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STRUCTURE AND CENTRALITY IN THE
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Dedication

For Caleb, Hannah, Nathan, and Rebekah.
Act justly. Love mercy. Walk humbly with your God.

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The development of a project of this magnitude is far from a solo endeavor. There is no way to adequately recognize everyone who deserves thanks, but here's my feeble attempt.

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Abstract

This study examines the structure and evolution of global refugee movements through the development of a network census of sending and receiving volume and partnerships between 242 countries and territories across five waves from 1990 to 2008. Degree centrality scores are analyzed using a variety of techniques to investigate three questions related to global refugee movement. These analyses contribute to refugee studies and a number of other disciplines by providing pictures of refugee movement and identifying important relationships that can inform future policy and theory development, as well as humanitarian interventions.

The structure and evolution of the global refugee network is examined in Chapter Three. The refugee network becomes more diffuse from 1990 to 2008, with fewer refugees moving to more destinations. In spite of this diffusion, there tends to be a high degree of stability among the top actors in most permutations of the network. This analysis also identifies an increased refugee burden experienced by countries at middle and low levels of development. Finally, this chapter identifies clear difference between top actors in the dichotomized receiving network and those in the other three networks. Countries at the highest level of development receive refugees from the most partners, but do not receive the highest total numbers of refugees. Countries at middle and low levels of development dominate the lists of top actors in the valued networks and the dichotomized sending network.

Chapter Four examines similarities and differences between the refugee and migrant networks, circa 2000. The migrant network is denser and more active than the refugee network, while the refugee network tends to be more centralized. Correlation analyses demonstrate the two networks are related, but at relatively low levels. In OLS

analyses examining the effects of domestic conditions and international integration on degree centrality in the different networks, state strength, conflict, INGO participation, trade openness, and receipt of foreign aid demonstrate similar effects on both migrant and refugee movements. Modernization, environmental, and political instability measures affect refugee movement but not migration. World system position demonstrates the clearest difference between the networks, with peripheral status demonstrating a negative relationship with migrant sending centrality and a positive relationship with refugee sending centrality. In a final set of OLS regressions using residual scores from the regression of the refugee network on its migrant counterpart, economic, political, and international measures all explain some of the observed differences between these networks.

In Chapter Five, random and fixed effects models explore the effects of domestic conditions and international integration on degree centrality in the refugee network from 1990 to 2008. Three important stories emerge. First, economic growth and development are negatively related to valued and dichotomized refugee-sending centrality. Next, countries that experience political instability are more central in the valued and dichotomized refugee-sending networks. Finally, greater foreign investment, trade openness, and INGO participation yield greater levels of refugees and receiving partners than those less involved in these networks, while more limited connections to global trade networks (i.e., lower world system positions) are negatively related to refugees received and partners.

Chapter One

INTRODUCTION

Refugee movement is an issue rife with consequences for both refugee and host at the political, humanitarian, economic, and personal levels. According to the Office of the United Nations High Commissioner for Refugees (UNHCR 2009), there were 15.2 million refugees in the world in 2008. Of these, 47 percent were female and 44 percent were under the age of 18. While the number of refugees in the world has grown steadily since the early part of the 20th century, the most recent trend shows a decline in this population, possibly due to increased levels of potential refugees staying within the borders of their own countries as internally displaced persons (IDPs). Most countries host some refugee population; however, 80 percent of the world's refugees currently reside in countries in the developing world. The UNHCR (2009) estimates that half of the global refugee population lives in urban areas, while another third live in camps. In Africa, the number of refugees in camps swells to an estimated 70 percent. In spite of the application of protection and assistance from the UNHCR, issues of health, safety, repatriation or relocation, and loss are daily realities for many of these who have been forced to leave their homes due to violence or persecution.

The question of defining refugee status is an important debate in academic and policy discussions of refugees. Definitions exist at the personal, academic, political, and legal levels (Wenk 1968; Zetter 2007) with a number of different actors vying to assert their definition. The ability to determine who is and who is not a refugee allows the defining institution to dictate who should be granted asylum, receive aid, and be considered for relocation or repatriation. The official definition of "refugee" for the global community is the one developed in 1951 by the Convention and Protocol Relating to the Status of Refugees (UNHCR 1951). This definition states that a refugee is:

> A person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it… (p. 16)

Two significant emphases emerge from this definition. First, refugees are individuals who face a *well-founded* fear of persecution. This qualification allows for a great deal of interpretation and variation in the application of the label across official definitions and policy development. Second, refugees are those who cross an international border, leaving their country of origin and relocating - temporarily or otherwise - in another country.

The field of refugee studies has developed steadily over the past hundred years in an effort to study this unique population. Research in this field has drawn from a number of disciplines to provide theoretical, methodological, and practical frameworks for the study of the origins, destinations, consequences, and outcomes of refugee movements at both the micro and macro levels. While emerging as an academic discipline in its own right, many researchers in refugee studies have maintained close ties to both policymakers and organizations tasked with meeting the needs of refugee populations. These ties provide both opportunities for work in the field and challenges in terms of research directions and expectations on the part of those commissioning research. In spite of the volume of work developed in this area, doubt exists as to the extent to which discoveries developed through academic research have actually had an impact at the policy level (Black 2001).

In an effort to contribute to the field of refugee studies and develop academic research that generates clear policy implications, the purpose of this study is to examine the structure and evolution of global refugee movements by constructing and examining a network census of sending and receiving volume and partnerships between countries. Additionally, the effects of domestic conditions and levels of international integration on degree centrality scores within the different permutations of this network will be examined to better understand how these conditions impact both outward flows of refugees and destination choices. Using a large, cross-national dataset and examining movements over multiple waves across the 1990 to 2008 time period, the analyses in this project are designed to develop answers to three refugee-related research questions. First, what does the structure of the global refugee network look like and how has it changed over time? Second, are the refugee and migrant networks different and, if so, what accounts for these differences? Finally, how do domestic conditions and levels of international integration affect patterns of sending and receiving centrality in the refugee network?

This study will address important gaps in the refugee and migration literatures as well as research questions in a variety of other frameworks, such as dependency, world-systems, modernization, economic development, health, and world polity. Additionally, the development of network censuses of refugee sending and receiving volume and partnerships is an important contribution. The ability to examine the structure of these networks will generate insights into the nature of refugee sources and destinations and create a new variable for use in future studies. The identification of relationships and trends in these networks will also provide a framework for the further development of refugee-specific theory. Beyond the academic contributions, better understanding of refugee sending and receiving centrality will have implications for future international refugee policy and intervention strategies.

LITERATURE REVIEW

History of Refugee Studies

Scholars in the field of refugee studies have contributed significantly to understandings of the nature, destinations, and consequences of refugee flows. While examinations and discussions of refugee flows and outcomes have taken place for much of human history, the field of refugee studies as an academic discipline is relatively new. In his review of the development of the field, Chimni (2009) identifies four distinct eras across the history of the discipline that reflect distinct changes in the causes and nature of refugee flows across the 20th and early 21st centuries.

The field of refugee studies was born out of the mass movements of refugees across Europe following the First World War. During this early period, research focused on practical issues like land capacity, resource use and availability, and consequences for those who moved. Governments and private organizations conducted most of the research in this period, attempting to address issues related to movements in the inter-war period (Chimni 2009).

A transition in the emphases of the field took place after World War II as a result of changes in the nature and handling of refugee flows. Two key changes were responsible for this shift. First, the Office of the United Nations High Commissioner for Refugees (UNHCR) was introduced and commissioned with the task of developing policy and providing interventions to address the needs of refugees across the world. While initially this post was intended to be temporary, dealing solely with post WWII refugees, it quickly became clear that the presence of an ongoing agency tasked with addressing refugee issues would be necessary (UNHCR 2010a). Secondly, new refugee movements developed as the result of the rise of oppressive socialist regimes and decolonization in Asia and Africa, causing refugee camps to emerge near areas experiencing conflict. These camps created opportunities for the study of large numbers of refugees gathered in a specific environment. Additionally, conflicts in Southeast Asia led to significant flows of new refugees moving both within the region and to destinations in the United States and other developed nations. During this period, research focused on discussions of the role of the UNHCR, studies of life and conditions in refugee camps, evaluations of the 1951 definition of "refugee" and its implications (Wenk 1968), and enumeration of individuals moving between East and West. As the Cold War conflict drove a good deal of refugee policy in this period, much of the work done in this era is colored by that conflict (see Hakovirta 1993). While exact dates are hard to determine, this period lasted from the mid-1940s into the early 1980s.

In the early 1980s, separatist conflicts, large-scale military offensives, and the rise of new repressive political regimes caused a sharp increase in the number of refugees across the world. As most of these events occurred in countries in the Global South, this era is characterized by a significant increase in refugee flows from the developing South to the industrialized North. As these flows developed, Northern governments reacted by enacting more restrictive refugee and asylum policies designed to limit the number of refugees able to enter and settle in a country. While research in this era focused heavily on refugees as individuals and offered stark portrayals of refugees designed to emphasize their humanity and status as victims (Chimni 2009), this era is also characterized by research that was heavily influenced by the development and adoption of definitions and research frames that served to justify the exclusionary policies of Northern governments (Bakewell 2008).

The current era of refugee studies is marked by new flows of refugees due to ethnic and sectarian violence and ongoing military conflicts, both civil and interstate. According to the UNHCR (2009), there are more refugees today than at any other point in human history, with most of this movement characterized as regional between countries in the developing South. Between 75 to 90 percent of current refugees stay in the region from which they emerge, causing developing countries to host an estimated 80 percent of the world's refugees (UNHCR 2009). These movements place significant pressure on already fragile economies, infrastructures, and political systems and also tax the resources of the UNHCR (Betts 2008). Scholarship in this era is varied, with an emphasis in many circles on the broader area of "forced migration studies" (Chimni 2009). This field is an extension of refugee studies that examines not only individuals who move due to persecution or political violence, but also as the result of economic, ecological, gender, and health-related issues. An ongoing debate exists in refugee studies over the extent to which research that includes these other displaced populations should or should not be considered legitimate refugee research (see Hathaway 2007; DeWind 2007; Cohen 2007).

Theory in Refugee Studies

The development of theories specific to refugee studies has proven to be a difficult undertaking (Hakovirta 1993). Bascom (1998) claims that no theory of refugees exists due to the diversity of groups, initiating factors, locations, destinations, durations, etc. involved in studying refugees. This lack of theory-building has been noted and lamented by a number of scholars (Hakovirta 1993; Kunz 1981; Robinson 1992), but few efforts have been made to address this gap. Theoretical frameworks that do exist in refugee studies tend to be borrowed from other disciplines and applied to refugee contexts (Black 2001). As the discipline has a history of drawing on information and scholars from a number of different areas (Black 2001), this strategy seems appropriate.

The neoclassical model as applied to migration by Lee (1966) is frequently referenced in the refugee literature (see Clark 1989; Iqbal and Zorn 2007). Scholars portray refugees as rational actors that make decisions about moving based on “push” factors in the home country, “pull” factors in a particular destination, and intervening obstacles and costs. However, unlike immigration decision-making, push factors for refugees often emerge quickly and at an intensity that does not allow for the weighing of costs or the evaluation of potential destinations. Pull factors tend to be less important as refugees often have little time to evaluate destination choices. Additionally, information about costs and obstacles is typically incomplete for refugees, limiting the extent to which informed, rational decisions can be made. So while some clear parallels to this theoretical structure exist, there are a number of ways in which the framework fails to apply to refugee movements and decisions.

Another theory borrowed from migration is migrant network theory (Massey 1990). The application of this theory to refugees predicts that refugees will tend to relocate in countries where other refugees or migrants from their country have previously settled due to the connections developed by earlier migrants and the reduction in resettlement "costs" incurred by the new refugees as they move to communities that are already established. Zolberg, Suhrke, and Aguayo (1989) noted the role played by increased ease of communication in the current globalized era in connecting potential refugees with countrymen living abroad and several studies have found links between previously existing populations of refugees and migrants and refugee decisions about potential destinations (Bocker and Havinga 1998; Moore and Shellman 2007; Neumayer 2005). In spite of these indications of the efficacy of migrant network theory to explain refugee movements, the shift in refugee receiving countries from the industrialized North to the developing South leads to the development of new destination countries that do not have the previous stock of refugees necessary for this theory to apply. Examining differences in the receiving networks over time can offer some insight into the validity of this theory as applied to refugee studies.

Theories outside of the area of migration have also been applied to various aspects of refugee studies. In his application of regime theory, Adepoju (1994) identified four "regimes" that he found to interact in the development of refugee flows. He drew connections between economic, demographic, political, and cultural factors and asserted that these interact to affect the choices made by refugees to move and in what direction. Hakovirta (1993) developed a systems model of combined causation that links seven elements in a system designed to serve as a framework for studying refugee flows and the consequences incurred by both individuals and hosts within these flows. Richmond (1993) also utilizes this systems approach with an emphasis on links between elements in sending and receiving areas. Additionally, Richmond advocates bridging the gap between micro and macro elements in refugee movements by applying a structuration approach (see Giddens 1979) that emphasizes the role of individual agency in developing and redeveloping social relations while simultaneously being both constrained and enabled by these same relations. Richmond claimed that decisions to move as refugees are made by individuals, but within specific contexts that strongly influence how and when those decisions are made. This combination of individual and social elements lays the groundwork for an approach to refugee studies that integrates a number of different theoretical perspectives.

Who is a "Refugee"?

As noted in the introduction, one of the most important discussions in refugee studies is the question of who, exactly, qualifies as a refugee. While the international community generally accepts the 1951 definition, the interpretation and application of this definition varies widely across actors. The application of refugee status carries enormous implications for policy, research, and interventions and has frequently been the product of political maneuverings (Black 2001). Actors approaching the question from different perspectives have different levels of incentive to control the official definition of the term (Nyers 2006). As compliance with treaty policies by national governments is contingent upon the application of the refugee label, states often favor restrictive definitions that limit the pool of potential refugee entrants (Fragomen 1970). Potential host states have strong incentives to limit the numbers of people allowed to cross their borders as refugees, as the absorptive capacity of any given state is finite and large influxes of additional population, even if only temporary, can generate a significant drain on state resources (Rees 1960). Perceptions of refugees as potential security threats (Chimni 2000), "vulnerable" populations in need of significant help (Clark-Kazak 2009), and stigmatized populations (Zetter 1988, 2007) legitimize these restrictive definitions to the populations of potential host countries, allowing policies of exclusion, repatriation, and even deportation to be accepted and - at times - demanded by local native populations (Zetter 2007).

In contrast, international and national organizations have incentive to broaden the definition of refugee as widely as possible. These broader definitions allow for the distribution of aid to the largest possible constituency and justify expanding budgets and operations for institutions like the UNHCR that are tasked with addressing the circumstances of refugees. This desire to expand the definition can be seen in the incorporation of internally displaced persons (IDPs) by the UNHCR into their purview despite this population failing to meet the refugee criteria of international border crossing. Even with this tendency to broaden the definition of refugee, these organizations draw lines between refugees (or "forced migrants") and migrants, citing coercion to move as the key difference between the two (UNHCR 2010b).

The refugees themselves represent a third set of actors working to control the definition of refugee. As a number of interventions and rights are accorded to those who receive refugee status, it is in the interest of individuals to whom the label might be applied to have as broad a definition as possible. Also important to individuals is the development of the attachment of a positive label to the term "refugee." As portrayals of refugees have shifted toward helpless (Clark-Kazak 2009) and other less-sympathetic images (Zetter 2007), policies and attitudes in receiving countries have become less open to receiving these populations.

Of all of the actors vying for primacy in defining "refugee," the state seems to hold the fore (Chimni 2000). Governments are not beholden to comply with UNHCR policies, but organizations are expected to accede to state policies in their work within national borders and individuals have limited recourse in efforts to define themselves. This combination of factors gives the state a position of power in framing the definitions and debates about refugees within its borders. According to the UNHCR (1997), state non-compliance with policies laid out in refugee treaties has become the "global norm."

Scholars note that the Convention definition was driven by these kinds of state interests and clearly reflects a specific set of historical, social, and political circumstances (Black 2001) particularly related to efforts toward nation-building by Cold War powers (Adellman and McGrath 2007). As such, many scholars and activists who seek to broaden the scope of what it means to be a refugee, characterize the 1951 definition as outdated. Excluded from this definition are those fleeing gender-related (Whittaker 2006) and structural violence (Zolberg et al. 1989), those moving due to economic deprivation (Richmond 1993), displacement due to development (Cernea 1990, Parasuraman 1995), and environmental degradation (Meyers 2002). Attempts to add new categories of individuals have also fostered new terms for refugees, including "forced migrants" (Zetter 2007) and "reactive migrants" (Richmond 1993). Expansion of the definition in some quarters has led many scholars to move away from the traditional label of "refugee studies" toward the more inclusive "forced migration studies" (Chimni 2009). Of particular concern to defenders of the 1951 definition are the implications of this shift for the focus of the discipline (see Hathaway 2007). Those in this camp fear that an emphasis on forced migration rather than refugees reflects a move away from investigations of individual issues and outcomes and toward the study of processes and policies.

A final debate in the definition of refugees is the inclusion or exclusion of IDPs in the definition. Hathaway (2007) argues that the emphasis on IDPs furthers the push towards a forced migrant definition with a resulting de-emphasis on refugees, a position that plays into the hands of states that seek to limit refugee entry and asylum. In response, Cohen (2007) questions the sensibility of developing different systems and regimes for individuals based on whether or not they cross an international border. DeWind (2007) echoes this sentiment, advocating a humanitarian perspective that focuses on needs rather than legal status. This perspective has also been adopted by the UNHCR, which has taken on protection of IDPs as part of its mandate (UNHCR 2010b).

North / South Conflict over Receiving Refugees

One of the consequences of the primacy of state actors in enforcing a narrow definition of refugees is a conflict between countries in the industrialized North and those in the developing South over refugee destinations. As industrialized countries effectively close their borders to refugees through exclusionary policies, flows have been redirected from destinations in the North to countries in the South that have fewer border controls and less ability to enforce immigration policies (Betts 2008). These destination countries also have fewer resources to meet the needs of incoming refugees and have varying levels of political stability that may be affected by the presence of large refugee populations and the demands they place on both resources and leadership (Betts 2008). Since responsibility for meeting the needs of these refugees is left to the host country and the UNHCR, Northern countries are able to use aid dollars to sway policies on both fronts (Suhrke 1998). They are also able to influence and direct research activities, a condition that has led some to claim that little attention is paid to marginalized refugee populations in parts of Africa (Agadjanian 2008). While some have accused Northern governments of developing policies and strategies based on racism (Robinson 1992), it is more likely that these policies are simply political expediencies that benefit wealthier states to the detriment of those less able to effectively close their borders.

Many receiving countries pay a high price for their inability to deflect refugee flows. While some individuals and segments of the economy in host countries may benefit from the presence of refugees (Bernard 1986), far more experience costs, such as higher prices, fewer resources, and increased demand on infrastructure. Keller (1975) identifies three key consequences associated with large numbers of refugees in a country: greater political unrest in the region, increased interpersonal violence, and enhanced political activity on the part of refugee populations that may destabilize current political balances in the country. Salehyan and Gleditsch (2006) have identified a clear relationship between the presence of refugees and the risk of new conflicts developing in the host country.

In addition to consequences for host countries, the movement of refugees into other poor countries in the same region can have negative outcomes for the refugees as they move into countries that may be hostile to them due to previous conflicts or racial/ethnic differences. Often these refugees find themselves isolated in camps or slums with limited resources and little opportunity to work or gain access to needed resources through other means (Betts 2008). These refugees become trapped by the policies of the host country (DeWind 2007) often with no recourse, as the UNHCR does not have the authority to counteract the authority of the host state, even when that state is in violation of treaty policy (Bernard 1986).

Beyond the North-South conflict over the location of refugees, lines are also drawn over the question of the causes of refugee flows. Since the 1990s, some scholars have accused policymakers of developing refugee policy based on a position that attributes the initiation of refugee flows exclusively to conditions that exist within the borders of the origin countries (Chimni 1998). This internalist position focuses the blame on internal conditions like conflict and poor governance and has allowed developed countries to absolve themselves of responsibility for refugee flows and develop more restrictive entrance policies for refugees (Zolberg et al. 1989). Additionally, this position allows hosts to emphasize repatriation of refugees rather than asylum or resettlement (Chimni 2009). These policy shifts have resulted in a greater emphasis on containment of refugees within the borders of their own country, leading to increases in IDPs and the shifting of refugee flows away from the most developed countries to those at lower levels of development (Chimni 1998). This trend is evidenced in the most recent Human Development Report from the United Nations Development Programme (2009) that finds 78% of refugees living in countries at the middle level of development.

By contrast, others suggest the need to examine external forces that shape internal conditions that generate increased refugee flows. Proponents of this externalist position do not discount the role that conflict and other internal issues play in the development of forced migration, but claim that these internal issues must be understood in the light of external conditions that impact their development. Adepoju (1994) asserts that four regimes must be considered in examinations of how refugee flows emerge – economic, demographic, political, and cultural. Without understanding the integration of these internal and external elements, the full picture of forced migration cannot be adequately grasped. An externalist approach to policy development would require the examination of economic and aid policies on the part of more developed countries who wish to better control refugee flows (Thorburn 1996). Resources allocated to dealing with "root causes" would focus not only on controlling borders, but also on promoting development within potential countries of origin to eliminate problems before they reach levels that initiate refugee flows (Widgren and Martin 2002).

Previous empirical research in refugee studies

Issues in refugee research

Researchers in the field of refugee studies have noted a number of methodological issues inherent in examinations of these populations. Perhaps the greatest difficulties are attached to the nature of the population itself. Chief among these is the previous discussion about who should be counted as a refugee and what constitutes a refugee population. The problem of counting refugees is further exacerbated by the conditions that cause them to move (Whittaker 2006). Refugees tend to travel *en masse* as the result of crises which makes "counting heads" a difficult proposition (Rees 1960). Bloch (2007) has gone so far as to claim that it is impossible to quantify the total number of individuals who are refugees. This impossibility is the product of issues like the ongoing mobility of the population beyond the initial movement and the desire by many refugees to blend into the host population in order to avoid the stigma of the refugee label (Zetter 1991).

Beyond the issue of defining and counting refugees, researchers have identified several other obstacles to studying refugees. Harrell-Bond and Voutira (2007) note that access to refugee populations is often restricted by governments or organizations tasked with addressing the needs of refugees. Additionally, the varied nature of the refugee population makes it difficult to identify the right questions to ask, particularly in studies that examine multiple populations (Zlotnik 1998). Further debate has developed around choices about in the appropriate direction of emphasis in refugee studies - the refugees as individuals or the processes that cause them to move and determine destinations and outcomes (Hathaway 2007).

A constant concern in refugee studies is the extent to which research frameworks and agendas are driven by policymakers and, as a result, reinforce policies that may or may not be in the best interests of the refugee population (Bakewell 2008). Bakewell claims that the quest for policy relevance among advocacy-oriented researchers has led them to adopt narrow definitions and frameworks that omit large numbers of individuals and circumstances and limit the questions asked in academic investigations. The tendency is to focus on those that fit the narrow categories while others fall through the cracks. While advocacy and scholarship can coexist (Voutira and Dona 2007), objectivity is often lost in the face of the difficult humanitarian circumstances observed by researchers as they interact with refugee populations (Bloch 2007). In his opening editorial of the first issue of *The Journal of Refugee Studies*, Zetter (1988) cautions that boundaries must be drawn between consultancy and research, and researchers need to be independent of institutions in order to best examine and meet the needs of refugees. Bakewell (2008) calls for “policy irrelevant research” that examines refugees as individuals experiencing particular social, political, and historical situations rather than members of a pre-defined category.

Previous research in refugee studies

In spite of these myriad methodological issues, refugee scholars have produced a body of work that is varied in both format and subject. Though some assert that work in the area of refugee studies is often performed in vain due to the lack of attention paid by policymakers to the findings that emerge (Black 2001), many non-state entities have benefited from this research as it has informed agenda-setting and the development of appropriate interventions. There are, however, clear limits to the kinds of research that have been done to date and the gaps left in the literature are, in many cases, important ones.

The types of research and writing produced in forced migration studies can be divided into a handful of categories. The literature is full of theoretical and policy-oriented work that examines the state of research in the field or the status of the refugee population as a whole. These works provide evaluations of current policies and institutions (Martin 2003), as well as offer new models for addressing issues like how policy is created (Chimni 2001) and how resources should be distributed to assist refugee populations (Akokpari 1998). Methodological issues related to refugee studies are also addressed (Bloch 2007; Zlotnik 1998).

Moving beyond the strictly theoretical, a second category of study includes descriptive accounts of issues, such as refugee aid (Loescher 1993), flows (Zolberg et al. 1989), and portrayals (Clark-Kazak 2009). Much of the work done by UNHCR and other large institutions (see United Nations Development Programme 2009) falls into this category. These studies typically rely on raw numerical data and provide descriptions of trends in flows, sending and receiving countries, assistance, and repatriation (see Zlotnik 1998). While offering insight into significant patterns and trends, these studies tend to fall short of offering statistical analysis beyond the presentation of descriptive numbers.

Case studies are another important category of the forced migration literature. These studies examine a variety of topics in specific detail. Koser (2007) presents a series of studies involving the interaction of refugees and transnational processes with an eye toward the outcomes that result. In her study of Mozambican refugees who settled along the rural South African border, Polzer (2008) provides an example of a very specific and detailed study of a single population. Similar to the descriptive studies, these case studies provide important insight into specific populations and issues, but do not present findings that can be generalized to the larger refugee population.

Taking a step beyond case studies, another branch of researchers have developed analyses of single issues related to specific populations of refugees. The scope of these studies is somewhat restricted, but the investigation of factors affecting a specific refugee population has made higher levels of analyses possible. Research in this vein has addressed issues, such as refugee health (Prothero 1994), labor market integration (Krahn et al. 2000), environmental impact (Jacobson 1997), resettlement (Lamba and Krahn 2003), and acceptance by receiving countries (Gibney, Dalton, and Vockell 1992). These studies tend to focus on post-movement outcomes for refugees and the countries that receive them.

Large-scale cross-national studies are uncommon in refugee research. Often, those that exist are qualitative in nature, focusing on interviews (Havinga and Bocker

1999) or policy statements (van Selm 2003) that do not lend themselves to quantitative analysis. Dye (2007) provides a larger comparative study in his collection of research dealing with micro-nutrition in refugee populations, but this comparison does not move to the level of statistical analysis. The lack of cross-national analysis is acknowledged and lamented by a number of researchers (Agadjanian 2008; Dye 2007), but the challenge to rectify the situation has largely not been accepted by the refugee studies research community. Zetter (2007) claims that a lack of general empirical findings allows for a greater politicization of the refugee identity, resulting in more restrictive policies. While cross-national examinations of refugee issues are difficult due to the multiple contexts, definitions, and data issues involved (Bloch 2007), some studies of this nature do exist, and offer important insights into the nature of refugee flows and outcomes.

Moore and Shellman (2007) use directed dyads at multiple time points from 1965 to 1995 to examine elements in potential host countries that might influence refugee decisions about destinations. They find that colonial ties, shared borders, refugee treaty participation, and a preexisting refugee population are all positively related to refugee destination choice while violence in the potential destination country and high relocation costs deter being chosen. In previous studies, these authors found that wages in the potential host country (Moore and Shellman 2004) and other economic and political conditions (Moore and Shellman 2006) also affect destination choices made by refugees.

Bocker and Havinga (1998) examine trends in destination countries for asylum seekers from 1985 to 1994. They also find evidence of the link between previously settled refugee populations and later refugee destination choices as well as a link between cultural ties (language, politics) and destinations. In examining connections between refugees from specific countries and European destinations, they find that the vast majority of refugees demonstrate a preference for moves to former colonizers. This may be due to the previously mentioned cultural ties or to more readily available transportation between these countries.

In a cross-national study of determinants of asylum migration to Western Europe, Neumayer (2005) finds that the stock of previous asylum seekers positively affects refugee decisions to migrate to these countries. Additionally, Neumayer finds that negative economic and political conditions in sending countries lead to higher flows of asylum seekers to this part of the world, but natural disasters and famine do not.

A number of other studies have examined conditions linked to refugee outflows. Davenport, Moore, and Poe (2003) find that threats to personal integrity generate greater refugee flows and fledgling democracies tend to produce higher levels of refugees. Other studies link poverty, military-controlled governments (Hakovirta 1993), and human rights violations (Apodaca 1998) with greater flows of refugees. In her study of 103 countries from 1971 to 1990, Schmeidl (1997) finds that political conditions (i.e., genocide, civil war) are positively related to refugee outflows, while higher development in the form of energy consumption has a negative effect on refugee movements. Schmeidl also finds that foreign intervention in civil wars leads to greater refugee outflows, but that other intervening factors (e.g., geographic obstacles, number of possible borders) do not influence refugee movements.

"Root causes" approach

Schmeidl's (1997) work demonstrates an attempt to incorporate the "root causes" approach into refugee studies. This approach is an application of Lee's (1966) neoclassical model of migration that focuses on push factors, intervening factors, and triggering events (Clark 1989) and represents a *via media* between the pure internalist and externalist approaches to refugee movements. In Clark's (1989) exposition of this approach, he identifies "root causes" as preexisting conditions within a country that create an environment from which refugee movement may be seen as a viable option, such as racial conflicts, degrading ecological conditions, and border disputes. The second category of elements, intervening factors, impact decisions made by potential refugees to move or stay when conditions escalate to a point of promoting refugee outflows. These factors include alternatives and obstacles to international movement, decision-making patterns, and seasonal conditions. Any of these might be enough to keep a potential refugee from moving or encourage a potential refugee to leave. The final category, triggering events, mark significant changes in current conditions that prompt the initiation of refugee flows. These could be anything from an expansion of violence or persecution to a change in perceptions about how refugees will be received in a host country.

The present study, examining the structure of the global refugee network, employs a modified version of Clark's (1989) approach that focuses on domestic conditions as root causes and vectors of international integration as potential intervening factors. Domestic conditions beyond political stability have the potential to impact refugee decision-making. More difficult conditions might make the decision to leave easier for potential refugees, while better development and welfare conditions might create higher potential costs for refugees, providing incentive to stay. Levels of integration in international systems like finance, trade, and civil society have the potential to impact conditions "on the ground" in potential sending countries and create connections that facilitate movements when refugees decide to move. The following sections discuss the domestic conditions to be studied as root causes in this analysis, as well as the potential role of international integration in influencing refugee movements.

Domestic conditions

A number of domestic factors have the potential to influence decisions made by potential refugees. For this project, four sets of elements will be examined: economic, political, demographic, and environmental. Many of these represent new variables in the refugee studies literature, while others have been included in previous cross-national studies with mixed results. Discovering the relationships between these variables and degree centrality scores stands to advance refugee studies through the identification of effects beyond those typically studied. The demonstration of these effects also has the potential to generate new areas of emphasis for policy work in the area of refugees.

Several measures of economic and modernization conditions have demonstrated relationships in previous research. Wages in receiving countries (Moore and Shellman 2004), GNP per capita (Moore and Shellman 2006), and levels of wealth (Bocker and Havinga 1998) have all been associated with increased refugee receiving. Additionally, as half of the refugee population currently resides in urban areas (UNHCR 2009), it stands to reason that more urbanized countries may be more attractive hosts. Relationships between economic factors and refugee outflows have also been observed. Economic growth demonstrates a negative effect on sending, while average income has a curvilinear relationship with refugee movement (Vogler and Rotte 2000). Neumayer (2005) found that GDP per capita has a negative relationship with sending, while economic discrimination increases levels of asylum seekers leaving a country. Low socioeconomic development (Edmondson 1993; Holzer, Schnieder and Casey 2002) and poverty (Hakovirta 1993) are associated with higher flows while higher development (as measured by energy consumption) yields reduced refugee movements (Schmeidl 1997). Based on these findings, I expect that the economic variables included in this study will demonstrate negative relationships with sending degree centrality scores and positive relationships with receiving centrality. That is, societies with better economic conditions will be less likely to send, but more likely to receive, refugees.

Measures of political instability make up the second set of models. Previous studies have consistently demonstrated the role of conflict (Schmeidl 1997), threatened violence (Edmondson 1993), and human rights violations (Apodaca 1998; Gibney, Apodaca, and McCann 1996; Neumayer 2005) in promoting higher refugee outflows. Moore and Shellman (2007) found that the presence of conflict and political terror (Moore and Shellman 2006) in potential host countries has a slightly negative relationship with levels of refugee receiving. These are the typical factors considered when examining refugee movements and these relationships have proven to be robust across most cross-sectional and longitudinal examinations. They represent key domestic conditions that promote outflows and potentially limit inflows. In light of this evidence, it is anticipated that the presence of political instability will increase sending centrality, but decrease receiving centrality in the refugee network.

Demographic and health conditions represent a largely unexplored area of potential root causes in refugee studies. While these conditions have been studied in refugee populations (Dye 2007), they are not typically included as predictors in refugee analyses. Holzer et al. (2002) found that countries with high infant mortality rates send refugees at higher rates than other countries. Schmeidl (1997) included population density as a potential population-related root cause, but did not find a significant relationship for her sample and time period. If domestic conditions serve to propel potential refugees into movement, then demographic factors related to population and health might contribute to the decision-making process. For this study, infant mortality and population density are included to examine the relationships that emerge with this more recent time period and larger sample. In addition to these, life expectancy and fertility rate are also examined. It is anticipated that negative demographic conditions will be related to greater refugee-sending degree centrality. However, due to the wide variation in these conditions experienced by high-receiving countries, it is not expected that these will demonstrate a significant effect on receiving centrality.

The inclusion of individuals who are forced to relocate due to environmental degradation among the refugee population is strongly espoused by many in forced migrant research (Meyer 2002). While this population is not specifically included in the UNHCR count of refugees, it is possible that many of those counted as political refugees are actually moving due to environmental issues, but using political conditions as a justification for entry into a host country. This is not an unheard of phenomenon, as Neumayer (2005) observed that many of those seeking political asylum in countries in Western Europe were actually economic migrants taking advantage of entry policies that favored refugees. CO_2 per capita is included in this analysis to test for effects related to environmental harm that might indicate the presence of this population among current refugees. Environmental degradation clearly has the potential to act as a root cause in this framework. In addition, the percent of cropland under cultivation is also included to measure a country's land use. It is possible that greater ties to the land (i.e., more land under cultivation) might encourage potential migrants to stay in the face of conditions that might otherwise promote movement. For these measures, it is expected that CO_2 per capita will be positively related to sending centrality and have no effect on receiving centrality while cropland under cultivation will be negatively related to both sending and receiving centrality.

International integration

Previous work in refugee studies has identified significant relationships between international variables and refugee movements. Schmeidl (1997) found that foreign intervention into civil wars increased sending levels. Neumayer (2005) included measures of foreign aid, trade, and tourism in his study of asylum seekers in Western Europe and found that aid and tourism had very slight negative effects on outflows, but trade did not. In his qualitative analysis of refugee movements in Southern Africa, Mazur (1989) notes a number of positive and negative effects on refugee movements and outcomes that he attributes to the intervention of global relief agencies. Iqbal and Zorn (2007) also predict these same kinds of effects, but fail to offer any empirical evidence.

For this analysis, levels and vectors of integration in global systems will be considered intervening factors in the root causes typology. Interaction with other countries in finance, trade, and civil society has the potential to influence refugee decisions through the effects that these interactions have on conditions within the potential sending and host countries and the channels that are created that facilitate refugee movements. Measures of international integration reflecting neoclassical economic, dependency, world systems, and world polity theories will be included. Each of these theoretical systems has clear ideas about the effects of participation in global systems, particularly for poor countries. While work in these areas has yet to include refugee movements as an outcome, the application of these ideas to this area provides another outlet for the examination of the efficacy of these theoretical systems. Not all of these vectors of international integration will affect all societies in the same way, but it is expected that clear patterns will develop that demonstrate the impact of participation in these systems on refugee movements.

Debates about the effects of foreign direct investment (FDI) in the developing world typically occur in contexts dealing with income inequality or economic development. In neoclassical economics, the goal of every developing country is thought to be the acquisition of as much foreign investment capital as possible (Firebaugh 1992). Because the source of investment money is not as important as its presence, it makes sense for countries to pursue foreign investment, as there are typically more funds available for developing countries from foreign sources compared to domestic. Researchers from this school have found positive effects of FDI on economic growth (Firebaugh 1992), health outcomes (Firebaugh and Beck 1994), education (Schofer and Meyer 2005), and domestic investment (de Soysa and Oneal 1999). These scholars acknowledge that growth in inequality may follow the growth brought by increased FDI, but this inequality is both acceptable and necessary as wages rise across the lower strata of the workforce (Firebaugh 2003).

Neoclassical ideas about the effects of trade openness on poverty reduction are similar to those about FDI. Advocates of this position argue that freer trade maximizes the size of potential markets, which yields greater opportunities to trade and encourages greater productivity and entrepreneurship (Weede 2008). Sachs and Warner (1995), among others (Wacziarg and Welch 2008), claim that expansion leads to greater economic growth and, as a result, a reduction in poverty. As economic growth is seen as a key to improved welfare outcomes (Firebaugh and Beck 1994), the expansion of trade is seen as a natural way to enhance growth and, by extension, human welfare. From this perspective, international integration in the forms of foreign investment and trade should decrease refugee outflows as economic and welfare conditions are improved in poor countries, thus reducing the potential impact of these root causes.

Alternatively, scholars in the dependency school argue that gains identified by neoclassical scholars mask longer-term losses that often result in countries experiencing worse economic conditions than when they started (Kentor 1998). A number of studies from this perspective have found that FDI generates increased income inequality and slows economic growth (Bradshaw et al. 1993; Dixon and Boswell 1996; Kentor and Boswell 2003). Vijaya and Kaltani (2007) found that increased FDI flows have a negative impact on manufacturing wages in the developing world, particularly among female wage-earners, countering a central point of the neoclassical argument. These negative economic outcomes have also been linked to a number of negative health and welfare outcomes including food consumption (Wimberley and Bello 1992), quality of life (Bradshaw and Huang 1991), and infant mortality, child mortality, and calorie consumption among children (Bradshaw et al. 1993). Dependency scholars also caution against countries throwing open their borders to international trade, fearing that greater openness will result in exploitation by wealthier countries that are better able to dictate terms of trade to their advantage.

Extending the dependency argument, world systems scholars hold that negative outcomes emerge as economies in the developing world participate in inherently unequal relationships with more developed countries (Wallerstein 1974). Through exploitation and the loss of resources through extraction, countries in the periphery of the world economy experience negative circumstances due to the economic constraints of their relative isolation (Kim and Shin 2003). These negative outcomes can extend into economic and political realms, potentially creating or exacerbating domestic conditions that yield higher refugee outflows. Based on these assumptions and findings related to the effects of integration on poor countries, both the dependency and world system perspectives would predict that greater participation in global finance and trade will be related to increased refugee outflows.

The world polity perspective provides an alternative narrative to the neoclassical and dependency arguments. This school of thought credits the global rise in international non-governmental organizations (INGOs) and the subsequent development of a global civil society with many of the gains realized in development and welfare outcomes around the world. As countries become more connected to INGOs, world culture scripts are diffused that prompt governments to act in accordance to the norms of global society. In addition to the development of these global ideas, INGOs can act as a "global third sector" beyond economics or politics that works outside of constraints placed by economies or governments (Salamon 1994) to influence human development and welfare outcomes by providing services (Chabbott 1999), funds (Ndegwa 1996), technology (Shirin 2000), and human capital (Chabbott 1999). Previous research shows that INGOs have a positive effect on educational enrollment and persistence, health outcomes, environmental outcomes, women's rights and a reduction in the negative effects of overurbanization (Soros 2004). Additionally, Jorgenson (2009) finds that the presence of environmentally-oriented INGOs is related to reductions in industrial organic water pollution intensity. Examining factors shaping overurbanization in the developing world, Bradshaw and Schafer (2000) provide evidence that the increased presence of INGOs ameliorate the negative consequences associated with overurbanization, and further, that INGO expansion is positively related to economic growth and access to clean water. Finally, the world culture ideas espoused by these organizations encourage the growth of grass roots organizations within developing countries (Salamon 1994), help standardize trade and professional practices (Boli and Thomas 1999), and lead to greater accountability of governments to their people and the international community (Bello 2001).

Participation in global civil society through INGOs has the potential to affect both sending and receiving centrality. The positive effects of INGOs noted above, coupled with the diffusion of global scripts advocating for greater human rights adherence and eliminating ethnic and sectarian violence, should lead to a negative effect on refugee outflows as domestic conditions improve. However, it is also possible that the presence of INGOs in a sending country may increase outflows through organizations that focus on refugee relocation (e.g., the International Rescue Committee) and the development of new communication and transportation channels that facilitate movement between countries.

Potential receiving countries may be affected by the presence of INGOs in two ways. First, the proliferation of world polity frames that view receiving refugees as a part of good global citizenship could lead countries to develop more open receiving policies, potentially increasing the number of refugees received and the number of partners from which they come. Additionally, connections made between countries through INGOs can lead to the development of communication and transportation ties that make it easier for refugees to move to these countries, should the need arise. With these factors in mind, it is expected that greater INGO participation will lead to reduced sending centrality, but greater receiving centrality for countries in the global refugee network.

Research Questions

The goal of this project is to examine the structure and evolution of the global refugee network by applying a variety of analytical techniques to the examination of degree centrality scores for the valued and dichotomized sending and receiving networks. This examination will address three refugee-related questions in an effort to understand the nature of the global refugee network and elements that affect sending and receiving centrality within that network. The application of descriptive, comparative, and analytic techniques to the study of these networks will increase understanding of the scope and structure of the network, identify differences between refugee and migrant networks, and examine relationships between centrality in the refugee networks and a variety of domestic and international factors. This project stands to make important contributions to refugee studies as well as other areas of analysis.

Central to this study will be the development of the refugee sending and receiving networks across five waves from 1990 to 2008. The development and examination of these networks addresses the first question of the study – what does the structure of the global refuge network look like and how has it changed over time? Analysis of refugee sending and receiving degree centrality at the network level does not currently exist in the refugee literature. The development of these networks allows for a descriptive analysis of centrality within them and the observation of patterns that develop as the networks evolve. Additionally, the creation of degree centrality measures for each of these networks contributes a new variable that can be analyzed as a dependent variable (as it is in this project) or used as a predictor in future cross-national studies.

A second question to be examined involves the extent to which the migrant and refugee networks are different. For this question, the third wave of the refugee network will be compared to a simultaneous migrant sending or receiving network to examine similarities and differences between the networks in sources and destinations. Descriptive comparisons will take place, as well as a comparison of the effects of domestic conditions and levels of international integration on centrality in these networks. These variables will also be used to determine the extent to which they explain differences in the network through a series of OLS regression models with residual scores generated through the regression of each migrant network on its refugee counterpart. The identification of differences between these networks will provide groundwork for the further development of refugee-specific theory.

Finally, to address the third question in the study, degree centrality scores for all waves and permutations of the global refugee network will be used to examine factors that influence position in these networks. The root causes approach will be tested using random and fixed effects models to examine relationships between domestic conditions and international integration and centrality in the refugee network both cross-sectionally and longitudinally. The application of these variables to refugee movements explores previously unexamined relationships in many of the included theoretical traditions. Additionally, the discovery of elements important to refugee sending and receiving centrality will develop directions for future international refugee policy and intervention strategy.

The examination of these questions addresses important gaps in the literature on refugee studies and in work across a number of other theoretical perspectives (e.g., world systems, world polity, dependency, economic development, health, demography). The inclusion of variables from these perspectives outside of refugee and migration studies contributes to those literatures through the examination of outcomes that have not been previously addressed by scholars in those fields. Additionally, the development of a systematic cross-national analysis of refugee movements contributes to an underdeveloped area of refugee studies. This study will also advance refugee studies by considering factors that have heretofore been unexamined in cross-national research projects, such as variables related to modernization, demography, and international integration. Comparison of migrant and refugee networks will inform future conversations about the similarities and differences between these populations. Finally, the discovery of patterns related to centrality in the refugee sending and receiving networks will inform policy and intervention strategies for countries and the international community.

Chapter Two Outline

Chapter Two

METHODOLOGY

The questions for this study will be addressed using a variety of statistical techniques and presented in a number of formats to provide as broad an understanding of structure and centrality in the refugee network as possible. Each chapter will explore one of the three questions presented with the goal of developing answers from a variety of perspectives that shed light on the network from many angles. The techniques and perspectives to be used will be discussed in detail in this chapter, with some restatement in the introduction of the appropriate subsequent chapters. This chapter begins with a discussion of the refugee data used for the analysis, followed by detailed discussions of how the analyses of each substantive chapter will be conducted. Finally, the chapter ends with a discussion of two key issues related to the data and how these are addressed.

Data

Data for the measures included in this study come from multiple sources that develop country-level data used in international comparisons, including: The United Nations, The World Bank, *The Yearbook of International Organizations*, The Freedom House Project, and others. A full list of data sources with operationalizations is presented in Appendix A. While the data examined in this analysis are the best available for this type of research, limitations associated with cross-national research – particularly among poor or mobile populations – exist. The nature of refugee movement makes it a particularly difficult population to count (Bloch 2007), as groups often move *en masse* and are not always identified as refugees in host countries. Additionally, poor countries or those with limited central governments are often unable to generate data for many of the measures used in this study. However, these poorest countries often receive the most attention from international organizations that generate country-level data, resulting in better data availability for some of these than for countries at slightly higher levels of development. To account for bias introduced by missing data, steps will be taken across the methodological procedures in this study to deal with any error that might enter the analyses as a result of these limitations. In spite of the challenges presented by the nature of these data, the efficacy of variables developed from these international sources has been demonstrated in research in the areas of refugee studies (Moore and Shellman 2007), world-systems (Clark and Beckfield 2009), dependency (Kentor and Boswell 2003), world polity (Meyer et al 1997), and human rights (Hafner-Burton and Tsutsui 2005).

The UNHCR database includes refugee sending and receiving observations for 242 countries and territories. These are stock data that include counts of all refugees living in a given country or from a given country each year. Refugee counts for each year from 1990 to 2008 were obtained from the database and used to construct period averages for five waves (1990-1993, 1994-1997, 1998-2001, 2002-2005, 2006-2008). Waves 1-4 include four years, while Wave 5 includes only three. The development of observations over five waves expands the total possible sample size to 1210. However, due to differential availability of data for many of the included variables, some countries will not have observations for all of the waves of the study, resulting in pooled data that are unbalanced. The decision to use a different number of years in the final wave is driven by two issues related to the data and geopolitical reality. First, 2008 is a logical terminal point as it is the last year for which refugee data are available for the majority of the countries and territories in the dataset. On the other end of the time period, going back beyond 1990 presents a challenge due to the number of new countries that emerge across Europe and Asia around this time as a result of the dissolution of the Soviet Union, Yugoslavia, and Czechoslovakia. Many of these countries did not exist in 1989 and, therefore, do not have data. This means that pushing the waves back a year or more would result in the sample being more unbalanced as some counties would have data for only the earliest wave, while others would lack data for this wave, but have observations for the others. As the averages for most of the variables are somewhat stable across years and waves, it is not anticipated that the inclusion of a three-year wave will prove problematic in the analysis. To verify this stability, centrality scores for each network and each wave were correlated to determine how highly correlated the scores were across waves. The five waves of each network were significantly correlated with scores of .750 or better. Interestingly, the first wave is the one that shows the lowest level of correlation, while Waves 2 through 5 are correlated at .900 or better for most networks.

Prior to statistical analysis, a number of operations and checks were performed on the variables in the study. Data were obtained from all sources and matched up by country and wave. Once all of the available information was compiled in the dataset, the full dataset was uploaded into UCINET (1999) (1999) or Stata as appropriate for the necessary statistical procedures. Each variable underwent a series of checks to examine the distribution of the data and to ensure that the data met appropriate regression assumptions with respect to collinearity, heteroskedasticity, and distribution issues. Some variables failed to meet these expectations and were excluded. These are discussed following the variable descriptions. Additionally, a number of variables were determined to have skewed distributions, and were logged for inclusion in the analysis. These are noted in the variable descriptions below. A correlation matrix of all relevant measures is presented in Appendix B.

To investigate the research questions for this study, a number of variables are examined. Unless otherwise noted, these variables will be presented as period averages for the five waves of the study (1990-1993, 1994-1997, 1998-2001, 2002-2005, 2006-2008). Period averages are used in order to reduce volatility that exists in some of the data, particularly the valued refugee data. Several of the included variables (infant mortality, life expectancy, and INGO membership ties) have limited available data, resulting in the use of a single year for each wave, rather than an average. The distribution of these scores shows a good deal of stability over time and it is not anticipated that the use of only one observation per wave will significantly affect the results. The world system measures also have limited data, as scores reflect a single observation. Again, world system position demonstrates a degree of stability over time (Babones 2005), and the use of a single score should not impact results. For periods in which there are fewer than four observations for a given country on a particular measure, whatever observations exist will be included in order to preserve the highest possible number of cases in the dataset.

All variables will occur in the analysis as simultaneous with the dependent variables. While it is possible that the effects of some of the variables in the analysis take time to manifest an effect on refugee movement, the stability of the distribution of averages of predictor variables across waves demonstrates the possibility of there being little, if any, difference in outcomes using simultaneous rather than lagged variables.

Additionally, the inclusion of fixed effects models allows for the examination of effects longitudinally, providing for the identification of relationships that manifest over time without having to use lagged predictors.

ANALYSIS

Development of the international refugee network

The first element to be examined in this study is the structure of the refugee sending and receiving networks. Identifying central and peripheral countries in the international refugee network and examining how countries in these positions have changed over time offers a number of advancements to the field of refugee studies. The development of a network census of countries that send and receive refugees provides a new way of examining refugee flows at the macro level and creates a variable that will prove useful in future studies of causes and effects of these flows. The network centrality variable may also be applicable to cross-national research in areas beyond refugee studies. Additionally, examining changes in the refugee sending and receiving networks over time will reveal patterns and trends that may validate or call into question current beliefs about the sources and destinations of refugees. The identification of these issues may foster the development of refugee-specific theory as the distinctiveness of this population is more clearly delineated. At the policy level, the identification of central sending and receiving countries will allow for the more efficient distribution of resources and the development of country or region-specific interventions that might serve to slow refugee outflows or pacify a situation within a potential sending country before conditions develop that lead to the initiation of refugee flows.

Movement of refugees between countries represents the primary dependent variable in this study. The data for this measure come from the Office of the United Nations High Commissioner for Refugees (UNHCR) database that counts refugees based on the definition developed in the 1951 Convention. Only those identified by the UNHCR as individuals who have crossed an international border in order to “save their lives or preserve their freedom” are included in these counts (UNHCR 2010b).

Measures of valued and dichotomized network degree centrality were constructed to address the question of the nature of the refugee sending and receiving networks. Valued centrality highlights the volume of movement experienced by sending and receiving countries, while dichotomized centrality provides a picture of relationships within the global network. Valued networks are based on stock measures that include counts of total refugees living in a country during a given year. Counts from each year within a period were summed and divided by the number of years included in the period to construct period averages. Years with zero refugees are included in these averages unless they have been specifically identified as years of missing data by UNHCR. Matrices were developed for each wave and permutation of the refugee network. Once developed, the matrices for each wave were input into the UCINET (1999) software package and translated into valued degree centrality scores. This generated five sets of scores for each network that were then matched up by country and wave in the dataset, resulting in 1210 total observations.

The dichotomized networks are based on refugee sending / receiving dyads developed from the valued matrices. If a country sends refugees to another country, it is counted as a sending tie for the sending country and a receiving tie for the destination.

Counts of these sending and receiving partners were used to develop networks and generate degree centrality scores for every country for each wave. Centrality scores for these networks are based on the number of ties experienced by a particular country in the wave, with higher scores indicating greater network centrality. In other words, countries that receive refugees from a large number of other countries will be more central in the receiving network than a country that receives refugees from a single country. Once all valued and dichotomized networks are constructed, they will be analyzed using a number of procedures to identify patterns of central and peripheral actors in the networks and observe important temporal trends. Results of these analyses of the structure of this network will be presented in a series of maps, graphs, and tables in Chapter Three.

Structure and centrality trends in the global refugee network

UCINET (1999) reports a number of descriptive statistics for networks. Scores for total actors (i.e., refugees, ties, and countries), mean, minimum, maximum, and network centralization are available. Network centralization demonstrates the extent to which the network is monopolized by a small number of actors. Higher centralization indicates a greater level of domination by the highest sending or receiving actors. Additionally, network density scores were calculated in UCINET (1999). For valued networks, density is a measure of average value, presenting the total number of migrants or refugees divided by the total possible ties in the network. Network density is a more intuitive statistic for dichotomized networks, capturing the extent to which all possible ties in the network are realized. This score is generated by dividing the actual number of ties in the network by the total possible number of ties (UCINET (1999) 2010). All of these statistics for each wave of each network are presented in Tables 3.2 through 3.5 to identify changes and trends in the networks over time.

In addition to descriptive statistics, I developed three other images of centrality and change over time in the networks. First, I divided total refugees and sending and receiving partners for each region by the total number of refugees or ties in the network to determine the percentage of refugees and / or ties sent and received during each wave, by region. These results are presented in Figures 3.1a through 3.1d. Regions included in this analysis are based on World Bank designations with the East Asia and Asia and Pacific categories collapsed together for a total of six regions: Sub-Saharan Africa, Asia, Middle East / North Africa, Latin America / Caribbean, Eastern Europe / Central Asia, and Europe and the West. Appendix C (Table C.1) lists the regional assignment for all of the countries in this analysis.

Following the identification of regional variation, maps were generated depicting centrality in the first and fifth waves of each network to provide a visual presentation of change over time. Centrality scores for each wave and network were matched with shapefiles in QuantumGIS (2010) and projected in geographic space using colors to identify countries at different levels of centrality in the networks. Map results are presented in Figures 3.2 through 3.9. These maps are intended to provide visual depictions of how countries and regions have differential experiences of centrality and demonstrate how structure and centrality have changed over the period of the study.

Finally, the top ten actors for each of the valued and receiving networks are identified for each wave of the analysis. The top actors in the valued and dichotomized sending networks are presented in Tables 3.6 through 3.10, with a summary in Table

3.11, while the top receiving actors are presented in Tables 3.12 through 3.16, with a summary in Table 3.17. These tables present total ties, refugee counts, and refugees per tie for the top actors in each wave. Clear changes over time and differences between top actors in the valued and dichotomized networks are noted and discussed in these results. A final table (3.18) presents the top ten fastest growing countries for valued and dichotomized centrality in sending and receiving networks.

It is expected that the composition of these networks will change over time. Based on observations from the UNHCR about trends in refuge flows over the period under investigation, it is predicted that centrality in the refugee receiving network will change over the period from 1990 - 2008 (H1) with less-developed countries in Africa and Asia becoming more central (H2). The refugee-sending network is also expected to change over this time (H3) with centrality shifting from countries in former Soviet states and Central Europe to countries in the developing South - particularly Sub-Saharan Africa (H4). Finally, it is expected that the valued and dichotomized sending networks will be structurally similar (H5), while the receiving networks will demonstrate clear differences (H6). Predictions about this and all subsequent analyses flow from the theoretical discussions and general observations presented in Chapter One. While many of these theories do not specifically address refugee movements, the application of these ideas to refugee studies is consistent with previous work in this area.

Comparisons of the refugee and migrant networks

Analysis

The second question in this study involves comparing sending and receiving centrality in the refugee network to that of the migrant network. State governments and other actors often attempt to characterize refugees as being identical to other migrants - particularly illegal migrants - allowing for the development of greater restrictions on the definition and rights of refugees. Scholars in the field of refugee studies assert that significant differences exist between migrants and refugees and that the two populations should not be considered equivalent (Hakovirta 1993). Nevertheless, migration theory is often borrowed and adapted to explain refugee movements (Black 2001). Comparing the migrant and refugee networks provides insight into similarities and differences that exist between these populations and has the potential to inform the construction of refugee-specific theory and policy. These comparisons will extend the fields of both migration and refugee studies and shed important light on discussions related to policies geared toward dealing with refugees, particularly in receiving countries.

Comparisons were done between the migrant and refugee sending and receiving networks circa 2000. Each of the four refugee networks was compared to its migrant counterpart to understand differences across each specific permutation of the networks. The valued and dichotomized migrant networks were constructed following the same procedures used to develop the refugee networks. Migration data for 225 countries and territories were available from the World Bank (WDI 2010), requiring that the refugee networks be trimmed accordingly so that the samples for each network are identical. A list of countries included in this analysis is presented in Appendix C (Table C.2). Because the migrant network data reflect a single year, the refugee network and predictor variables from the wave that corresponds to this year (Wave 3) will be used in the comparative analyses. Results of these comparisons are presented in Chapter Four.

Comparisons of the refugee and migrant networks will take place on multiple levels. First, centrality scores from all networks were developed in UCINET (1999) and matched to country shapefiles in QuantumGIS (2010), then reprojected into geographic space to develop maps of the networks for visual comparison. These maps are presented in Figures 4.1 through 4.8. Additionally, descriptive statistics for each network were obtained from UCINET (1999) and reported in Tables 4.1 through 4.4. As in the previous analysis, total partners or movers (i.e., migrants or refugees), mean, minimum, maximum, network centralization, and network density scores are presented and compared for each migrant and refugee network pair. To complete these descriptive comparisons, regional variation for each network is presented in Figures 4.9 through 4.12. The percentage of total migrants or refugees and total sending or receiving partners for ties for countries in each of the six regions was calculated and each figure presents side-by-side comparisons of these percentages by region for each network.

Moving beyond descriptive comparisons, two procedures were performed to identify the extent to which each migrant / refugee network pair is correlated. First, Pearson's correlations were performed in UCINET (1999) to determine the degree of linear relationship between centrality scores for each pair of networks. The results of these bivariate correlations are presented in Table 4.5. Consistent with the assertion that migrant and refugee networks have similar structures, but are distinct from one another, it is expected that each network pair will be significantly correlated at the .05 level (H7), but that the coefficients for these correlations will be relatively low (H8), indicating significant, but weak, relationships between the two.

Following the Pearson's correlations, quadratic assignment procedure (QAP) correlations were performed. QAP correlations gauge the extent to which ties in one network are related to those in another when the actors in both networks are identical. As the valued networks are at the interval level, Pearson's Correlation and Hamming Distance statistics are presented for these correlations. The Pearson's correlation for this procedure differs from that calculated for the centrality scores as it identifies correlations between each pair of actors (in this case countries and territories) in the networks. The Hamming Distance captures the extent to which scores in one matrix would have to be changed to make them identical to those in the second matrix. For the dichotomized networks, Pearson's correlation and Hamming Distance are also presented, but the binary nature of these networks also allows for Simple Matching scores to be calculated. The Simple Matching coefficient captures the proportion of cells in the two matrices that are the same, essentially the inverse of the Hamming Distance presented as a proportion. It is expected that the results of the QAP correlations will demonstrate that the network pairs are significantly different (H9) and that those differences are large (H10), particularly in the comparisons of the valued networks.

As it is expected that these networks are significantly different, it stands to reason that domestic conditions and levels of integration in international systems will affect centrality in these networks differently. Identifying these differences highlights areas in which theory and policy require modification to specifically address refugee movements. To examine the extent to which these measures differ in their relationships to centrality in migrant and refugee networks, results of a series of OLS regressions are presented that include sets of independent variables that reflect particular theoretical perspectives with the centrality scores for each network. Variables providing measures of economic conditions, political stability, population dynamics, environmental and land use conditions, and international integration are included in a total of five models for each centrality score. In the analysis of each category of variables, individual models are presented that include a single predictor and the appropriate centrality score, net of regional variation. Network pairs for each set of models are presented together for comparison and discussion in Tables 4.8 through 4.47.

Variables

The dependent variables for each of the analyses are the *degree centrality scores* for each network. Scores for the valued sending, valued receiving, dichotomized sending, and dichotomized receiving networks for both migrant and refugee movements circa 2000 are examined, resulting in eight sets of models and four sets of comparisons. Due to the skewed nature of these centrality scores, the natural log of each is included in the regressions. In order to preserve countries with no ties or migrants / refugees in a network, 1 was added to each centrality score prior to these scores being logged. This manipulation resulted in logged scores of 0 for those countries that do not contribute to a given network, allowing them to be included in the analyses. Descriptive statistics for all included variables are presented in Appendix D.

Regional variation is a set of dummy variables indicating the global region in which the particular country is located. Categories are assigned based on World Bank divisions with the East Asia and Asia and Pacific regions collapsed into a single Asia and Pacific category. This results in the inclusion of six regions: Middle East / North Africa, Latin America / Caribbean, Sub-Saharan Africa, Asia and Pacific, and Eastern Europe /

Central Asia. Europe and the West serves as the excluded category. These are included as a base model in Model 1 of each analysis and as controls in all subsequent models.

The first set of models for comparisons of the networks include economic and modernization variables. Previous research in refugee studies has found that economic variables demonstrate significant relationships with both refugee flows (Neumayer 2005) and destination choices made by refugees (Bocker and Havinga 1998). As states modernize, they may become more attractive to refugees as potential destinations and the benefits of modernization may ameliorate some of the negative influences that produce refugee flows. While the variables included in this model do not, by themselves, reflect reasons for leaving that fit within the UNHCR definition, it is possible that lower levels of modernization and economic development might prove to be deciding factors for those making decisions to relocate in the face of violence or persecution. The elements included in this set of variables include measures of economic development and modernization common to cross-national analyses.

Gross Domestic Product per capita (GDP per capita) is a measure of the wealth of a given economy. Data for this measure come from the World Bank's World Development Indicators (WDI 2010). The log of these averages will be used due to the skewed nature of the data.

H11: GDP per capita will be positively related to centrality in both receiving networks, but negatively related to centrality in both the migrant and refugee sending networks.

State strength is a measure of the ability of a country's government to invest in meeting the needs of its population. Countries that are less able to meet these needs (i.e., less strong) may be more likely to experience conditions that lead to individuals leaving as refugees or migrants. This measure is constructed by dividing total government consumption expenditure by GDP. Government expenditure data come from the UN Database (UNData 2010) while GDP data come from the WDI (2010).

H12: Countries with lower strength levels will be more central in the sending networks while countries at higher levels will be more central in the receiving networks.

Economic growth is a measure of GDP growth rate. Countries with growing economies tend to demonstrate greater levels of political and economic stability that may preclude conditions that generate refugee flows. Data for this measure come from the WDI (2010) and are presented as annual percent change in GDP growth.

H13: GDP growth will be negatively related to refugee and migrant sending, but positively related to both refugee and migrant receiving network centrality.

Urbanization measures the percentage of a country's population that lives in urban areas. As countries modernize, greater numbers of individuals migrate to urban areas to find work. Borrowing from migration theory, it is possible that individuals who make these moves are more likely to move again given sufficient reason. From this perspective, it is reasonable to expect that countries with higher levels of urbanization will generate greater numbers of migrants. Conversely, it is possible that urban dwellers have greater ties due to employment that might prevent them from becoming refugees. On the receiving end, countries with more urban populations may appear to present greater post-migration opportunities for refugees and, thus, be more attractive as destinations. Data for this measure come from the United Nations Database (UN Data 2010) and are presented as the percent of population dwelling in urban areas.

H14: Countries with higher levels of urbanization will be less central in the refugee sending network, but more central in the migrant-sending network. Urbanization is also expected to be positively associated with centrality in both receiving networks.

Secondary school enrollment is another modernization variable that measures a country's level of formal education. Data are from the WDI (2010) and measure the percentage of the secondary school age population who are enrolled in school. While enrollment does not necessarily indicate attendance, higher enrollment levels should indicate higher levels of participation.

H15: Countries with higher levels of enrollment will be less central in the refugee sending network, but more central in the migrant-sending network. Higher levels of enrollment will also be related to greater centrality in both the migrant and refugee receiving networks.

The second set of models examines the effects of political instability on migrant and refugee network centrality. Political conflict, violence, and oppression have been consistently linked to greater flows of refugees (Davenport et al. 2003; Schmeidl 2007). At the receiving end, Moore and Shellman (2007) found that conflict in potential host countries has a slightly negative effect on refugee destination choices. The measures included in this model capture different elements of conflict and oppression and should provide insight into relationships between these elements and the networks. Each variable for these models is coded so that higher scores indicate greater levels of instability.

Political repression is measured using data from the Freedom House Project. Freedom House analysts evaluate 193 countries on a checklist of 25 questions that address issues of political rights (electoral process, political pluralism and participation, and government function) and civil liberties (freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights). Countries are rated on a scale of 1 to 7 for each of these categories with 1 representing the highest level of freedom and 7 the lowest. The two categories are then averaged to develop the country's "freedom score" (Freedom House 2009). These scores will be averaged for each period of the study and logged to account for skewed distribution.

Political terror reflects the extent to which government actors violate basic human rights. Data for this measure come from the Political Terror Scale (Gibney, Cornett, and Wood 2010) that codes countries on a scale of 1 to 5 based on previous year descriptions of human rights activities from Amnesty International and U.S. State Department Country Reports. Level 1 is considered the lowest level of political terror (highest human rights score) while level 5 is the highest level of political terror (Wood and Gibney 2010). The natural log of this variable is included to account for the skewed distribution of the data.

H16, H17: Countries with greater levels of political repression and political terror will be more central in the refugee sending network, but less central in the migrant sending network. Greater levels of repression and terror will be related to lesser centrality in both receiving networks.

Collapse reflects political revolution, secession, or a total or near-total loss of central authority in a country (PTIF 2010). Data for this variable come from the Political Instability Task Force at George Mason University (PITF) and include observations for all of the years of the current study. This variable will be included as a dummy in the analysis with “1” signifying state collapse during the particular four-year wave and “0” indicating a lack of collapse over the period.

H18: Countries that experience government collapse will be more central in the refugee-sending network, but less central in the migrant sending network. Experiencing collapse will be negatively related to both receiving networks.

Conflict is a dummy variable that measures whether or not a country was involved in an intrastate or interstate conflict during any years covered in the wave. Data come from the Uppsala Conflict Database (2010) and are coded “1” for the presence of conflict and “0” for the absence. The Uppsala Database comes from the Uppsala Conflict Data Program (UCDP), a project of the Uppsala University in Uppsala, Sweden. The UCDP defines conflict as:

> a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year (UCDP 2010, emphasis in original).

These data provide observations for all of the countries and territories in the analysis and have been used in a number of academic (see Harbom, Melander, and Wallensteen 2008) and policy papers (see Brosche 2008).

H19: Countries that experience conflict will have greater centrality in the refugee sending network and lower centrality in the migrant-sending network. Conflict will not affect centrality in the refugee receiving network, but will be negatively related to centrality in the migrant receiving network.

The effects of demographic and health conditions on centrality scores are examined in the third model. While measures of health have been included in refugee studies as an outcome variable (Dye 2007), researchers have not included these variables as predictors in refugee studies. Although political conditions have proven to be the most consistent producers of refugees, it has been noted that these variables do not explain all of the variation between countries in their levels of refugee flows (Apodaca 1998). Demographic and health variables are included in this analysis to examine the possibility that issues of population pressure and health outcomes may impact relocation decisions made by potential migrants or refugees. Should differences in the effects of these variables be identified, they would provide another area for further study in investigations of refugee flows.

Fertility rate is an indicator of a country's level of fertility. It is measured in average births per female and expresses the expected number of children that a woman will have if she survives to the end of her reproductive age span and experiences the given age-specific rate. Countries with high fertility rates may experience population pressures that can lead to conflict or economic conditions that precipitate refugee flows. Countries with low fertility rates may be more welcoming of migrants and / or refugees in an effort to bolster flagging populations. Data for this measure come from the World Bank WDI (2010) and are logged to deal with skewness in the distribution.

H20: Countries with high rates of fertility will be more central in both sending networks while countries with low levels of fertility will be more central in the receiving networks.

Population density is another variable designed to measure the level of population pressure in a country. Density is measured as population per square kilometer. This measure will be constructed using population and country size data from the UN (UNData 2010) and will be developed for a single year in this analysis and for each wave in the panel analysis. These data are logged due to their skewed distribution.

H21: Population density will be positively related to refugee and migrant sending centrality as well as refugee and migrant receiving centrality.

Infant mortality is a measure of the health of a population that captures the number of deaths to infants (children under 1 year of age) per 1,000 infants born in a given year. Data for this measure come from the UN Statistics Division (UNData 2010) and are available for five years within the period of the study. These years correspond with years included in each of the five waves (1990, 1995, 2000, 2005, 2007). Data for the year 2000 are included in this comparative analysis. While the lack of data to construct period averages is unfortunate, these data demonstrate a level of stability that allows for the inclusion of only one year for each period without fear of outcomes being unduly influenced. This variable is logged to account for skewness in the distribution of the data.

H22: Infant mortality will be positively related to both sending networks. However, it will not be significantly related to either receiving network.

Life expectancy is another measure of population health. This measure captures the average expected life span for a person born in a given year. Like the population density variable, these data are available from the United Nations (UNData 2010) for a single year in each wave of the study (1990, 1995, 2000, 2005, 2007) and will be matched in the analysis accordingly. Data for the year 2000 are included in the comparative analysis and are logged to account for skewness.

H23: Countries with higher life expectancies will be less central in the refugee-sending network. It is not expected that life expectancy will affect centrality in the migrant sending or either receiving network.

The next model includes measures capturing the effects of environmental degradation and land use on centrality scores. Recent scholarship on forced migration has identified a large population of environmental refugees that have moved due to changing environmental conditions, loss of water or arable land, or pollution (Meyers 2002). While this population is not counted by the UNHCR as a “refugee” movement, the element of forcible displacement applies. Environmental measures are included in this analysis to examine the role that they play in political refugee movements. It is possible that degrading environmental conditions create a tipping point that results in potential refugees choosing to move when they may have otherwise chosen to stay. If this is the case, many of the individuals counted as political refugees by the UNHCR may actually be environmental migrants. The identification of significant relationships might provide justification for future examinations of environmental refugees as part of the refugee population. This would include the collection of data on displacement and location of environmental forced migrants, data currently lacking in forced migration studies.

CO_2 per capita is included in the analysis to determine the effects of ecological degradation on decisions to migrate as refugees. While environmental refugees are not included in the UNHCR numbers and are, therefore, not a part of the research population (UNHCR 2010b), it is possible that the negative effects of environmental harm may influence individuals who are contemplating movement for other causes. It is also possible that environmental migrants identify as political refugees, when possible, to take advantage of benefits available to refugees. For migrants, higher levels of CO_2 may indicate the presence of job opportunities in industry, reducing the necessity of moving to

another country. This variable is measured in metric tons of CO_2 emissions per capita. Data come from the UN Database (UNData 2010) and are logged for this analysis.

H24: Levels of CO_2 emissions will be positively related to refugee sending centrality, but be negatively related to migrant sending centrality. Additionally, these levels are expected to have a positive relationship with migrant receiving centrality, but no relationship with refugee receiving centrality.

Cropland under cultivation measures the percentage of total land area currently used for agriculture by the population of a country. Individuals that are closely tied to the land may be less inclined to leave it when conditions might otherwise prompt movement. On the receiving end, countries with little available land for cultivation may seem less attractive as destinations for migrants or refugees who plan to be involved in agriculture in their new host country. As this economic niche is filled, there is less possibility of these kinds of migrant or refugees moving to these countries. Data for this measure come from the WDI (2010) and are logged for this analysis.

H25: It is expected that the percentage of cropland under cultivation will be negatively related to sending and receiving centrality in both networks.

The final set of models examines the effects of a variety of variables measuring different vectors of participation in global systems on network centrality. This set of variables reflects measures that are prominent in several internationally-oriented theoretical frameworks. These frameworks make predictions about outcomes for countries based on levels of interaction within global systems. Scholars in the dependency school claim that economic interaction in the forms of foreign investment and trade between developing and developed countries can create negative economic, health, and political outcomes for developing countries as more advanced countries are able to tailor trade terms for their own benefit (Dixon and Boswell 1996; Kentor and Boswell 2003). Contrasting these positions, the neoclassical economics school argues that the goal of every developing country should be the acquisition of as much foreign investment capital as possible (Firebaugh 1992), as the source of the money is not as important as its presence. Scholars from this position indentify a number of positive welfare outcomes associated with elevated exposure to global financial and trade systems (see Firebaugh and Beck 1994; de Soysa and Oneal 1999).

The world-systems framework attempts to sort countries into categories based on their role in production and economic ties to other countries. Countries in the “core” are those with high numbers of connections to other countries and economies that are based on capital-intensive production. “Peripheral” countries are those at the bottom end of the spectrum. Research in the world-systems framework predicts and demonstrates that being in the periphery has negative outcomes for inequality, economic, and well-being outcomes (Clark and Beckfield 2009; Nemeth and Smith 1985). Finally, the world polity framework credits participation in international organizations for distributing scripts to countries in the developing world that encourage positive changes in areas like human rights, education, and other well-being measures (Meyer et al. 1997). Each of these frameworks addresses the effects of cross-national interaction with distinct predictions about outcomes that have clear connections to refugee and migrant flows.

Foreign direct investment penetration (FDI penetration) measures the extent to which a country’s economy is dependent on foreign investment. Researchers have found that countries with higher levels of FDI penetration experience long-term negative effects from this level of investment (Kentor 1998; Kentor and Boswell 2003). These negative effects could extend to conditions that affect refugee flows. The measure is constructed using FDI stock divided by total GDP. Data for this measure come from the United Nations Conference on Trade and Development (UNCTAD 2010) and are logged to account for skewness in the distribution.

H26: The inclusion of advanced economies in the analysis that tend to avoid negative outcomes related to foreign investment leads to the prediction that FDI penetration will have a negative relationship with refugee and migrant sending centrality as well as refugee receiving centrality, but a positive relationship with migrant receiving centrality.

Trade openness provides a measure of the level at which a particular nation participates in the world economy (Clark 2008). This variable includes all exports and imports and calculates the percentage of a country's total GDP accounted for by trade outside the country's borders. The measure is developed by summing total exports and imports as a share of total GDP. The data for each of the parts of this measure are from the WDI (2010). This variable will be logged to account for the skewed nature of the data.

H27: As with FDI penetration, the inclusion of advanced economies will cause this variable to demonstrate a negative relationship with refugee and migrant sending centrality as well as refugee receiving centrality. However, openness will demonstrate a positive relationship with migrant receiving network centrality.

Official development assistance (ODA) per capita is a measure of the foreign aid received from the World Bank Development Assistance committee, other global institutions, and other countries. This variable represents the total amount received divided by the mid-year population of each receiving country. Data are from the WDI (2010) and are logged to account for skewness in the distribution.

H28: Countries with higher levels of ODA are expected to be less central in all sending and receiving networks.

World system position reflects the position of a given country relative to others in the international trade network. Position in this network is related to a variety of development outcomes (Clark and Beckfield 2009; Nemeth and Smith 1985). Peripheral countries – those on the edges of the trade network – are more likely to suffer negative effects due to their limited bargaining position within the network. The potential then exists for these peripheral countries to experience outcomes that affect the initiation of outward refugee and migrant flows as well as the attractiveness of these countries as potential destinations. Data for this measure come from Clark and Beckfield's (2009) trichotomous measure of world system position (core, semi-periphery, and periphery) and will be included in the analysis as a series of dummy variables with "core" states as the excluded category. Because world system position has been found to remain fairly stable over time (Babones 2005), the 2009 position will be applied for each time period.

H29: Countries in the periphery will be more central in the migrant and refugee sending networks but less central in the receiving networks. Countries in the semiperiphery will demonstrate greater centrality in both sending networks and the refugee receiving network, but reduced centrality in the migrant receiving network.

INGO membership ties is a count of the conventional international non-governmental organizations with which a country has membership ties. A country is credited with an INGO tie if one citizen participates in a given organization. Data for these measures come from the *Yearbook of International Organizations*. As the distribution of these data demonstrates a degree of stability over time (Beckfield 2003), counts for a single year (2000), will be included in the analysis. This variable is logged to account for skewness in its distribution across countries.

H30: Countries with higher levels of organizational ties at all levels will be less central in the refugee sending network, but more central in the migrant sending network. Higher organizational ties will also increase centrality in both receiving networks.

A number of variables were considered, but ultimately rejected for these analyses due to either a lack of data or problems associated with regression assumptions that they presented in the models. Measures of inequality (Gini), internally displaced persons (IDPs), weapons imports, and debt service were excluded for one or both of these reasons. When analyzed in individual models, none of these measured demonstrated significant relationships with the centrality scores for any of the networks.

Examination of residual scores

Following the development of these comparisons of the effects of domestic conditions and international relationships on centrality in the networks, a final series of OLS regressions will be conducted to examine the efficacy of these variables in explaining the differences between the two networks. For this set of analyses, the degree centrality scores for each refugee network will be regressed on those of the appropriate migration network with the resultant residuals saved as a new variable. These residual scores will then be included as the dependent variable in a series of regression models to determine the ability of the variables examined in earlier analyses to explain differences in the networks. The analysis of the residual scores from each network will progress in the same manner as that of the comparative analysis detailed above. Four sets of models will be run and presented in Tables 4.48 through 4.67. Significant positive relationships indicate conditions in which refugee centrality is higher than would be expected, given migrant centrality, while negative relationships indicate lower refugee centrality than would be expected, given a country's level of migrant centrality. These relationships identify variables that cause network centrality to differ, explaining some of the observed distinction between the networks.

A number of significant relationships are anticipated in these analyses of residual scores. For the economic variables, it is anticipated that greater economic development will lead to reduced refugee sending centrality, relative to migrant sending centrality, but have no significant effect on receiving centrality (H31). Political instability will cause refugee-sending centrality to increase, relative to migrant centrality, but have no relationship with receiving centrality (H32). Analyses of the population (H33) and environmental (H34) models are not expected to reveal any significant effects between these measures and residual scores. For the international variables, mixed results are expected. FDI, trade openness, ODA, and INGO participation will not demonstrate significant relationships with the residual scores (H35). However, it is anticipated that world system position will demonstrate a significant effect (H36), with peripheral position leading to increased refugee sending centrality and decreased receiving centrality, relative to migrant scores. Semiperipheral position is expected to exhibit the opposite effect, with decreased sending and increased receiving centrality, relative to migrant centrality.

Effects of domestic conditions and international integration on refugee network centrality

The final investigation in this study examines the question of centrality in the valued and dichotomized refugee sending and receiving networks from 1990 to 2008. This analysis will expand work in refugee studies by providing both longitudinal and cross-sectional analysis of elements affecting refugee sources and destinations as well as providing insights into changes in these networks over time. Additionally, this examination contributes to work in a number of theoretical frameworks by introducing an outcome variable that has heretofore not been studied.

Pooled time series data, such as those used in this study, have consistently demonstrated the tendency to violate the ordinary least squares (OLS) assumption of uncorrelated errors due to the likelihood of unmeasured heterogeneity in the panels (Lee, Nielsen, and Anderson 2007). The strong possibility exists that observations in the same country have correlated error. This correlation of error within panels due to time invariant unit specific effects may bias the parameter estimates (Greene 2000). The use of random and fixed effects models is a common strategy for accounting for this error (Mahutga and Bandelj 2008) as they adjust for error correlation through the inclusion of a panel-specific error term that is normally distributed. Models for these analyses also include a first-order autocorrelation correction.

To examine factors that explain centrality in the refugee-receiving network, the dataset will be analyzed using random effects models (REMs) and fixed effects models (FEMs). REMs compare both between and within-country variation, allowing for the observation of changes in the effects of independent variables in both a cross-national and historical perspective. This method is appropriate in studies where meaningful variation exists over time both within and between countries. The use of REMs also helps overcome potential omitted variable bias in models that examine variation across these vectors. By contrast, FEMs examine longitudinal variation within countries and are useful when this kind of change is the primary variation of interest.

For the current study, variation in refugee flows occurs both over time and across countries, making REMs the more logical choice. However, including FEMs tests for robustness and makes possible the identification of elements that affect centrality longitudinally, regardless of cross-sectional variation. To this end, results of both random effects and fixed effects models are presented. As FEMs only examine change over time, time-invariant variables (region, world-system position) cannot be included in these models. Results of these analyses of centrality in the global refugee network are presented in Chapter Five.

The analyses for this chapter progress in much the same manner as the OLS regressions of the comparative study in chapter four. A base model is included that examines regional and wave variables with each network centrality measure. Following this base model are each of the models outlined in the previous section - economic, political, demographic, environmental, and international. Each of these models includes an individual analysis with a single predictor and the centrality score, net of controls, and a full model that includes all of the variables for that section with the centrality measure and control variables. Additionally, a final model for each network that includes all of the significant variables from any of the models in that particular network analysis will be included. As the inclusion of all of these models creates a strong potential for collinearity, a second final model will be run that excludes any variables from the initial final model that introduce collinearity into the analysis. This model is included to examine the independence and robustness of effect net of other significant relationships. REMs results are presented in Tables 5.1 through 5.25 and FEMs results are presented in Tables 5.26 through 5.50. While a floating sample is used for these primary analyses, additional sets of models were performed using a standardized sample and a sample that excludes countries that contribute only one observation to the dataset. Outliers were also identified and removed, with new models run that excluded these observations to test for their effects. Results of these alternative analyses are reported following the presentation of the primary results with the floating samples.

Models for REMs and FEMs

While most of the variables and models included in this analysis reflect those from Chapter Four, several key differences exist. Two of these are demonstrated in the control variables. First, measures of regional variation cannot be included in the fixed effects models as these measures are time-invariant. The second key change is the inclusion of a wave variable in these models. As REMs and FEMs examine relationships over time and observations are included over several waves, this measure allows for the identification of change over time and controls for longitudinal variation. The *time period* variable is an ordinal level variable for the five waves from which observations are presented for each country. Waves 1 – 5 will each correspond with a specific time period for which averages have been constructed. Wave 1 is 1990 – 1993, 2 is 1994 – 1997, 3 is 1998 – 2001, 4 is 2002 – 2005, and 5 is 2006 – 2008.

H37: Based on trends identified in Chapter Three, it is expected that the dichotomized networks will demonstrate positive relationships with the time variable, while valued networks will have negative relationships.

For the economic models, the key change is the exclusion of the economic growth measure in the REMs and FEMs. As changes in GDP per capita over time represent economic growth, the specific growth measure becomes redundant and is, thus, removed. The hypotheses for the effects of economic variables on refugee network degree centrality closely parallel those developed for Chapter Four. Greater levels of GDP (H38) and state strength (H39) are expected to reduce sending centrality, but have no effect on receiving centrality. The modernization variables are expected to reduce sending centrality but increase receiving centrality (H40, H41).

While the variables are the same in this and the previous chapter for the political model, one important distinction for this analysis should be noted. As data for the political terror measure are only available through 2006, Wave 5 relationships will be based on a single observation rather than a period average. As these data demonstrate a good deal of stability over time, it is anticipated that the use of a single year in this case will not greatly influence the outcome. The political repression, collapse, and conflict measures all include observations for all of the years of the analysis. For this model, it is expected that greater levels of political repression (H42) and political terror (H43) will be related to increased sending centrality, but reduced receiving centrality. The presence of state collapse (H44) or conflict (H45) will be related to greater levels of sending centrality and reduced receiving centrality.

Like the political analyses, variables included in the demographic models do not change from those included in Chapter Four. As noted in the previous explanations of these variables, data for infant mortality and life expectancy are only available for a single year in each of the waves (1990, 1995, 2000, 2005, 2007). As scores for these variables demonstrate a good deal of stability over time, it is not anticipated that the use of a single observation per wave will create significant changes in the relationships demonstrated. Predictions for these variables follow those of the modernization variables. Greater health – higher life expectancy (H46) and lower infant mortality (H47) – will yield less sending centrality, but have no effect on receiving centrality. Greater levels of population pressure – higher fertility rates (H48) and population density (H49) - will generate higher levels of sending centrality, but will not affect receiving centrality.

The random and fixed effects analyses of the relationships between international integration and centrality in the refugee networks feature several differences from those presented in Chapter Four. For both REMs and FEMs, the ODA measure has been removed due to the loss of observations incurred by its inclusion. The presence of this variable in the full international caused almost 60% of the observations to be lost (N = 504). In additional to this change, the fixed effects models exclude the world system and regional measures, as they are time invariant. Only FDI penetration, trade openness, and INGO membership ties are examined in these models. Foreign direct investment (H50) and trade openness (H51) are expected to demonstrate negative relationships with sending centrality due to the inclusion of advanced economies in the analysis as these countries have high levels of investment and openness, but low levels of refugee sending. It is also expected that inclusion of these countries will cause these measures to yield less valued receiving centrality, as they are able to limit total numbers of refugee entrants, but greater dichotomized receiving centrality as they are connected to more potential partners. Greater levels of ties to the world polity through INGOs (H52) will also result in lower levels of sending centrality. However, these countries will have greater receiving centrality across both networks as high levels of participation in the world polity create ties and positive associations for potential host countries with potential refugees. In the random effects models, it is expected that peripheral status will be related to increased sending, but decreased receiving centrality (H53). By contrast, semiperipheral status will be related to lower sending and higher receiving centrality (H54).

Potential problems inherent in cross-national studies

The problem of missing data is one of the chief limitations to any cross-national study, particularly one that deals with marginalized populations or large numbers of developing countries where data may not be readily available. When running analyses with network and other variables, attention will be paid to the number of missing observations for the different variables. For robustness, a number of procedures will be employed to determine the extent to which missing data affect the outcomes of the analyses. For comparisons of refugee network measures, each wave of the refugee network will be examined to ensure that the sample of countries is standardized across the analysis. In the random and fixed effects analyses, two options for dealing with missing data were evaluated. Floating and unbalanced standardized samples were developed and compared in an effort to include as many observations as possible while preserving the integrity of the analysis.

The first option for dealing with missing data was to develop a floating panel of observations for each model. This method retains all observations for which data exist in every model, resulting in a varying sample across models. While this method allows for the retention of more observations in some models, it can create problems with comparability across waves and may result in biased results that skew toward countries that are able to contribute observations across all variables and waves in the analysis.

A second procedure for dealing with missing data is the generation of a standardized unbalanced panel. In this analysis, the same number of observations is used for every model. To develop this sample, a model was run that included all of the predictor variables with one of the centrality scores. The sample for this model includes only observations that have data for every variable in the analysis. The sample for this model was then used as the standard for every model in the analysis, with only observations that have data for every variable included in each model. Models with more observations available than the baseline were trimmed to meet this standard. The resulting panel is unbalanced with some countries contributing observations for more waves than others. This method of dealing with missing data resulted in the loss of over half of the countries and observations in the dataset, resulting in skewed results that favored countries that were able to contribute observations for all of the variables across all of the waves. A list of countries included in the standardized sample is presented in Appendix C (Table C.3). While neither of the options presented is optimal, the use of a floating sample was chosen as the primary sample for the analysis due to the greater amount of countries and observations that were retained in most models. However, results of the standardized analyses are discussed in Chapter Five in the "alternative analyses" section.

A second issue regarding the nature of the data involves differences that exist due to the use of multiple sources in compiling data. Because the data for this project come from a variety of sources, variation exists in definitions, methods of data collection, and data manipulations used to develop measures. Whatever variation may exist, two commonalities are present across the dataset that allow for comparisons using these disparate data to be made. First, all of the data included are at the country or nation-state level. Whatever decisions were made in producing these data, they all share the same unit of analysis, which allows for comparability. Secondly, each measure uses a common data source for all observations. Whatever flaws may exist in the data, they will be consistent across all of the observations in a particular measure.

This analysis of structure and centrality in the global refugee network employs a variety of statistical techniques and forms of presentation to study three important questions about the nature of this network. First, what does the structure of the network look like and how has it changed over time? Second, to what extent are the global migrant and refugee networks different? And finally, what factors affect a country's centrality in the refugee sending and receiving networks? Answers to these questions were developed using refugee sending and receiving data for 242 countries and territories across five waves covering the years 1990 to 2008. The results of these analyses have potential implications for refugee policymaking, the development of intervention strategies for both sending and receiving countries, and the development of theory in refugee studies that is specific to this population. Additionally, refugee and migrant network centrality scores are examined with variables from a number of theoretical traditions, representing previously unexplored outcome variables in these systems. Finally, the development of refugee centrality scores presents a variable that is available for use as a dependent or predictor variable in further cross-national analyses in refugee studies and beyond.

Chapter Three Outline

Chapter Three

DESCRIPTIVE ANALYSIS OF THE GLOBAL REFUGEE NETWORK

The goal of this chapter is to examine the structure and evolution of the global refugee network from 1990 to 2008. For this examination, degree centrality scores for each permutation of the network were constructed (valued sending, valued receiving, dichotomized sending, dichotomized receiving). To develop these networks, I obtained data on refugees sent and received for 242 countries and territories for each year from 1990 to 2008 from the UNHCR database. I then calculated period averages for five waves and developed matrices for each wave and each network that included the total number of migrants and refugees sent and received by each country during that period. These matrices were input into the UCINET (1999) software package and translated into valued degree centrality scores. Following the development of the valued networks, each network was dichotomized, again using UCINET (1999). Every country that sent refugees to another country was given a sending tie to that country, while the destination country received a receiving tie. Finally, I calculated degree centrality in these networks using these dichotomized data.

I used the UCINET (1999) software package to generate a number of descriptive statistics for each wave of these networks and identify the most central actors for each wave and each network. The examination of these data provides insight into primary sending and receiving regions, characteristics of high sending and receiving countries, changes in the network over the course of the study, and the scope of the refugee burden placed on high-receiving countries.

The descriptive analyses in this chapter examine centrality in the global refugee network from a variety of angles. First, the scope of the overall network across the time period of the study is presented, including a discussion of general trends in total refugees and total ties. I then examine regional variation in sending and receiving centrality for both the valued and dichotomized networks. Next, descriptive statistics for each of the permutations of the refugee network are presented and analyzed to distinguish trends across these networks. Visualizations of these trends are presented in a series of maps that accompany each statistical discussion. Finally, the top ten actors for each network and each wave are identified and discussed, followed by an analysis of the trends that emerge.

The picture developed through these analyses is of a network that is becoming more diffuse, but also more centralized. The total number of refugees in the network is shrinking and more countries are participating, but over time the most central actors in these networks represent a larger share of the total across the waves of the study. In both sending networks and the valued receiving network, these most central countries tend to be those at low to medium levels of development, while the most central countries in the dichotomized receiving network are exclusively wealthy Western countries. The identification of these trends and differences provides a number of insights related to refugee origins and destinations and how these have changed over the last two decades. These descriptive analyses generate a number of questions for further study to better understand centrality patterns in these networks both between countries and over time.

Table 3.1. Total refugees and sending / receiving ties by wave, 1990-2008

Measure	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Growth Rate
Total Ties	1406	2901	3796	4382	4639	230%
Total Refugees	14,859,172	14,575,958	12,068,067	9,573,883	8,325,553	-44%
N	242	242	242	242	242	

Table 3.1 presents the total ties and refugees present in each wave of the global refugee network from 1990 to 2008. The percent change in each over the course of the study is also included. Two opposing trends are very clear. First, total ties held by countries in the network have increased more than twofold over the period of the study. Countries have become more active in the network, with more potential senders and receivers participating. The second clear trend is the reduction in the number of refugees in the network. While more countries participate in sending and receiving refugees over this period, total refugees sent by these countries have decreased by almost half. This may reflect a decrease in the presence of conditions that generate large numbers of refugees or it may be the product of more restrictive border controls, resulting in greater numbers of internally displaced persons (IDPs) in countries that formerly would have sent high numbers of refugees. Interestingly, the total number of refugees identified by summing the raw numbers received from the UNHCR is just over half of the 15.2 million refugees reported by this agency in their 2008 *Global Trends* publication (UNHCR 2009). A close reading of this publication reveals that the UNHCR figure is based on both refugees and "people in refugee-like situations" (UNHCR 2009, p.6), explaining some of this disparity.

Regional variation

While the global trends are clear, there is a good deal of variety across regions in refugee sending and receiving patterns. To examine these trends, I calculated the percentage of total refugees sent and received by each region and the percentage of sending and receiving partners for each region by dividing the total refugees or ties contributed by region in each wave by the total refugees or ties for that wave. These percentages are presented in Figures 3.1a through 3.1d. Regions were assigned based on the World Bank's regional categories (World Bank 2010), with the East Asia and Asia and Pacific regions collapsed into a general Asia and Pacific category. For this analysis and all subsequent regional examinations, the included regions are: Sub-Saharan Africa, North Africa / Middle East, Latin America / Caribbean, Europe and the West, Asia and Pacific, and Eastern Europe / Central Asia. Each country's regional assignment is presented in Appendix C.

Figure 3.1a presents the percentage of total refugees sent by countries in six regions across each of the waves of the study. Not surprisingly, countries in Sub-Saharan Africa and Asia dominate this category, accounting for at least 70 percent of refugees sent during each wave. The Eastern Europe percentage is skewed heavily by the presence of Afghanistan in this region – the largest refugee-sending country across all waves of the study (see Tables 3.6 through 3.10). Equally unsurprising is the region with the fewest sent refugees - Western European countries and their counterparts in North America (Canada, United States). The highest percentage attained by this region in any wave is the .05 percent reached in Wave 5. While the highest-sending regions demonstrate a downward trend since Wave 3, the Middle East moved counter to this trend, experiencing a spike in Wave 5. This occurred due to increases in sent refugees by a number of countries in the region including: Iraq, Egypt, and Morocco. These increases, coupled with decreases in most other regions, led to this region's refugees representing a larger percentage of the total in this wave than in previous waves.

Figure 3.1a. Percentage of total refugees sent by region and wave, 1990-2008

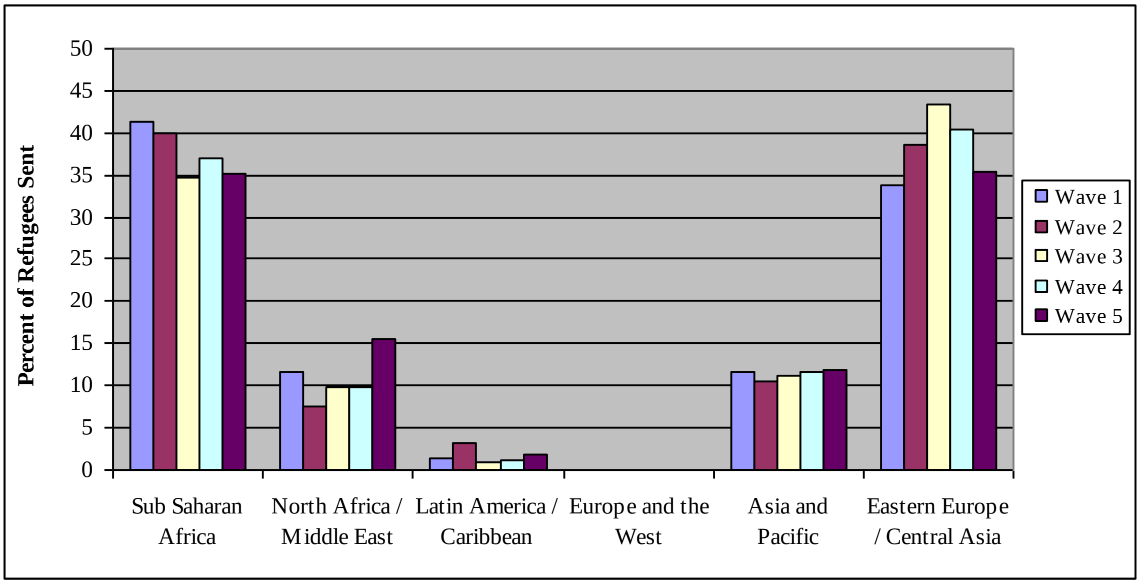

Figure 3.1b. Percentage of refugees received by region and wave, 1990-2008

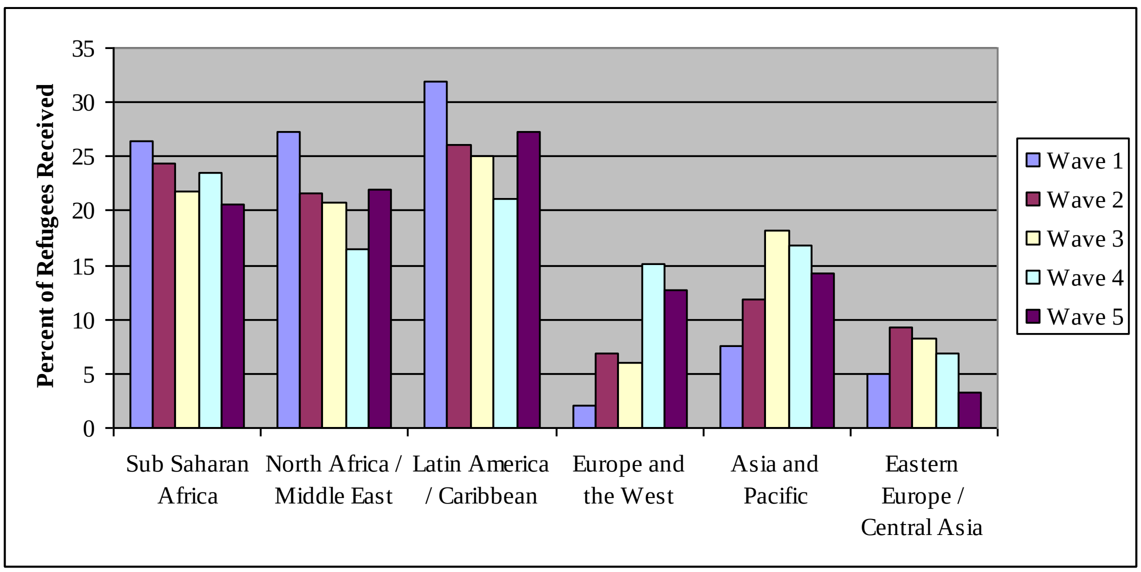

Figure 3.1b shows the percentage of total refugees received by each region across the waves of the study. Interestingly, Latin American countries host the largest percentage of refugees across most of the waves. This may be a product of more open receiving policies in this region, relative to wealthier countries that tend to be more restrictive in granting access and asylum (Bakewell 2008). It may also be a product of population shifts that occurred in the region due to conflicts that took place in the 1980s

and 1990s. Refugees moved from unstable countries to safer destinations within the region during this time and many chose to remain in their new countries rather than repatriate when conditions stabilized.

High levels of refugees received in Africa and the Middle East reflect the continued presence of movement due to conflict and political instability in those regions. Additionally, a spike is demonstrated for the Asia region in Wave 3 that correlates with the initiation of conflict in Afghanistan and Iraq. Many of the refugees leaving these countries as a result of this war have gone to Pakistan, greatly inflating the receiving centrality of that country and the region since 2001. The spike demonstrated by Western European countries in Wave 3 is a product of the inclusion of additional countries due to a lack of data in earlier waves (1) and a reduction of received refugees in the Middle East and Latin America regions. Even with this spike, this region remains among the lowest receivers of refugees, possibly demonstrating the role played by more restrictive entry policies and distance from conflict locations.

The percentages of sending ties held by each region across the waves of the study are presented in Figure 3.1c. Of particular note is the relative stability of each region across waves of the study in terms of percentages sent. While the overall number of ties increases over the period of the study (see Table 3.1), regions seem to change at an almost uniform rate. Latin America shows a slight downward trend while Europe and the West demonstrates movement in the opposite direction. Countries in Africa hold the

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1. Data for Canada, Germany, and Australia are not included in Wave 1 due to a lack of information in this period about the origins of refugees hosted by those countries.

highest percentage of sending ties, reflecting the potential for developing high numbers of partners presented by the high number of refugees sent by countries in this region (see Figure 3.1a). This is a particularly high refugee-sending region due to the levels of sustained conflict that have plagued the region for decades. Many refugees sent from this region in earlier periods of conflict moved to host countries that have since become more restrictive about receiving refugees, forcing newer refugees from this region to find new destinations rather than following established refugee paths (Betts 2008). This kind of shift generates new partnerships, causing the number of total ties held by the region to increase. Additionally, this region is served by a large number of organizations that perform aid work that often involves relocation of refugees (e.g., the International Rescue Committee, the UNHCR). The presence of these organizations increases the potential receiving partners held by countries in this area. This region, as well as Latin America, may also benefit in this category from having a high number of potential receiving partners in the region. At the other end of the sending spectrum, countries in the West have the fewest sending partners, as would be expected from a region that sends so few refugees (see Figure 3.1a).

Figure 3.1d presents the percentage of refugee-receiving ties held by countries in each region across the waves of the study. While countries the West receive a relatively low number of refugees compared to other regions (see Figure 3.1b), they hold the highest percentage of receiving ties across all waves of the study. This dichotomy portrays these countries as open to refugees from all parts of the world, but on a limited basis. These countries may be viewed as the most attractive destinations for refugees, but restrictive entry policies and high levels of repatriation common to these countries make it difficult for large numbers of refugees from a given country to gain entrance (Betts 2008). Refugees from all parts of the world attempt entry into these countries, but a relative few are received. The high level of ties may also be related to previous waves of immigration that have resulted in immigrant networks in these countries that may make it easier for some refugees to enter due to family ties or other connections.

Figure 3.1c. Percentage of refugee sending ties held by region and wave, 1990-2008

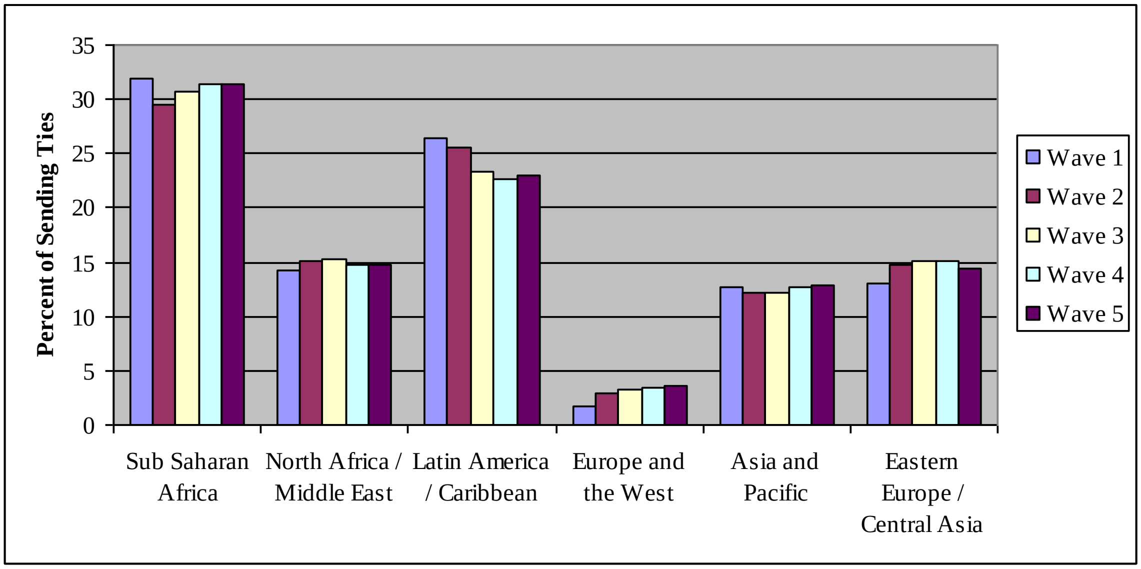
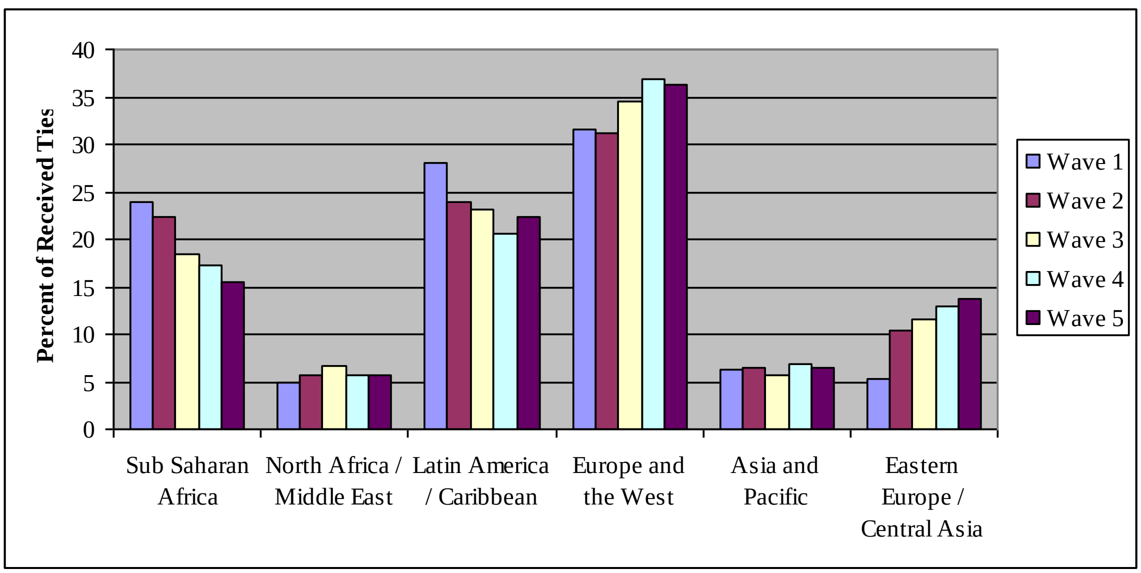


Figure 3.1d. Percentage of refugee receiving ties held by region and wave, 1990-2008



Interestingly, some of the top regions in terms of refugees received are not among the leading regions in receiving ties. While the Middle East consistently accounts for the second highest level of valued receiving, this region has the fewest receiving partnerships (see Figures 3.1b and 3.1d). Countries in this and other high value-receiving regions tend to receive refugees from only a few other countries, often in the same region (see Tables 3.12 through 3.16).

Two important observations emerge from this examination of regional variation across the waves of the refugee network. First, primary sending regions are as would be expected. The presence of ongoing conflict and political instability in Africa and Asia, as well as the dissolution of the Eastern Bloc in Eastern Europe in the 1990's caused these regions to contribute refugees to the network at high levels. While Eastern Europe sends to relatively few partners, given their level of valued sending, Latin America demonstrates the opposite effect, with relatively fewer refugees going to a high number of partners.

The receiving networks exhibit an interesting pattern. Regions dominated by less developed countries (i.e., Africa, Middle East, Latin America) receive the highest percentages of refugees, while more developed regions (i.e., Asia and the West) are less central in this network. However, Western countries receive refugees from a higher percentage of total partners than any other region. Countries in this region represent the most attractive destinations for refugees, thus increasing the potential partners from which refugees are received. These countries are also able to control inflows, thereby limiting the number of actual refugees allowed to enter from these partners. These patterns will emerge in several different ways over the rest of these descriptive analyses.

Descriptive statistics

Valued sending network

Table 3.2. Descriptive Statistics for Sending Degree Centrality (Valued)

Measure	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Growth Rate
Total Refugees	14,859,172	14,575,958	12,068,067	9,573,883	8,325,553	-44%
Mean	61,402	60,231	49,868	39,562	34,403	-44%
Minimum	0	0	0	0	0	0%
Maximum	3,026,727	2,693,708	3,168,356	2,268,734	1,944,852	-36%
Centralization	0.449%	0.747%	0.788%	0.786%	0.867%	93%
N	242	242	242	242	242	

Table 3.2 presents statistics for the valued refugee-sending network. A number of measures reflect the consistent downward trend in the number of refugees sent over the course of the study (see Table 3.1). The total number of refugees and average sent per country declines by 44 percent over the period of the study. There are several possible explanations for this decline. It may be that many of those who would be inclined to move did so earlier in the period under investigation (or prior to the first wave), resulting in lighter flows toward the end of the study. It is also possible that fewer individuals needed to move due to lessened political violence or that many refugees returned home due to improved conditions or a change in refugee policy that caused them to leave their host country. The period of the study also marked a significant increase in IDP movement (UNHCR 2010), reducing the number of potential refugees that crossed an international border. Interestingly, the number sent by the highest sending country, reflected in the maximum score, increases and decreases across the waves of the study, ending down 36 percent from the first wave. This fluctuation reflects periods of greater and lesser conflict and stability in the highest-sending country (Afghanistan) over the last two decades (see Tables 3.6 through 3.10).

Although the general trend in refugee sending over this period is downward, the network becomes more centralized. This indicates that the top senders in the network send more refugees as a percentage of the total than more moderate senders. This is demonstrated by the difference in percent changes in the total number of sent refugees (- 44 percent) and the maximum sent by the highest sender (- 36 percent). This heightened concentration comes in spite of an increase in the number of sending countries participating in the network (see Table 3.4). A number of factors may be at work. The increase in IDPs over this period may have lessened the numbers of new refugees added to the network, limiting the sending strength of new contributors. Likewise, conditions over the period of the study may have caused fewer people to need to move. It is also possible that individuals from lesser sending countries identify (or are classified) as something other than political refugees more frequently than those who come from countries marked by political violence.

Visualizations of Waves 1 and 5 of the valued refugee-sending network are presented in Figures 3.2 and 3.3. These maps present a clear picture of the domination of this network by a handful of key actors. While the identity of some of these central actors changes from the first wave to the last, this dynamic does not. Countries like Russia and Mozambique became less central as political conditions stabilized over time. The presence of Afghanistan, Sudan, Somalia, and Iraq as central actors in both waves is a function of the persistent conflict experienced by these countries over the last two decades. The presence of Vietnam as central in both waves reflects the high number of refugees who left this country during conflicts in the 1960s and 1970s and never returned.

Figure 3.2. Valued Refugee-Sending Network, 1990-1993

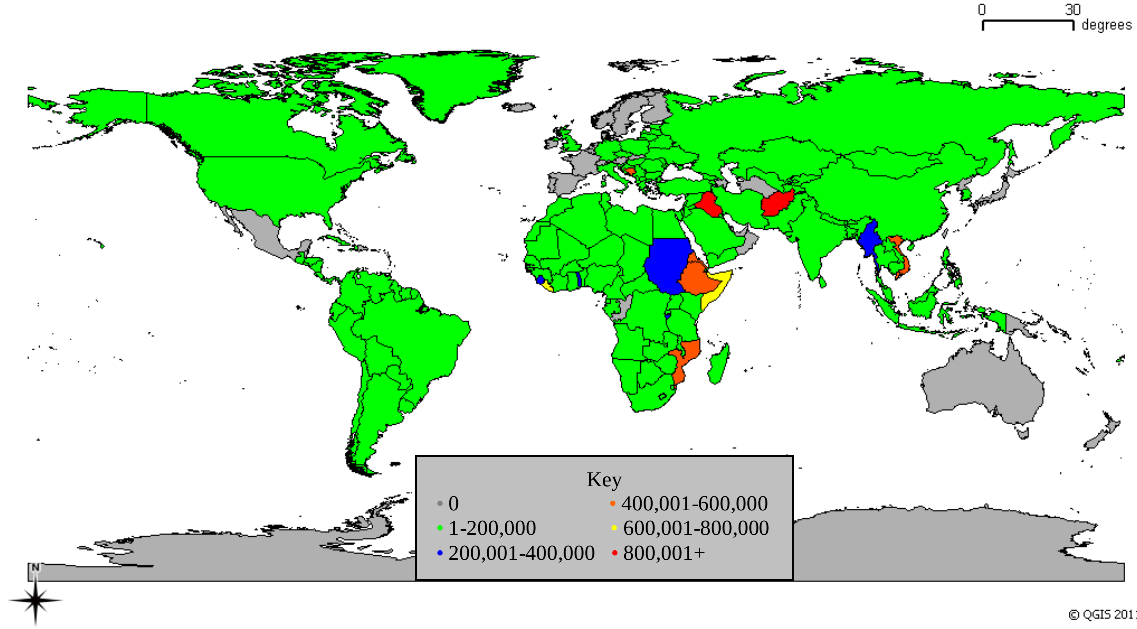
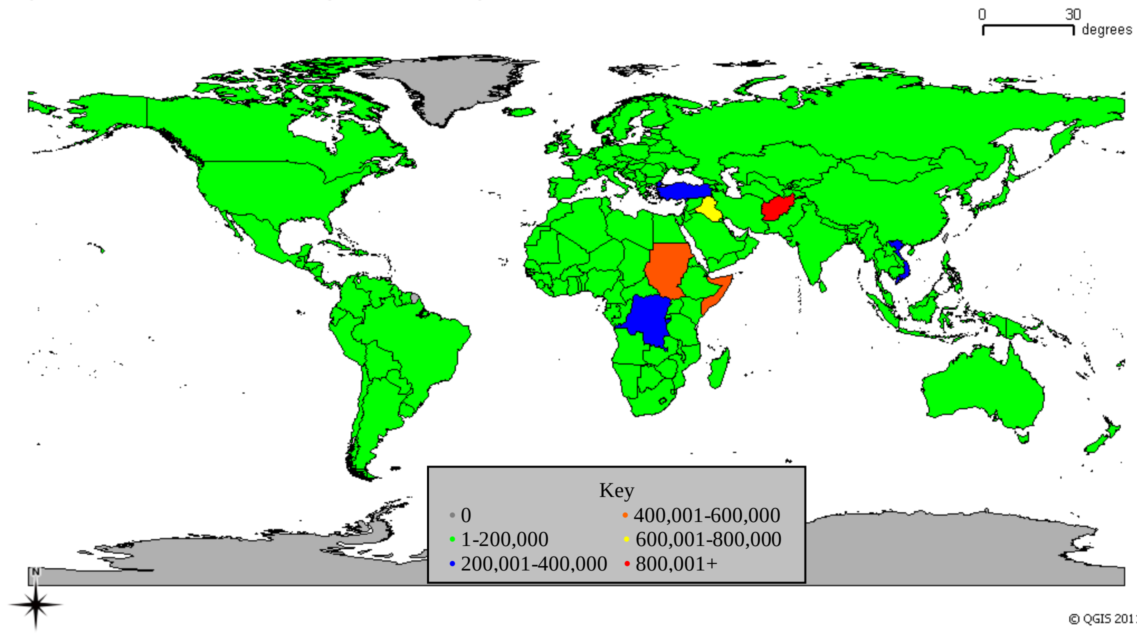


Figure 3.3. Valued Refugee-Sending Network, 2006-2008



Valued receiving network

Descriptive statistics for the valued refugee-receiving network are presented in Table 3.3. As this network is the reverse of the valued sending network, the total refugees and average number of refugees received are identical to the average number sent (see

Table 3.2). Reflecting the trend from the sending network, the number of refugees received by the highest receiving country declined steadily over the course of the study (down 75 percent overall).

Table 3.3. Descriptive Statistics for Receiving Degree Centrality (Valued)

Measure	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Percent Change
Total Refugees	14,859,172	14,575,958	12,068,067	9,573,883	8,325,553	-44%
Mean	61,402	60,231	49,868	39,562	34,403	-44%
Minimum	0	0	0	0	0	0%
Maximum	3,806,318	2,087,311	1,875,756	1,181,869	970,691	-75%
Centralization	0.567%	0.575%	0.461%	0.403%	0.425%	-25%
N	242	242	242	242	242	

Of particular interest in this network is the centralization measure. Of the four networks examined, only the valued receiving network demonstrates a decrease in centralization over the waves of the study. This decline in network centralization reflects a reduced level of influence by the highest-receiving countries. This greater level of receiving parity may be a product of both the addition of new refugee destinations and the reduced number of refugees received by the network as a whole. As new destination countries emerge due to a shift in refugee-sending regions or the closing of more traditional refugee destinations due to policy changes or political violence, the dominance of key actors in the network lessens.

Figures 3.4 and 3.5 present a visual depiction of the valued refugee-receiving network from Waves 1 and 5, respectively. Of particular interest in comparing these maps is the clear demonstration of the overall reduction in the number of refugees received over time. Many of the most central actors in Wave 1 (Sudan, Ethiopia, Guinea) show significant reductions in received refugees by Wave 5. Other countries show stability over time (Canada, Iran, the United States). Only a small number of countries demonstrate a marked increase over time, including Jordan, China, and Pakistan.

Figure 3.4. Valued Refugee-Receiving Network, 1990-1993

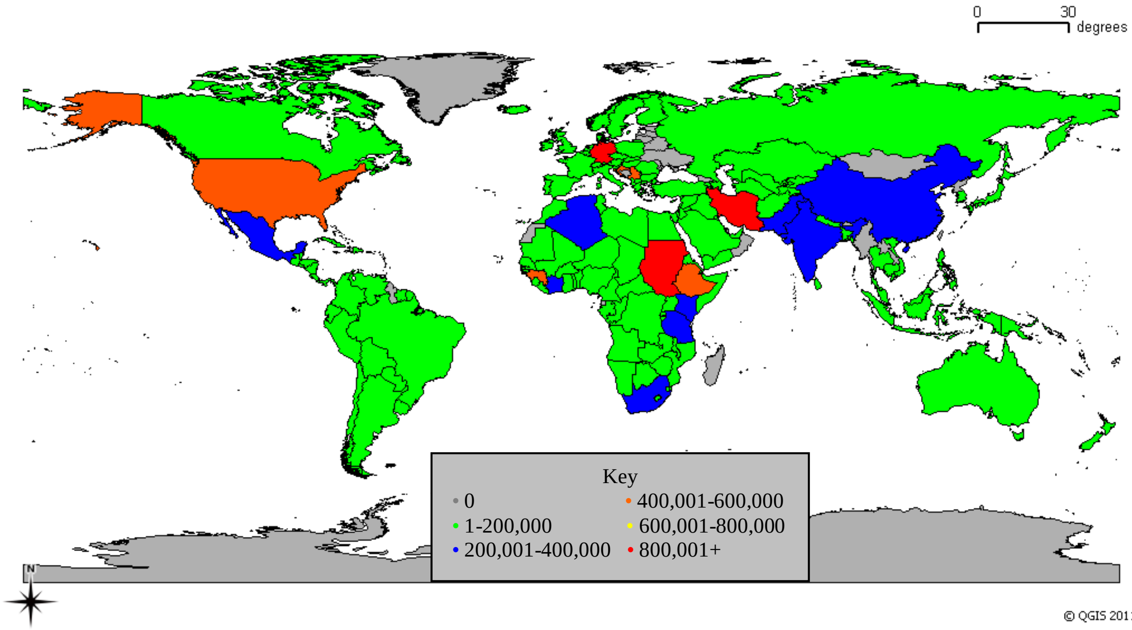
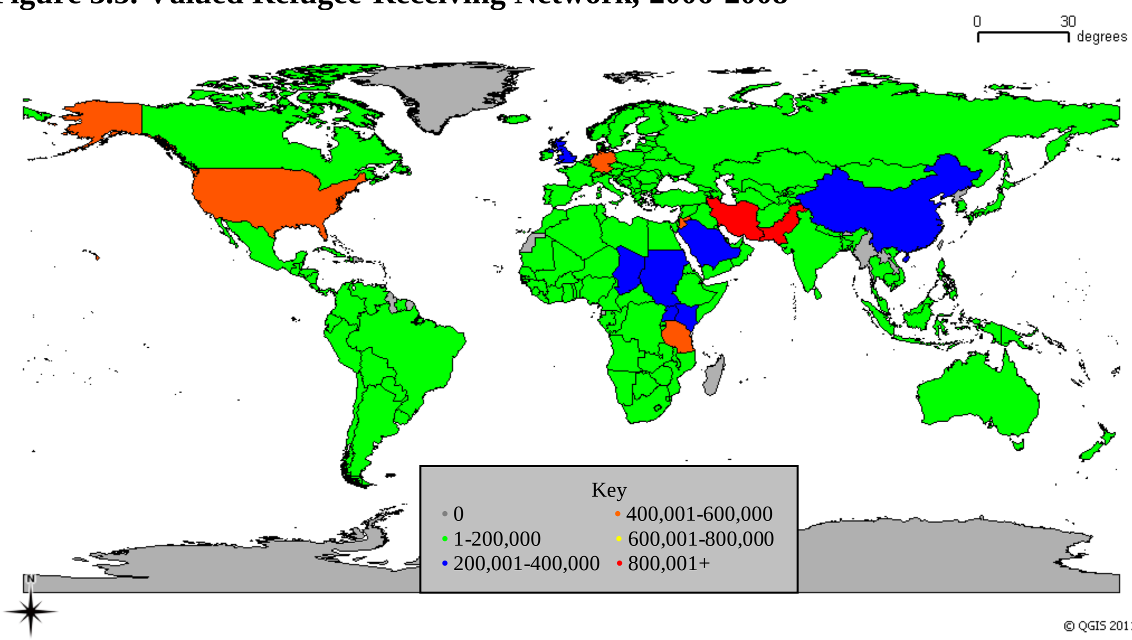


Figure 3.5. Valued Refugee-Receiving Network, 2006-2008



The valued refugee network is marked by a clear decline in the number of refugees being sent. A number of elements may contribute to this trend, but the overall direction is clear. At the same time the number of refugees is decreasing, the network is becoming more diverse as new countries participate in both sending and receiving refugees. Of particular interest in this network are the opposing directions of centralization scores observed between networks. While central sending actors become more important in the network, central receiving actors play a reduced role.

Dichotomized sending network

Table 3.4. Descriptive Statistics for Sending Degree Centrality (Dichotomized), 1990-2008

Measure	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Percent Change
Total Ties	1406	2901	3796	4382	4639	230%
Total Sending Countries	143	186	189	192	195	36%
Mean	5.81	11.988	15.686	18.107	19.169	230%
Minimum	0	0	0	0	0	0%
Maximum	54	83	97	97	103	91%
Centralization	20.079%	29.588%	33.88%	32.871%	34.929%	74%
Network Density	.0241	.0497	.0651	.0751	.0795	230%
N	242	242	242	242	242	

Table 3.4 presents statistics for the dichotomized refugee-sending network for all five waves of the analysis. Across the waves of the study, the total number of ties and average ties per sending country increase by 230 percent. These changes indicate that the network became more varied over the course of the study as sending countries sent refugees to more partners. Additionally, the total number of refugee-sending countries increased over the course of the study (143 to 195), further expanding the refugee sending network. A third indication of the expansion of the sending network is the increase in the number of countries to which the highest sending country had ties. The maximum number of ties increased by 91 percent over the five waves. It is possible that this expansion occurred because new countries became open as potential destinations or because fleeing refugees had more resources or options available in the later time period. It is also possible that this increase in sending ties reflects a need experienced by refugees to find new destinations as older, more traditional, destinations adopt restrictive entry policies. Earlier destinations would still have extant refugee populations, maintaining ties

to senders, while the addition of newer destinations would cause the number of ties to increase. The growth in the number of refugee-sending countries also increased over the period of study, further contributing to the expansion of the sending network.

While these numbers describe the distribution of the network, the density and centralization scores present a better picture of its composition. Network density captures the extent to which all possible connections are made. The score is generated by dividing the actual number of ties in the network by the total possible number of ties (UCINET 1999). Higher density scores represent greater numbers of possible ties being realized in the network. Table 3.4 presents an increase of 230 percent in density scores (.0241 to .0795), demonstrating the more integrated nature of the network as more countries became involved in sending (and receiving) refugees over time.

Network centralization demonstrates the extent to which the network is monopolized by a small number of actors. Over the waves of the study, centralization scores increased. While the overall network expanded, generating greater numbers of senders and ties, it also became more centralized as a small number of core actors increased ties at a greater rate than the network as a whole. The centralization can be observed by comparing the top actors in the final wave of the valued sending network (Table 3.10) with the list of countries experiencing the greatest increase in refugees sent (Table 3.18). The presence of common countries on these lists demonstrates the monopolization of increased ties by actors already at the core of the network.

Figure 3.6. Dichotomized Refugee-Sending Network, 1990-1993

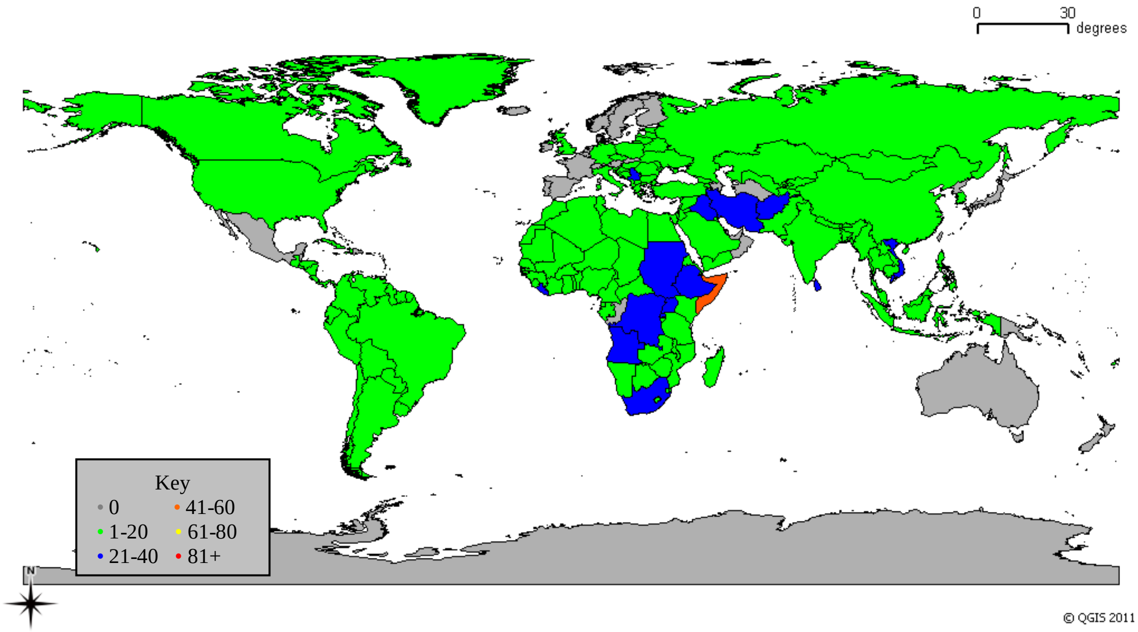
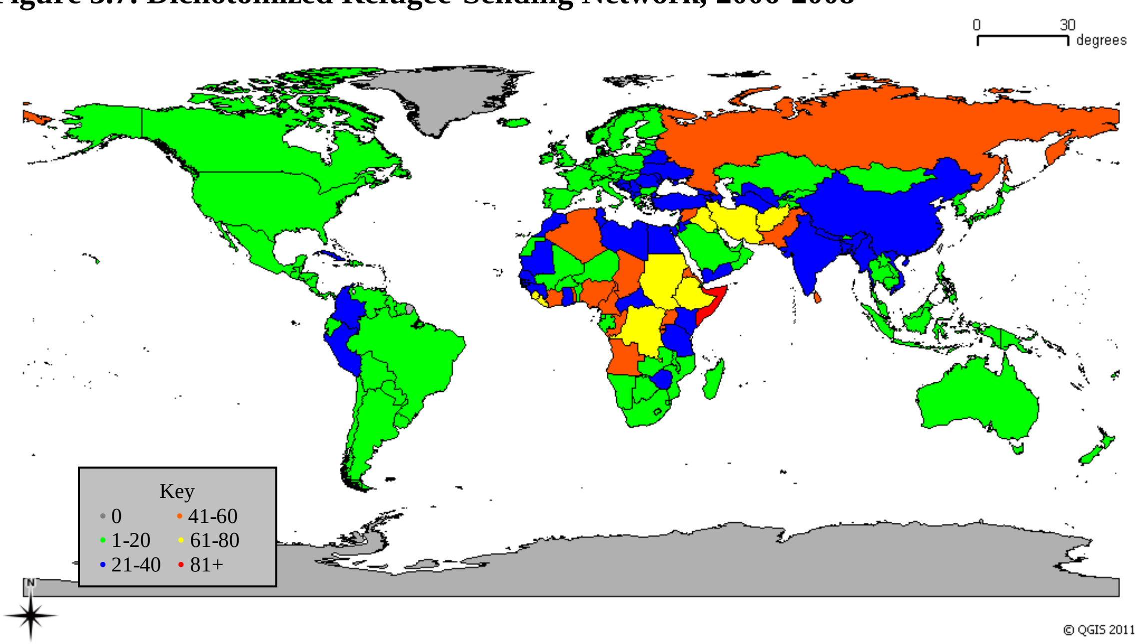


Figure 3.7. Dichotomized Refugee-Sending Network, 2006-2008



Visualizations of Waves 1 and 5 of the dichotomized refugee-sending network are presented in Figures 3.6 and 3.7. A comparison of these maps clearly demonstrates the increase in ties that occurred across the network from Wave 1 to Wave 5. These maps also depict the increasing concentration of sending ties in Africa, the Middle East, and

Central and Southern Asia. While these regions have been at the center of the dichotomized network across all waves of the study, the maps show that, over time, more countries in these areas have moved towards the center of the network, further solidifying the domination of these regions.

Dichotomized receiving network

Table 3.5. Descriptive Statistics for Receiving Degree Centrality (Dichotomized), 1990-2008

Measure	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Percent Change
Total Ties	1406	2901	3796	4382	4639	230%
Total Receiving Countries	128	150	155	152	156	23%
Mean	5.81	11.988	15.686	18.107	19.169	230%
Minimum	0	0	0	0	0	0%
Maximum	109	167	168	173	176	62%
Network Density	.0241	.0497	.0651	.0751	.0795	230%
Centralization	42.995%	64.587%	63.463%	64.537%	65.345%	52%
N	242	242	242	242	242	

Descriptive statistics for the dichotomized refugee-receiving network are presented in Table 3.5. The total number of countries with at least one receiving tie increased by 23 percent over the course of the study, providing further evidence that refugees found new destinations. By Wave 5, almost 75 percent of the countries in the study hosted refugees from at least one partner. The number of ties held by the country with the highest number of ties also increased (109 to 176), demonstrating that the most central actors continued to expand the scope of their partnerships. This growth parallels the increase in sending countries over the span of the study as more potential receiving ties became available.

Like the dichotomized sending network, the receiving network became slightly more centralized over the period of the investigation. While the network expanded in total receiving ties and countries that experienced at least one tie, centralization scores indicate that the growth in ties among countries at the center of the receiving network grew at a faster rate than the network in general. This centralization indicates that countries at the top of the receiving network hosted refugees from the highest number of partners, but did not necessarily host the most refugees.

Figure 3.8. Dichotomized Refugee-Receiving Network, 1990-1993

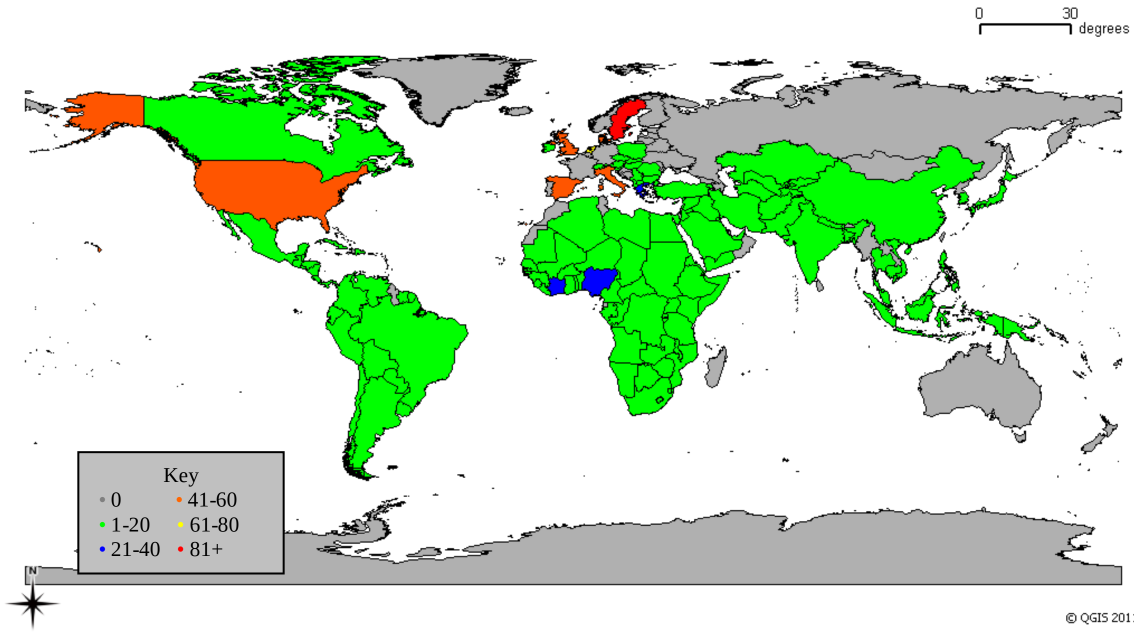
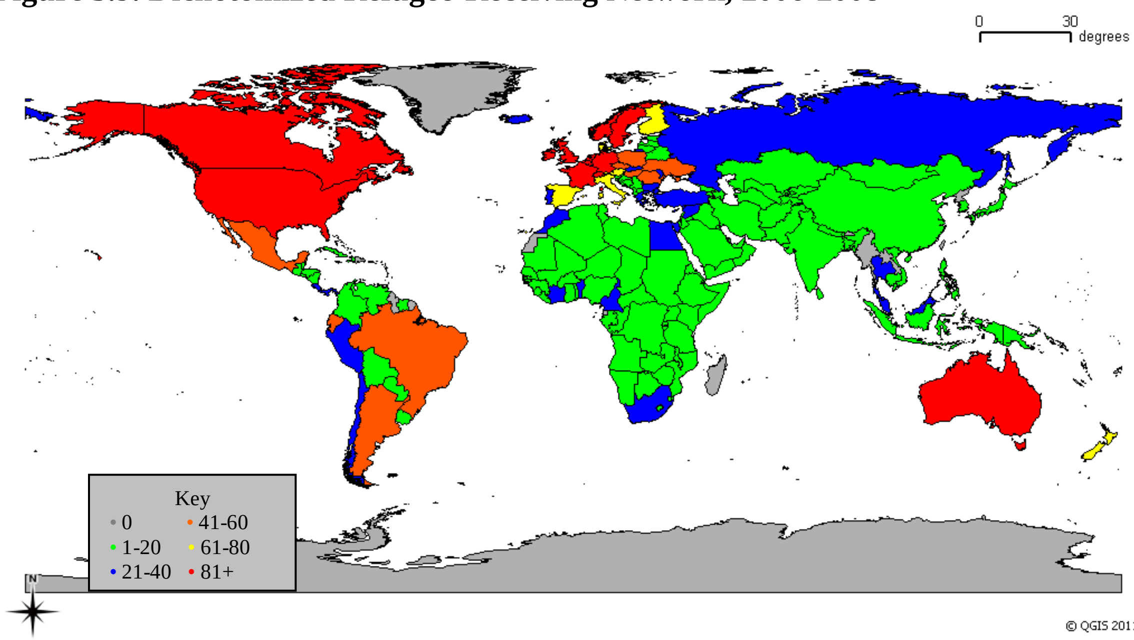


Figure 3.9. Dichotomized Refugee-Receiving Network, 2006-2008



Figures 3.8 and 3.9 present visualizations of the dichotomized refugee-receiving network in Waves 1 and 5, respectively. While the network presented in Figure 3.8 is slightly distorted due to the lack of data for some of the heaviest receivers, the map clearly demonstrates the prevalence of the United States and countries in Western Europe at the center of the network. Comparing the two maps, a number of observations become clear. The increase in ties noted in Table 3.5 is demonstrated, with the greatest numbers of ties present in North America and Western Europe. Countries at middle levels of development in Latin America, Eastern Europe, and Central Asia show marked increases in ties held, as do several countries in Sub-Saharan Africa. This presents a clear picture of the increased density of the network over time and of the role played by these countries as new destinations for refugees.

In examining the dichotomized network, three key features emerge. First, the network becomes more varied over time as more actors become involved in sending and receiving refugees. Secondly, this heightened activity caused the network to become denser as a higher percentage of potential ties were realized. Finally, the network becomes more centralized. In spite of the increased number of actors participating in sending and receiving refugees, those countries at the center of the network increase ties at a greater rate than the overall network, concentrating a greater percentage of the total ties in those nodes.

Summary of descriptive statistics for valued and dichotomized refugee networks

In comparing the dichotomized and valued networks, an important trend emerges. Total refugees are on the decline, while the numbers of participants in the network are increasing. From a sending perspective, this may be a product of greater numbers of IDPs staying within the borders of their home country and a number of smaller countries sending refugees due to political conflict. It may also be that fewer individuals are self-identifying as refugees as receiving policies become more restrictive or focused on repatriation. On the receiving side, it may be that the greater dispersion of the network comes as a result of restrictive policy changes by more traditional refugee-receiving countries, necessitating the development of new destination countries for refugees. A second argument, that this dispersion of the network is due to shifts in high-volume refugee-sending regions, seems to be invalid. As Figures 3.1a and 3.1c demonstrate, there is a good deal of stability over the waves of the study in the regions from which refugees originate. The change in destinations does not appear to be a function of changes in regions of origin.

Top ten senders and receivers

Sending centrality

The top ten actors in the dichotomized and valued refugee sending networks for each wave of the study are presented in Tables 3.6 through 3.10. Each table presents total ties and refugees for the top ten countries, as well as the average refugee per tie for each. Where ties occur in the dichotomized top ten, each country with that score is included, causing the dichotomized list to have more than ten actors in some cases.

Table 3.6. Top Ten Countries in Sending Degree Centrality, 1990-1993

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Somalia	54	666,137	12,336	1.	Afghanistan	3,026,727	29	104,370
2.	Iran	40	129,873	3,247	2.	Iraq	1,158,240	38	30,480
T3.	Iraq	38	1,158,240	30,480	3.	Somalia	666,137	54	12,336
T3.	DR Congo	38	62,678	1,649	4.	Liberia	659,657	32	20,614
5.	Ethiopia	37	580,719	15,695	5.	Ethiopia	580,719	37	15,695
T6.	Sudan	32	345,992	10,812	6.	Vietnam	515,893	32	16,122
T6.	Liberia	32	659,657	20,614	7.	Eritrea	478,419	9	53,158
T6.	Vietnam	32	515,893	16,122	8.	Bosnia and Herzegovina	404,439	23	17,584
9.	Afghanistan	29	3,026,727	104,370	9.	Mozambique	400,274	13	30,790
T10.	Angola	27	104,208	3,860	10.	Sudan	345,992	32	10,812
T10.	Serbia	27	85,024	3,149					

Table 3.7. Top Ten Countries in Sending Degree Centrality, 1994-1997

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Somalia	83	633,519	7,633	1.	Afghanistan	2,693,708	59	45,656
2.	Iraq	77	729,547	9,475	2.	Rwanda	1,155,344	69	16,744
3.	Iran	76	111,876	1,472	3.	Bosnia and Herzegovina	898,487	46	19,532
4.	Liberia	70	705,400	10,077	4.	Iraq	729,547	77	9,475
5.	Rwanda	69	1,155,344	16,744	5.	Liberia	705,400	70	10,077
6.	Sudan	68	423,836	6,233	6.	Somalia	633,519	83	7,633
7.	DR Congo	66	131,535	1,993	7.	Vietnam	530,396	40	13,260
8.	Ethiopia	63	128,559	2,041	8.	Sudan	423,836	68	6,233
9.	Afghanistan	59	2,693,708	45,656	9.	Burundi	423,009	56	7,554
10.	Burundi	56	423,009	7,554	10.	Sierra Leone	342,435	40	8,561

Table 3.8. Top Ten Countries in Sending Degree Centrality, 1998-2001

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Sudan	97	465,463	4,799	1.	Afghanistan	3,168,356	78	40,620
2.	Iraq	94	594,517	6,325	2.	Iraq	594,517	94	6,325
3.	Somalia	93	501,966	5,397	3.	Burundi	538,198	68	7,915
4.	DR Congo	87	295,442	3,396	4.	Bosnia and Herzegovina	525,572	51	10,305
5.	Iran	80	88,662	1,108	5.	Somalia	501,966	93	5,398
6.	Ethiopia	79	67,153	850	6.	Sudan	465,463	80	5,818
7.	Afghanistan	78	3,168,356	40,620	7.	Angola	394,547	64	6,165
T8.	Liberia	77	293,096	3,806	8.	Sierra Leone	370,229	77	4,808
T8.	Sierra Leone	77	370,229	4,808	9.	Eritrea	353,037	44	8,024
10.	Rwanda	75	92,753	1,237	10.	Palestine	343,469	51	6,735

Table 3.9. Top Ten Countries in Sending Degree Centrality, 2002-2005

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Somalia	97	404,956	4,175	1.	Afghanistan	2,266,734	80	28,334
2.	Sudan	95	634,941	6,684	2.	Sudan	634,941	95	6,684
T3.	Iraq	92	340,821	3,705	3.	Burundi	507,615	76	6,679
T3.	DR Congo	92	442,349	4,808	4.	DR Congo	442,349	92	4,808
5.	Ethiopia	85	63,191	743	5.	Somalia	404,956	97	4,175
6.	Liberia	82	298,970	3,646	6.	Palestine	369,969	64	5,781
7.	Iran	81	118,779	1,466	7.	Vietnam	361,257	44	8,210
T8.	Afghanistan	80	2,266,734	28,334	8.	Iraq	340,821	92	3,705
T8.	Sierra Leone	80	73,651	921	9.	Angola	302,432	60	5,041
10.	Rwanda	78	78,564	1,007	10.	Liberia	298,970	82	3,646

Table 3.10. Top Ten Countries in Sending Degree Centrality, 2006-2008

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Somalia	103	492,961	4,786	1.	Afghanistan	1,944,852	76	25,590
2.	Iraq	98	778,932	7,948	2.	Iraq	778,932	98	7,948
3.	Ethiopia	96	69,013	719	3.	Sudan	535,490	92	5,821
T4.	Sudan	92	535,490	5,821	4.	Somalia	492,961	103	4,786
T4.	DR Congo	92	375,984	4,087	5.	DR Congo	375,984	92	4,087
6.	Liberia	82	108,902	1,328	6.	Burundi	351,292	75	4,684
7.	Iran	81	80,028	988	7.	Vietnam	343,428	49	7,009
8.	Sierra Leone	78	35,713	458	8.	Palestine	334,478	70	4,778
9.	Afghanistan	76	1,944,852	25,590	9.	Turkey	221,187	45	4,915
T10.	Rwanda	75	82,173	1,096	10.	Myanmar	193,865	46	4,215
T10.	Burundi	75	351,292	4,684					

As noted in Figure 3.1c, the actors with the most ties in each wave tend to be from countries in Africa and the Middle East. These most central countries tend toward the lower middle to low levels of development. Additionally, these countries are frequently marked by conflict and political upheaval, a condition that would be expected of countries sending high volumes of individuals that are counted as refugees based on the 1951 Convention definition. Movement in and out of the top ten closely parallels the initiation and cessation of military conflict. Additionally, the number of ties held by the top actors increases significantly over the waves of the study, with the most central country sending refugees to almost twice the number of partners in Wave 5 as Wave 1 and the 10th place country holding over three times more ties in Wave 5 than Wave 1. This increase parallels the expansion of the overall dichotomized network demonstrated in the previous section. With the exception of retention between the first and second waves, the top ten actors demonstrate a high degree of stability across the waves of the study. Wave-to-wave retention from Waves 2 through 5 is between 90 and 100 percent.

Like the dichotomized network, the valued sending network is composed primarily of less-developed countries from Sub-Saharan Africa and the Middle East. In fact, there is a good deal of similarity in the composition of each network, with at least five of the top ten in common in each wave of the study (see Figure 3.17). A key characteristic of the sending network is the large gap between the top actor (i.e., Afghanistan) and the actors that comprise the rest of the top ten. In every wave, Afghanistan sends at least one million more refugees than the second place country. The largest difference occurs in Wave 3 where Afghanistan contributed over 2.5 million more refugees than the next closest country. The nearly 3.2 million refugees sent in this wave account for almost half of the total refugees sent by the top ten (see Table 3.11). This domination of the top position in the network across all waves of the study demonstrates the constant state of conflict experienced by Afghanistan across these two decades. Interestingly, wave-to-wave retention is lower in the valued network than the dichotomized network, varying from 60 to 80 percent across waves. Overall retention from Wave 1 to Wave 5 is also low, with only five of the original ten countries persisting from the beginning to the end of the study. This reflects the cessation of conflict in countries over time and success in efforts toward repatriation of refugees following the end of hostilities.

Table 3.11. Summary of Holdings of Top Ten Actors in Refugee-Sending Networks by Wave, 1990-2008

Dichotomized Top Ten					Valued Top Ten				
Total Ties	**Percent of All ties**	**Total Refugees**	**Percent of All Refugees**	**Average Refugee per Tie**	**Total Ties**	**Percent of all Ties**	**Total Refugees**	**Percent of All Refugees**	**Average Refugee per tie**
386	27.45	7,335,148	49.36	19,003	299	21.27	8,236,497	55.43	27,547
687	23.68	7,136,333	48.96	10,388	608	20.96	8,535,681	58.56	14,039
837	22.05	5,937,637	49.20	7,094	700	18.44	7,255,354	60.12	10,365
862	19.67	4,722,956	49.33	5,479	782	17.85	5,930,044	61.94	7,583
948	20.44	4,855,340	58.32	5,122	746	16.08	5,572,469	66.93	7,470

Table 3.11 summarizes the dichotomized and valued sending networks across all waves of the study. The total ties and refugees held by the top ten in each wave are presented. A key feature of the summary is the level of similarity that exists between the two networks. The similarities in composition have already been noted, but beyond this, there are clear parallels in the trends experienced by the two networks across the waves of the study. Both valued and dichotomized networks experience increases in the total number of ties held by the top actors in the networks from Wave 1 to Wave 5. While the number of ties in the dichotomized network is somewhat higher, both networks increase total ties by over 200% over the course of the investigation. However, the total ties held by the top ten in each network represent a lower percentage of the total ties held by all countries over time. In spite of this trend, these percentages reflect the greater centralization of the network over time as more actors enter the network and increase ties at a slower rate than the central actors (see Table 3.4).

The networks are also similar in the trajectory taken by the total number of refugees sent in each wave. A comparison of total refugees sent over Waves 1 through 5 shows that the valued network consistently sends more refugees than the dichotomized. The lists of top ten actors in both networks demonstrate a clear downward trend in the total number sent from wave-to-wave, but refugees from these countries represent an increasingly larger percentage of the total refugees sent in a given wave. This shift illustrates the greater level of centralization identified in Table 3.2.

A final feature held in common by these networks is the trend in average refugee per tie score for the top ten actors across waves. While the valued network has slightly higher scores due to the presence of more refugees and fewer ties, both networks demonstrate a clear downward trend in the number of sent refugees per sending tie. This shows that refugees from these countries are going to more varied destinations over time, possibly as a result of a need for the development of new destinations as traditional hosting countries either close to refugees or in some other way become less attractive or attainable.

Receiving centrality

Tables 3.12 – 3.16 present the top ten actors in the dichotomized and valued refugee-receiving networks for each wave of the study. The total ties and refugees, as well as average refugee per tie, are presented for all countries in the top ten. Like the presentation of sending dichotomized lists, when ties occur, all countries at that level are included.

Table 3.12. Top Ten Countries in Receiving Degree Centrality, 1990-1993

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Sweden	109	139,351	1,278	1.	Iran	3,806,318	2	1,903,159
2.	Netherlands	89	44,892	504	2.	Germany	1,072,875	--	--
3.	USA	73	546,959	7,493	3.	Sudan	926,912	6	154,485
4.	Denmark	72	40,287	560	4.	USA	546,959	73	7,493
5.	Italy	63	20,009	318	5.	Guinea	520,267	4	130,067
6.	UK	62	58,009	936	6.	Ethiopia	502,060	8	62,758
7.	Spain	55	6,414	117	7.	Serbia	496,616	11	45,147
8.	Greece	45	14,325	318	8.	Croatia	403,000	--	--
9.	Cote d'Ivoire	31	232,556	7,502	9.	Mexico	360,167	25	14,407
10.	Nigeria	26	4,448	171	10.	Tanzania	353,108	6	58,851

Table 3.13. Top Ten Countries in Receiving Degree Centrality, 1994-1997

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Canada	167	149,975	898	1.	Iran	2,087,311	--	--
2.	USA	149	606,988	4,074	2.	Germany	1,234,376	--	--
3.	Netherlands	124	90,754	732	3.	Pakistan	1,165,895	13	89,684
4.	Sweden	122	194,491	1,594	4.	DR Congo	1,048,131	10	104,813
5.	France	114	195,798	1,718	5.	Tanzania	695,538	6	115,923
6.	Australia	108	94,899	879	6.	USA	606,988	149	4,074
7.	Norway	80	65,095	814	7.	Guinea	581,180	11	52,834
8.	Denmark	79	62,255	788	8.	Sudan	575,589	7	82,227
9.	Italy	77	74,944	973	9.	Serbia	553,670	12	46,139
10.	Spain	76	5,643	74	10.	Ethiopia	363,832	19	19,149

Table 3.14. Top Ten Countries in Receiving Degree Centrality, 1998-2001

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Canada	168	151,169	900	1.	Iran	1,875,756	--	--
2.	USA	167	520,099	3,114	2.	Pakistan	1,651,203	22	75,055
3.	Sweden	129	162,819	1,262	3.	Germany	933,425	--	--
4.	Netherlands	124	176,897	1,427	4.	Tanzania	623,463	5	124,693
5.	Australia	122	63,237	518	5.	USA	520,099	167	3,114
6.	France	117	133,253	1,139	6.	Serbia	471,862	11	42,897
7.	Switzerland	113	70,291	622	7.	Guinea	397,420	19	20,917
8.	Belgium	108	16,202	150	8.	Sudan	395,320	6	65,887
9.	Denmark	98	70,736	722	9.	DR Congo	325,871	9	36,208
10.	Norway	96	33,582	350	10.	China	293,776	12	24,481

Table 3.15. Top Ten Countries in Receiving Degree Centrality, 2002-2005

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Germany	173	840,481	4,858	1.	Pakistan	1,181,869	19	62,204
2.	Canada	171	131,309	768	2.	Iran	1,077,987	5	21,559
3.	USA	168	435,194	2,590	3.	Germany	840,481	173	4,858
4.	Sweden	132	104,431	791	4.	Tanzania	622,514	4	155,629
5.	Netherlands	129	133,472	1,035	5.	USA	435,194	168	2,590
6.	Australia	119	61,108	514	6.	China	299,272	16	18,705
7.	Switzerland	114	46,326	406	7.	UK	282,583	110	2,569
8.	UK	110	282,583	2,569	8.	Serbia	267,696	15	17,846
9.	Belgium	103	13,493	131	9.	DR Congo	242,671	7	34,667
T10.	Norway	102	45,938	450	10.	Saudi Arabia	241,908	9	26,879
T10.	Ireland	102	6,208	61					

Table 3.16. Top Ten Countries in Receiving Degree Centrality, 2006-2008

	Dichotomized Top Ten	Total Ties	Total Refugees	Refugees Per Tie		Valued Top Ten	Total Refugees	Total Ties	Refugees Per Tie
1.	Germany	176	580,805	3,300	1.	Iran	970,691	8	121,336
2.	USA	174	467,973	2,690	2.	Pakistan	899,156	18	49,953
3.	Canada	173	165,997	960	3.	Germany	580,805	176	3,300
4.	Sweden	134	77,390	578	4.	Jordan	500,316	20	25,016
T5.	Australia	121	36,234	299	5.	USA	467,973	174	2,690
T5.	Netherlands	121	88,363	730	6.	Tanzania	414,791	10	41,479
7.	UK	119	297,830	2,503	7.	China	301,028	15	20,069
8.	Switzerland	116	46,773	403	8.	UK	297,830	119	2,503
T9.	France	107	152,092	1,421	9.	Chad	294,482	2	147,241
T9.	Norway	107	38,003	355	10.	Kenya	286,289	13	22,022

Across all waves, the top ten actors in the dichotomized network are predominantly wealthy, developed countries in Europe or North America. Countries at this level of development tend to be well-connected politically, diplomatically, economically, and culturally to large numbers of countries at every level of development. Additionally, these countries have highly developed transportation networks that connect to all parts of the world. With these multiple vectors of connectedness, it is little surprise that these countries would also play host to refugees from large numbers of senders. The top ten actors in this network display a high degree of stability across the waves of the study. Excluding the first wave due to issues related to reporting ties among some of the most central actors (see footnote 1), wave-to-wave retention varies between 80 and 90 percent. Retention from Wave 2 to Wave 5 is also high at 80 percent.

Unlike the similarity displayed by the valued and dichotomized sending networks, the top ten actors in the valued receiving networks are quite different than those in the dichotomized networks. While the United States (and later, Germany and the United Kingdom) appear on both lists, countries at middle and lower levels of development constitute most of the valued receiving lists. These countries tend to be in close proximity to high-conflict areas and often demonstrate a tendency toward instability. Like the dichotomized network, wave-to-wave retention appears to be somewhat stable, holding between 70 to 90 percent. However, the structure of the network changes significantly over the full period of the study with only four of the top ten countries from Wave 1 (Iran, Germany, United States, and United Republic of Tanzania) appearing in the top ten from Wave 5. This shift clearly demonstrates the role played by proximity to conflict in elevating refugee levels. Included in the top ten receiving countries in Wave 1 are Croatia and Serbia, who received refugees from Central European conflicts in the late 1980's and early 1990's, and Mexico, who received refugees from Latin American conflicts in the same period. By Wave 5, these countries have been replaced with actors from Sub-Saharan Africa and the Middle East as these regions have experienced heightened levels of conflict in the early part of the 21st century.

Table 3.17 summarizes the ties and total refugees received by the top ten receiving networks, both dichotomized and valued. In addition to the differences in stability over time and the kinds of countries on the lists noted previously, this table highlights the disparity between the top actors in the two networks with respect to ties and refugees. While the top ten receivers in the dichotomized network account for around a third or more of all ties in each wave, they account for less than a fourth of total refugees at their highest receiving level (i.e., Wave 5). In fact, in Wave 1, these countries account for less than 10 percent of all refugees received in the period. The valued top ten demonstrate the opposite effect receiving around 60 percent of all refugees in any given wave, but holding only around 10 percent of ties. If the United States and Germany are excluded, the number of ties held by the remaining actors drops to around 5 percent. These observations portray a receiving network in which poor countries receive the brunt of refugee movements, while wealthy countries are better able to be selective in the extent to which they are impacted by refugee inflows.

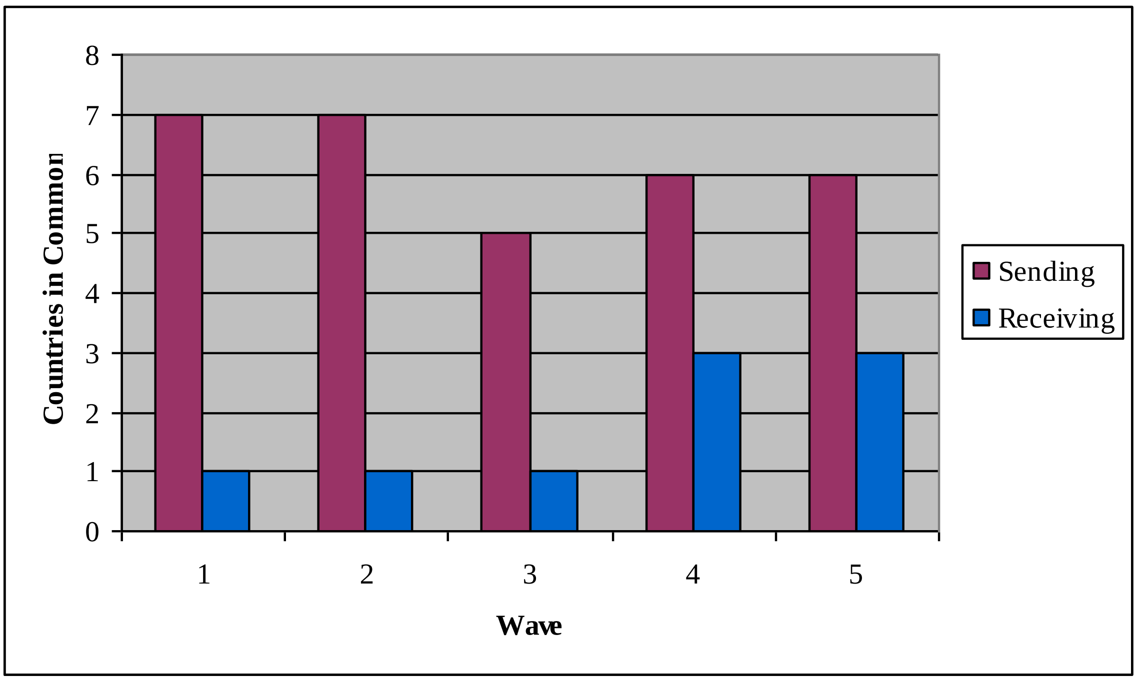
Table 3.17. Summary of Top Ten Actors in Refugee-Receiving Networks, 1990-2008

Dichotomized Top Ten					Valued Top Ten				
Total Ties	**Percent of All ties**	**Total Refugees**	**Percent of All Refugees**	**Average Refugee per Tie**	**Total Ties**	**Percent of all Ties**	**Total Refugees**	**Percent of All Refugees**	**Average Refugee per tie**
625	44.45	1,107,250	7.45	1,772	135	9.60	8,988,282	60.49	66,579
1096	37.78	1,540,842	10.57	1,406	227	7.82	8,912,510	61.15	39,262
1242	32.72	1,398,285	11.59	1,126	251	6.61	7,488,195	62.05	29,833
1423	32.47	2,100,543	21.94	1,476	526	12.00	5,492,175	57.37	10,441
1348	29.06	1,951,460	23.44	1,448	555	11.96	5,013,361	60.22	9,033

This difference in refugees received is highlighted by the average refugee per tie measure. Discounting Wave 1, the valued top ten received between 8.5 and 29 times more refugees per tie than the central actors in the dichotomized top ten. Clearly, countries in the developing world are receiving the brunt of refugee movements. Through connections at a variety of levels, highly developed countries receive refugees from large numbers of countries. However, through policy, distance, and tight border controls, these countries are able to limit refugee flows to manageable levels that do not significantly impact economic, political, or cultural life. On the other hand, countries at lower levels of development appear to be less able to restrict refugee movements due to proximity to conflict areas, lack of policy-level restrictions, and lesser ability to control borders. These countries are far less able to absorb the economic, social, and political consequences that come with a heavy influx of refugees (Iqbal and Zorn 2007; Keller 1975). Many of the valued top ten receiving countries receive the bulk of their refugees from only a handful of partners, creating potential for political disruption as these refugees consolidate and settle.

Trends in sending and receiving centrality

Figure 3.17. Similarity of actors in the top ten of dichotomized and valued networks for the refugee sending and receiving networks across five waves, 1990-2008



In comparing the refugee sending and receiving networks, a number of trends emerge. First, the difference in similarity in the top ten actors in the dichotomized and valued networks between the sending and receiving networks marks an issue with important implications. While the top ten actors in each wave of the dichotomized and valued sending networks are quite similar, the actors that receive refugees from the highest number of partners and those that receive the highest number of refugees are very different. Figure 3.17 depicts the extent of these differences. Countries that are central in the valued sending network tend to be central in the dichotomized sending network. However, most central countries in the dichotomized receiving network are not central in the valued network. Countries with the highest number of receiving ties are generally not the countries that receive the highest numbers of refugees.

Secondly, differences exist in the actors that comprise the different networks. The top actors in both the dichotomized and the valued sending networks are primarily countries at low levels of development in Africa, Central and South Asia, and the Middle East. These countries are typically marked by political instability and conflict, either during the period being studied or in the recent past. In contrast, the top actors in the valued receiving network come from a variety of development levels, geographic regions, and levels of stability. Some countries are on these lists due to a history of openness to refugees while others appear due to their proximity to areas of conflict.

Providing a stark contrast to both the central actors in the sending networks and those in the valued receiving network are the top actors in the dichotomized receiving network. The countries with the most refugee-receiving ties are almost exclusively those at the highest levels of economic development. With the exception of the first wave, which is somewhat misleading due to missing data (see footnote 1), all of the central actors in this network are members of the OECD and are considered “Western” countries. As has been previously noted, these countries are connected to the most sending partners, but generally do not host the highest numbers of refugees.

This disparity between the number of partners and number of refugees received by the dichotomized receiving network marks the third broad trend observed in comparing these networks. The average refugee per tie score of the central actors in the dichotomized receiving network is vastly different than those of the top actors in the valued receiving network or either of the sending networks (see Tables 3.11 and 3.17). Wealthy countries are clearly the most attractive destinations for refugees, but these countries seem to be best able to control the volume of the flow of refugees crossing their borders. Receiving fewer refugees from more partners creates a more diverse refugee population and may limit the potential problems associated with having large pockets of single-origin refugees within the society. These central actors in the dichotomized receiving network appear to have successfully limited the impact of receiving refugees on their country.

Table 3.18. Top Ten Countries in Increased Valued and Dichotomized Degree Centrality, 1990-2008

Top Ten Senders (Valued)	New Refugees	Top Ten Senders (Dichotomized)	New Ties	Top Ten Receivers (Valued)	New Refugees	*Top Ten Receivers (Dichotomized)	New Ties
DR Congo	313,306	Sierra Leone	67	Pakistan	659,801	Switzerland	78
Palestine	254,111	Congo	64	Jordan	499,627	UK	73
Turkey	206,568	Eritrea (tie)	60	Chad	294,408	Belgium	71
Sudan	189,498	Iraq (tie)	60	UK	239,821	Hungary	55
Serbia	100,742	Sudan (tie)	60	Saudi Arabia	211,744	Brazil	49
CAR	96,834	Ethiopia	59	Egypt	90,279	Argentina	48
Angola	83,808	Cote d'Ivoire	57	Yemen	79,828	Ecuador	46
Columbia	72,528	Nigeria	56	Kenya	72,818	New Zealand	43
China	54,538	DR Congo	54	Tanzania	61,683	Czech Republic	37
Azerbaijan	52,767	Burundi (tie)	51	Netherlands	43,471	Costa Rica	35
		Palestine (tie)	51				

* Only waves 2-5 are included for this measure due to a number of heavy receiving countries having no ties reported for Wave 1.

Table 3.18 presents the ten actors in each network that experienced the greatest numerical increase in centrality from Wave 1 to Wave 5 (see footnote 1). Each score is developed by subtracting the Wave 1 centrality score for each country from the Wave 5 score. The list of top movers in the valued sending network provides the most varied group of actors of any of the lists. Countries vary by region, development level, and conflict level. Of these movers, only three break into the top ten of the overall valued sending network. Like the receiving network lists, the composition of the list of countries with the greatest increases in ties is quite different than the list from the valued network. Only three countries appear on both lists. The top ten upwardly mobile actors in the dichotomized receiving network are almost exclusively from Africa and represent some of the least developed countries in the world. Most of these countries have experienced extended periods of conflict over the time period of the study and the proliferation of ties may reflect the need to find new receiving partners as flows develop due to heightened or renewed conflict. It may also be a product of more potential host countries becoming aware of conflict and humanitarian crises occurring in these sending countries, with a subsequent opening of borders to accommodate refugees. Possibly the most telling observation about this list is the number of actors that were in the top ten of the dichotomized sending network in both Wave 1 and Wave 5. This means that these countries started as the most central actors and then increased ties at a greater rate than other actors in the network, further demonstrating the increased centralization of this network over the period of study.

In the receiving networks, three of the top ten movers in the dichotomized network moved into the top ten of the overall network, while six of the top ten movers in the valued network did so. This reflects the greater levels of variation in the valued network as refugees move for a time and then move back after the cessation of hostilities, leaving a remnant behind in the host country. This small group that does not return continues to be counted as a tie in the network, but may represent fewer refugees than during the initial movement period. For the receiving networks, it is noteworthy that only one of the actors that experienced the greatest increase in ties (United Kingdom) is on the list of actors that increased the most in total refugees. Upwardly mobile valued receivers are primarily countries at middle levels of development that are in close proximity to areas of conflicts that erupted during the time of the study. In contrast, countries that experienced the highest increases in ties are in the high to upper middle development categories, and are predominantly separated from regions experiencing conflict. Tellingly, none of the countries experiencing the greatest increases in receiving ties shares a region with the countries with the greatest increases in sending ties. The differences between these lists demonstrate again the ability of more developed nations to control the flows of refugees into their borders.

General observations

A number of trends emerge across these examinations of the descriptive data of the refugee sending and receiving networks. Over the five waves of the study, the global refugee network becomes more diffuse, with fewer refugees moving to a greater number of destinations. This diffusion could be the result of reduced conflict around the world, generating fewer refugees. However, it is also possible that more potential refugees are remaining within their native borders, becoming IDPs rather than refugees. On the other side of the equation, the number of receiving countries has increased significantly over the two decades of the study. The emergence of new refugee destinations may be a by-product of new areas of conflict developing, causing neighbors that were previously not major refugee-receiving centers to become more involved in receiving due to proximity. The possibility also exists that new destinations have emerged as more traditional refugee-receiving countries in Europe and North America have developed more restrictive receiving policies for refugees, limiting their availability as potential destinations.

A second trend identified in these data is the burden placed on countries at middle and lower levels of development by refugee populations. If the diffusion of the network over time was uniform, there should be evidence of a reduced burden on all countries. However, this has not been the case. The countries that experienced the greatest increases in refugees are predominantly from these middle and lower tiers (see Table 3.18). Likewise, the majority of the highest overall receiving countries are at these development levels (see Tables 3.12 through 3.16). The data clearly demonstrate that many countries that are ill-equipped to absorb large refugee populations are finding themselves forced to do so. Whether due to proximity of conflict or changes to receiving policies by higher developed countries, these middle and lower development level countries are experiencing the bulk of the economic and population burden presented by refugees.

The clearest trend in these data is the extent to which the dichotomized receiving network differs from the other three networks. Clear differences emerge in the composition of the networks and the role played by top actors in the global refugee network. More than any other factor in these data, these network-level differences demonstrate the extent to which the refugee burden is passed from wealthy, developed nations to countries at lower levels of development.

Of the four networks studied, only the top tens of the dichotomized receiving network consist exclusively of countries at the highest levels of development (see Tables 3.12 – 3.16). Because of their positions in multiple global networks (communications, economic, transportation, etc.) these countries receive refugees from more countries than actors at lower development levels. However, these countries have demonstrated an ability to limit the number of refugees received even as they host refugees from large numbers of partners. Comparisons of actual refugees received by the top receivers on the valued list and those on the dichotomized list clearly show that the larger portion of the world's refugees are going to countries at low levels of development and with fewer overall receiving ties. This disparity is highlighted further when the statistics for the number of refugees per tie are compared. Countries that receive the highest number of refugees tend to be those that are least able to absorb the demands of these inflows on their resources and economies.

These trends and the evaluation of the global network in general leave a number of questions to be explored. Chief among these are questions related to the examination the dynamics involved in centrality in either the sending or receiving network. Is political violence the only element that matters in generating refugee flows or do other factors come into play as well? Why do some countries develop more sending ties than others? Do economic and other conditions in receiving countries impact refugee destination choices or is proximity the overwhelming factor? Are there differences in elements that impact centrality in the dichotomized and valued receiving networks? Do refugees make movement choices like other migrants, or are there differences in the elements that impact their destinations and decisions to leave?

All of these questions require further study. In the following chapters, each of the networks will be examined and compared in analyses with variables from a number of different perspectives in order to investigate the different effects of domestic conditions and levels of international integration on centrality in these networks. These analyses will develop insight into the forces that shape the global refugee network and point to potential interventions that might alleviate some of the burden placed on high-receiving countries and ameliorate internal conditions that promote the initiation of refugee flows.

Chapter Four Outline

Chapter Four

COMPARING THE GLOBAL REFUGEE AND MIGRANT NETWORKS, CIRCA 2000.

Most scholars in the fields of migration and refugee studies recognize that migrant and refugee movements represent different phenomena, driven by different issues and resulting in different types of decisions about destinations. However, a lack of theory in refugee studies often leads to the application of migration theories to refugee movements (Black 2001). Unfortunately, if migrants and refugees represent different types of movement, then the use of migrant theories to examine refugee movements is destined to miss important distinctions and subtleties unique to refugee outflows and destinations. In an effort to identify some of these distinctions and move toward the development of refugee-specific theory, the goal of this chapter is to develop and compare the valued and dichotomized migrant and refugee sending and receiving networks circa 2000. Each migrant network is compared to its refugee counterpart (e.g., valued migrant-sending with valued refugee-sending). Comparisons are made at a number of levels to examine differences and similarities in the networks to determine the extent to which these networks differ, identify key areas in which they are different, and examine what drives the composition of these networks, causing them to be different.

In order to compare migrant and refugee networks, degree centrality scores were calculated for each of the four possible networks of each type – valued sending, valued receiving, dichotomized sending, and dichotomized receiving. Data were included for 225 countries and territories circa 2000. Migration data represent immigrants living abroad in 2000, while the refugee data are a period average from Wave 3 of the study (1998-2001). Matrices were developed for each network that included the total number of migrants and refugees sent and received by each country. As countries contribute and receive migrants and refugees at different levels, all of the networks are asymmetrical. These matrices were input into the UCINET (1999) software package and translated into centrality scores. Countries with high degree centrality in the valued networks send or receive higher numbers of migrants or refugees than countries with lower centrality scores.

Following the development of the valued networks, each network was dichotomized, again using UCINET (1999). Every country that sent migrants or refugees to another country was given a sending tie to that country, while the destination country received a receiving tie. Centrality scores in these dichotomized networks are based on the total number of sending or receiving ties held by countries in the respective networks. Countries that receive from a high number of other countries are considered central in the receiving network, while countries with many sending partners are high in the sending networks.

Once developed, I compared these networks at several levels to identify similarities and differences. First, descriptive statistics and geographical differences are examined. These measures are developed from UCINET (1999) and are presented in a series of tables and figures that compare the scope and structure of each network, including size, centrality, density, and regional distribution. Next, correlations of the networks are developed and examined. Both Pearson’s Correlation and Quadratic Assignment Procedure (QAP) correlations and are performed and all results presented. Following these results, a series of OLS regressions are performed that examine the effects of variables from a number of perspectives on centrality in the networks. Results for each network pair are reported and compared. Finally, a series of OLS regressions are conducted to examine the effects of these variables on residual scores obtained by the regression of each migrant network on its refugee counterpart. These analyses demonstrate elements that cause the networks to be different. Each of these sections includes a brief introduction, a presentation of the results, and a discussion of the relevant findings within the section.

A number of outcomes are anticipated in this analysis. First, it is expected that the networks will prove to be significantly different along the various levels examined. Next, it is anticipated that a good deal of this difference will be based on regional variation. Countries in different regions participate in these networks at different levels and these differences should be reflected in the observed results. A third set of outcomes derives from the predicted results with respect to the effects of variables on centrality in the networks from Chapter Two. Generally, it is expected that most of the variables in each model will demonstrate some effect on centrality scores, with greater development yielding higher receiving centrality in both networks and greater instability and unrest yielding higher refugee-sending centrality. It is anticipated that migrant-sending centrality will be affected by both development and political variables, as well. Finally, while it is expected that these elements will demonstrate relationships with both migrant and refugee centrality, it is anticipated that these effects will be in different directions and a varying strengths. Therefore, these elements will also explain some of the difference between networks in the residual analyses. The identification of these areas of similarity and difference will provide insights that may inform both the development of theory in refugee studies and the development of policy interventions aimed at helping prevent refugee movements and assisting host countries in preparing for and dealing with refugee flows as they occur.

DESCRIPTIVE COMPARISONS OF MIGRANT AND REFUGEE NETWORKS

Visualizations and descriptive statistic comparisons

Figure 4.1. Valued Migrant-Sending Network, 2000

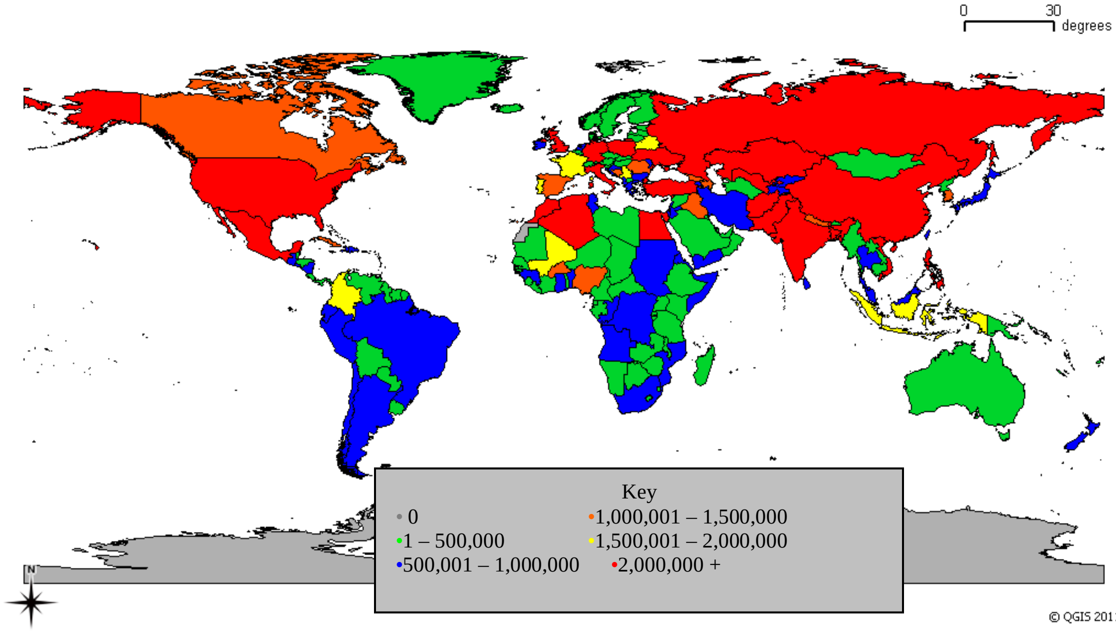
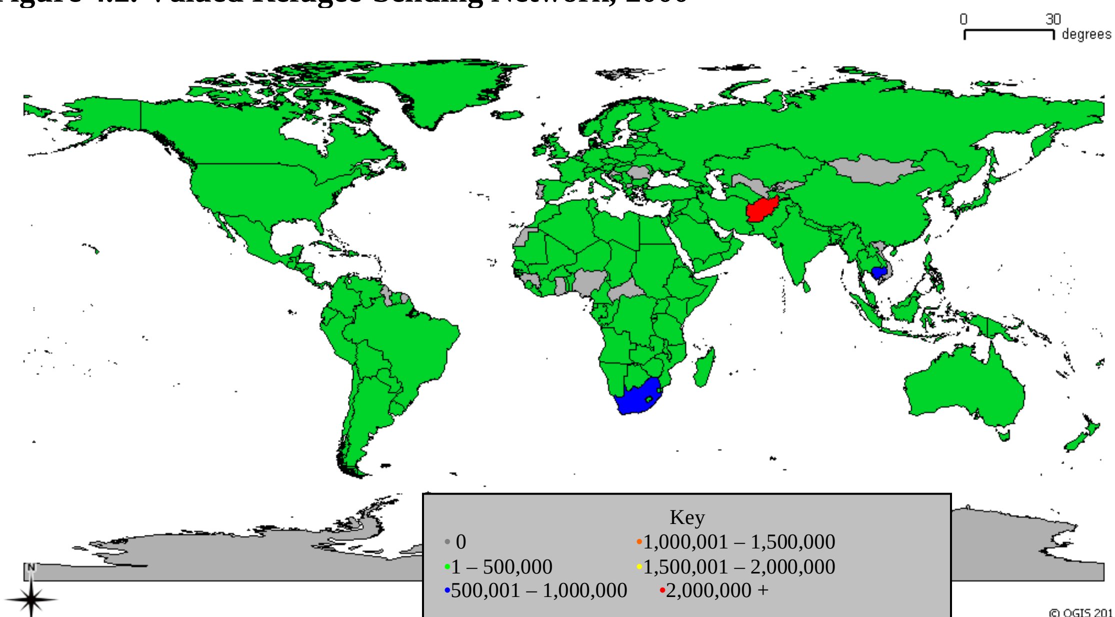


Figure 4.2. Valued Refugee-Sending Network, 2000



Visualizations of the valued migrant and refugee-sending networks are presented in Figures 4.1 and 4.2. These maps clearly portray a higher level of activity present in the migrant network. Only one country in the refugee network (Afghanistan) sends enough refugees to qualify for the highest category, while 18 countries in the migrant network reach this level. Most countries in the refugee network send far less than 500,000 refugees, while more than half of the countries in the migrant network contribute more than this number of emigrants. The migrant network also demonstrates greater variation in sending levels with multiple countries contributing migrants at each of the levels delineated in these figures.

Table 4.1. Descriptive Statistics for Sending Degree Centrality (Valued)

Measure	Migrant	Refugee
Total Ties	175,706,768	10,210,189
Mean	780,919	45,379
Minimum	171	0
Maximum	12,098,610	3,168,352
Centralization	.544%	.849%
Network Density (Average Value)	3455	186
N	225	225

Table 4.1 presents descriptive statistics for the valued migrant and refugee-sending networks. Several important differences are evident. Perhaps the most glaring of these differences is found in the scope of the two networks. The migrant network involves 17 times more actors than the refugee network, numbers reflected in the total ties and the means for each network. The greatest contributor to the migrant network (Mexico) contributed four times more migrants than the highest refugee sender (Afghanistan) contributed to the refugee network. In addition to being larger, the migrant network is also far more active than the refugee network. Every country in the migrant network contributed emigrants to the total while 38 countries did not participate in the

refugee network. This level of activity is also reflected in the network centralization scores. Network centralization demonstrates the extent to which the network is monopolized by a small number of actors. The refugee-sending network is more centralized, indicating that core actors in this network contribute a higher percentage of the total than core actors in the migrant network. The disparity in level of activity between the networks is further captured by differences in network density. For valued networks, density is a measure of average value, presenting the total number of migrants or refugees divided by the total possible ties in the network. In this network, the migrant density is much higher, reflecting the greater number of migrants involved in the network, relative to the number of refugees.

The valued migrant and refugee-receiving networks are presented in Figures 4.3 and 4.4. Again, these visualizations clearly demonstrate a higher volume of activity in the migrant network, relative to the refugee network. Only 3 countries surpass the 500,000 mark in refugees received, while 64 countries received more than this number of migrants. Northern countries and regions are the heaviest recipients of migrants; although, interestingly, not all of the highest-receiving countries have high levels of development. While a number of countries appear to be both heavy senders and heavy receivers of migrants, this is not the case with refugees. Instead, the highest refugee-receiving country (Pakistan) is located next to the highest sending country (Afghanistan), providing a clear picture of the role played by proximity in refugee movements.

Figure 4.3. Valued Migrant-Receiving Network, 2000

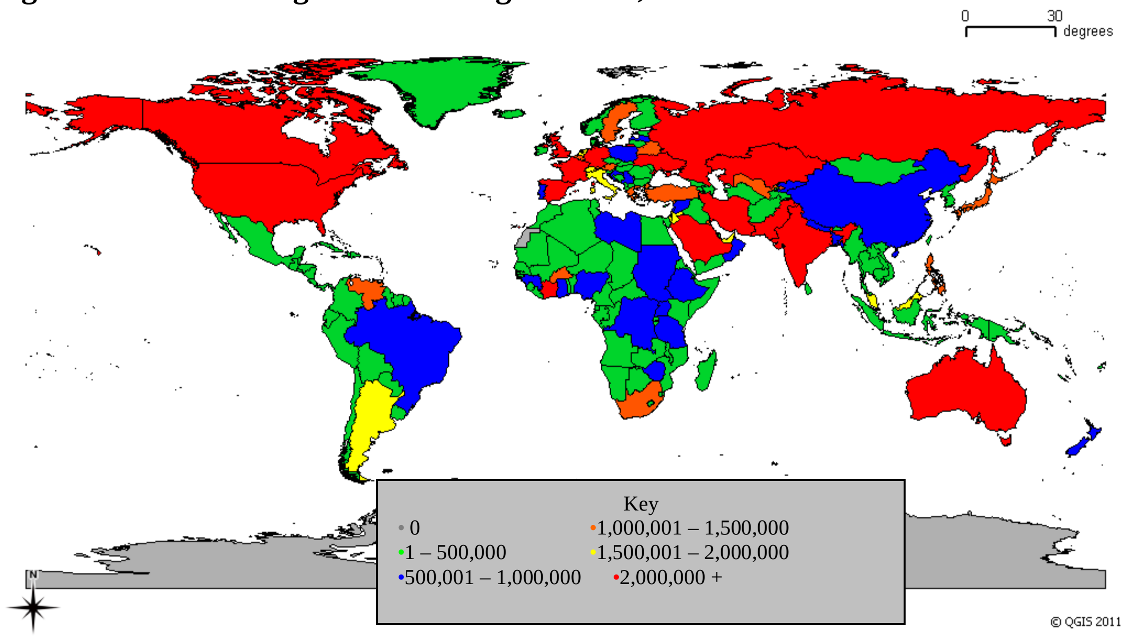
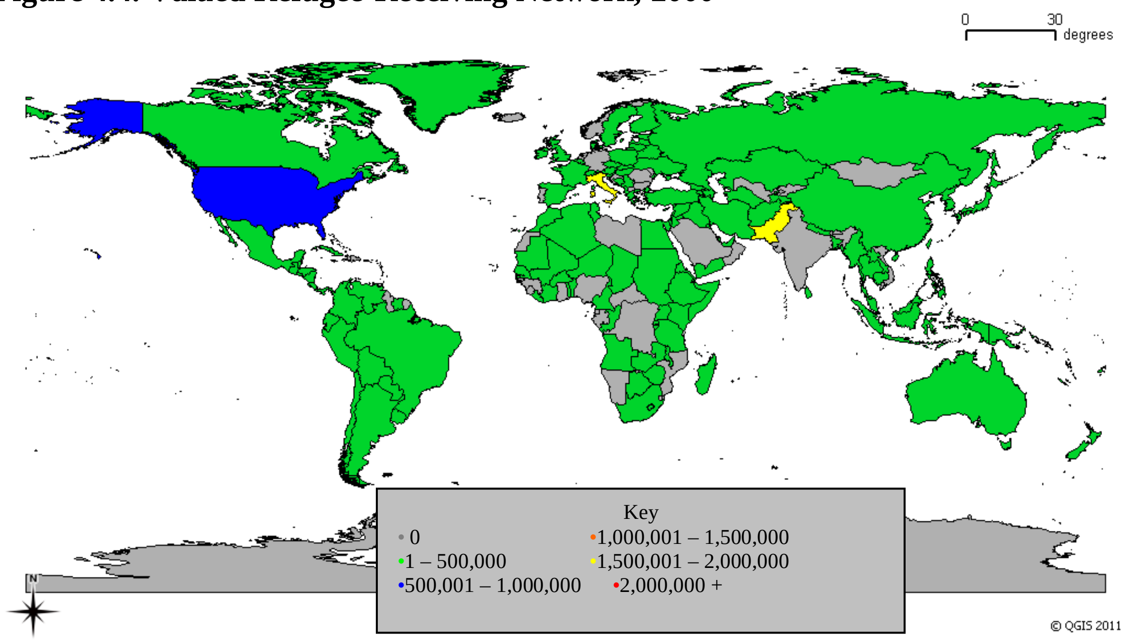


Figure 4.4. Valued Refugee-Receiving Network, 2000



The descriptive statistics for the valued receiving networks are presented in Table 4.2. As these networks involve the same numbers of actors as the receiving networks, differences in the scope of the networks are identical to those discussed previously. The most central actor in the migrant network (the United States) hosted around 18.5 times more migrants than the number of refugees hosted by the most central receiver in the refugee network (Pakistan). While both networks have non-participant countries that receive 0 migrants / refugees, the migrant network is far more centralized than the refugee network, marking an important difference in the sending and receiving networks. In fact, the network centralization score for the migrant network (1.626 percent) portrays the highest degree of centralization of any of the four valued networks in this analysis.

Table 4.2. Descriptive Statistics for Receiving Degree Centrality (Valued)

Measure	Migrant	Refugee
Total Ties	175,706,768	10,210,189
Mean	780,919	45,379
Minimum	0	0
Maximum	34,634,800	1,875,756
Centralization	1.626%	.498%
Network Density (Average Value)	3455	186
N	225	225

Visualizations of the dichotomized migrant and refugee-sending networks are presented in Figures 4.5 and 4.6. The map of the migrant network (Figure 4.5) clearly demonstrates a high level of activity, with most countries holding at least 121 sending ties. While many of these countries do not send large numbers of migrants into the network (see Figure 4.1), the migrants they do send move to a wide variety of destinations. In contrast, the dichotomized refugee network shows a high degree of regional variation in the number of sending ties held, highlighted by the volume of ties held by countries in Africa and the Middle East. At the other end of the spectrum, developed countries across Western Europe, North America, and the Pacific have few sending ties, reflecting the low numbers of refugees contributed by these countries (see Figure 4.2). This may also be the product of the ability of refugees from these more developed countries to choose destinations in similar countries.

Figure 4.5. Dichotomized Migrant Sending Network, 2000

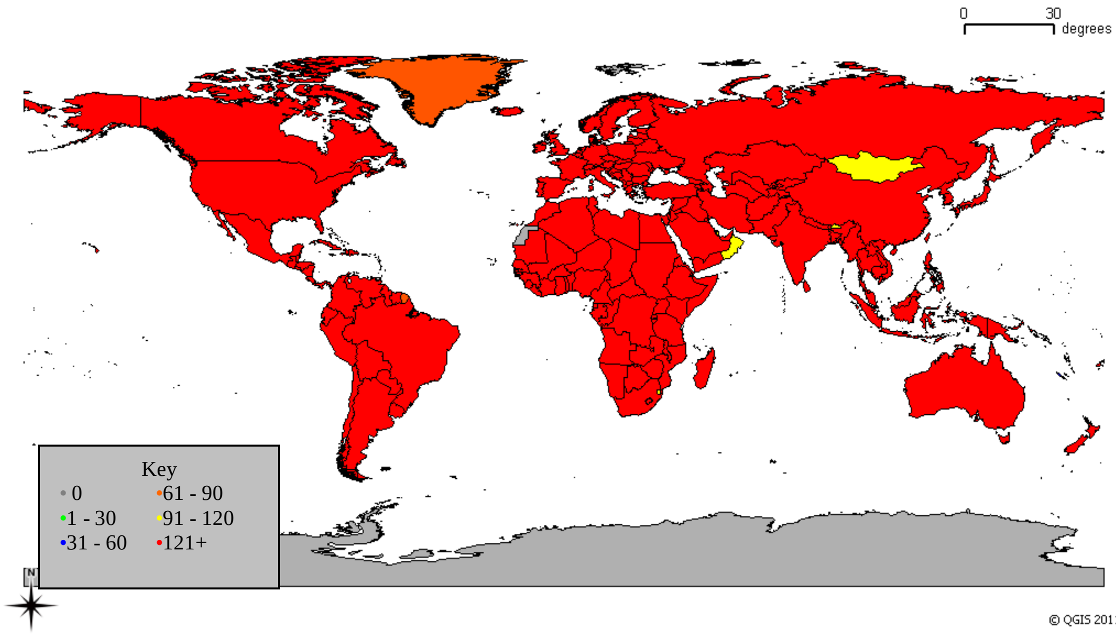


Figure 4.6. Dichotomized Refugee Sending Network, 2000

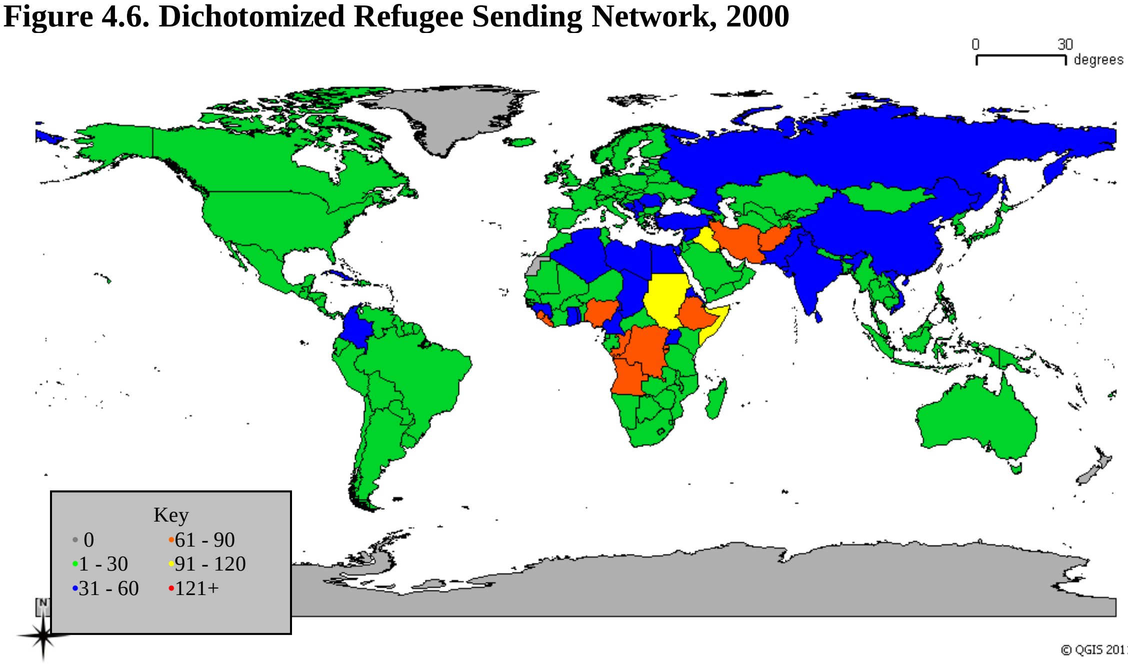


Table 4.3 presents the descriptive statistics for the dichotomized migrant and refugee sending networks. As in the comparison of valued networks, the migrant network is much larger and more active than the refugee network. The total ties and mean of the refugee network is only about 10 percent of that of the migrant network. Every country in

the migrant network participates in sending people to another country, while 38 countries in the refugee network have no sending ties. Additionally, the most central actors in the migrant network (India and the United Kingdom) have more than twice the number of ties as the most central actor in the refugee network (Sudan). The greater dispersion of ties across the migrant network leads to this network being less centralized than the refugee network. The high level of activity in the migrant network also yields far higher density score than that of the less active refugee network (.737 to .065).

Table 4.3. Descriptive Statistics for Sending Degree Centrality (Dichotomized)

Measure	Migrant	Refugee
Total Ties	37,432	3775
Mean	166.364	16.778
Minimum	21	0
Maximum	219	97
Centralization	23.603%	35.973%
Network Density	0.737	0.065
N	225	225

Figures 4.7 and 4.8 present visualizations of the dichotomized migrant and refugee receiving networks, respectively. Like the dichotomized migrant sending network (see Figure 4.5), Figure 4.7 portrays the high degree of parity that is present in the migrant network. Most countries receive migrants from at least 121 other countries. Many of the countries that fail to reach this threshold are small island nations (i.e., Niue, Tokelau) or are marked by long histories of conflict and political unrest (i.e., Sudan, Central African Republic). By contrast, the map of the dichotomized refugee-receiving network again shows clear variation in regional trends. Wealthy countries in Western Europe and North America receive refugees from the highest number of other countries. These countries generate high levels of receiving ties, as they are perceived as optimal destinations for refugees, but are often able to limit the number of refugees who are

allowed to enter. This disparity is discussed in depth in Chapter Three. A second level of receiving ties is demonstrated by a number of countries at the middle level of development (i.e., Brazil, South Africa). These countries may appear to be attractive destinations for refugees who are unable to enter the countries at the highest levels of development due to restrictive entry policies.

Figure 4.7. Dichotomized Migrant Receiving Network, 2000

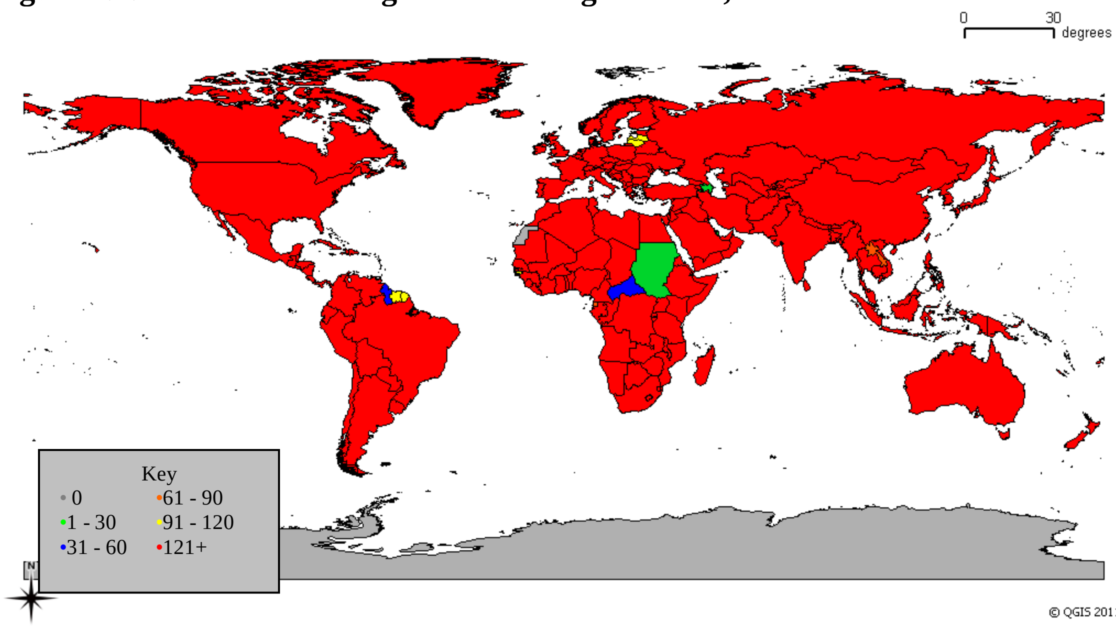
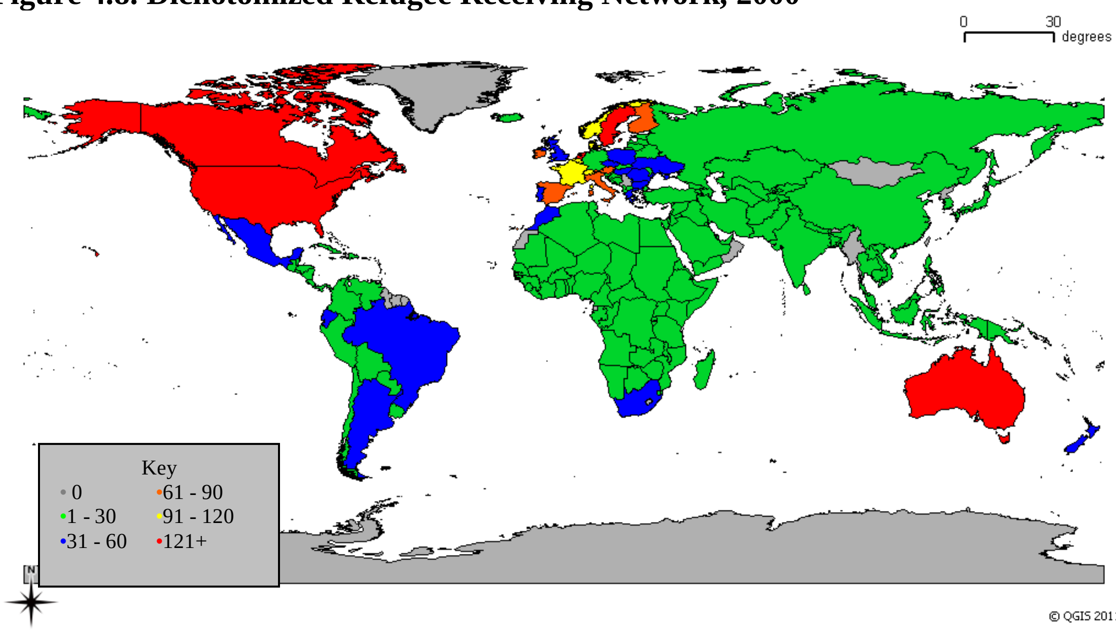


Figure 4.8. Dichotomized Refugee Receiving Network, 2000



Descriptive statistics for the migrant and refugee dichotomized receiving networks are presented in Table 4.4. As in the migrant sending network, the core actors demonstrate a high level of centrality. In fact, the most central actors in the network (i.e., Germany) receive migrants from every other country in the network. The most central actors in the refugee network (United States, Canada) receive refugees from only 167 countries in the network, demonstrating a lower level of centrality. The most noticeable difference between the receiving networks presented in this table is the disparity in network centralization scores. The refugee network is highly centralized, with a score much higher than the migrant network or either of the dichotomized sending networks. This score demonstrates that, of the dichotomized networks, the refugee-receiving network is most dominated by a core group of actors accounting for the majority of total ties in the network.

Table 4.4. Descriptive Statistics for Receiving Degree Centrality (Dichotomized)

Measure	Migrant	Refugee
Total Ties	37,432	3775
Network Density	0.737	0.065
Mean	166.364	16.778
Minimum	0	0
Maximum	224	167
Centralization	25.845%	67.363%
Network Density	0.737	0.065
N	225	225

Several key distinctions between the migrant and refugee networks emerge from these descriptive comparisons. The migrant networks are more active than the refugee networks, while the refugee networks are generally more centralized than the migrant networks. The exception to this pattern of centralization is in the valued receiving networks. The volume of migrants received by the most central actors (particularly the

United States), causes this network to be far more centralized than its refugee counterpart. The high level of activity demonstrated by countries in the migrant networks also causes these networks to be denser than refugee networks. Density scores for both valued and dichotomized networks are much higher for migrant than refugee networks. These differences are clearly demonstrated by the visualizations of the networks in which far more countries in the migrant networks participate at the highest level, relative to countries in the refugee networks.

Regional differences in the migrant and refugee networks

Figure 4.9 shows the percentage of all migrants and refugees sent by each region circa 2000. Regional percentages for the valued receiving networks are presented in Figure 4.10. These pictures of regional variation demonstrate clear differences between the migrant and refugee networks. The valued migrant-sending network has a relatively even distribution across regions, ranging from 27 percent (Eastern Europe) to around 9 percent (Middle East and Africa). In contrast, there is a wide variance between regions in the valued refugee-sending network. The Middle East is the lowest sending region in this network, accounting for only around 0.5 percent of all refugees, while Eastern Europe accounts for almost 39 percent of all refugees – led by the contribution of Afghanistan. Asia, Africa, and Latin America all send a higher percentage of refugees than migrants, reflecting high levels of conflict and political instability among countries in these regions.

The migrant and refugee valued receiving networks – presented in Figure 4.10 – demonstrate very different patterns than those of the sending networks. The percentage of both migrants and refugees received by regions are widely varied, ranging from 3.5 percent (Latin America) to 44.4 percent (Europe and the West) for migrants and from 5.2

percent (Middle East) to 39.5 percent (West) for refugees. These disparities portray clear preferences and a high degree of similarity in destination choices for both migrants and refugees.

Figure 4.9. Percentage of Sent Migrants and Refugees by Region, 2000

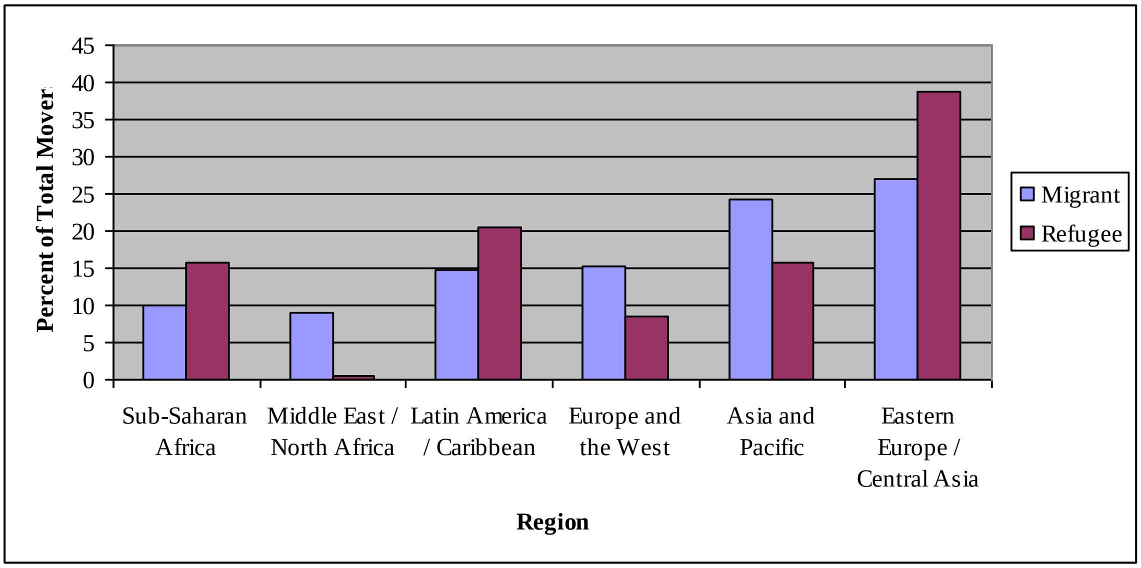


Figure 4.10. Percentage of Received Migrants and Refugees by Region, 2000

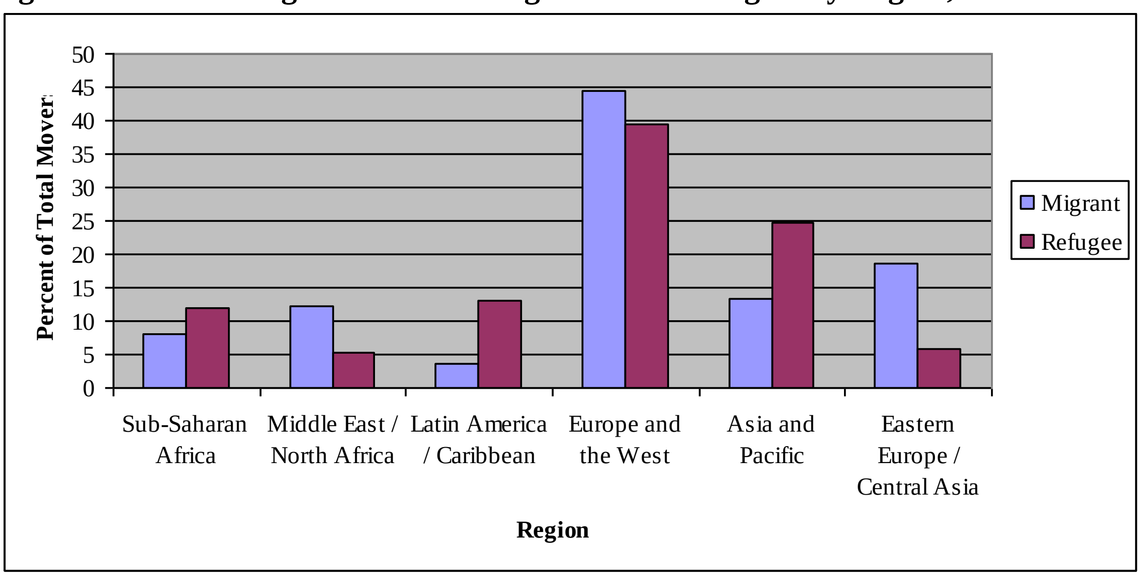


Figure 4.11. Percentage of Sending Ties Held by Region, 2000

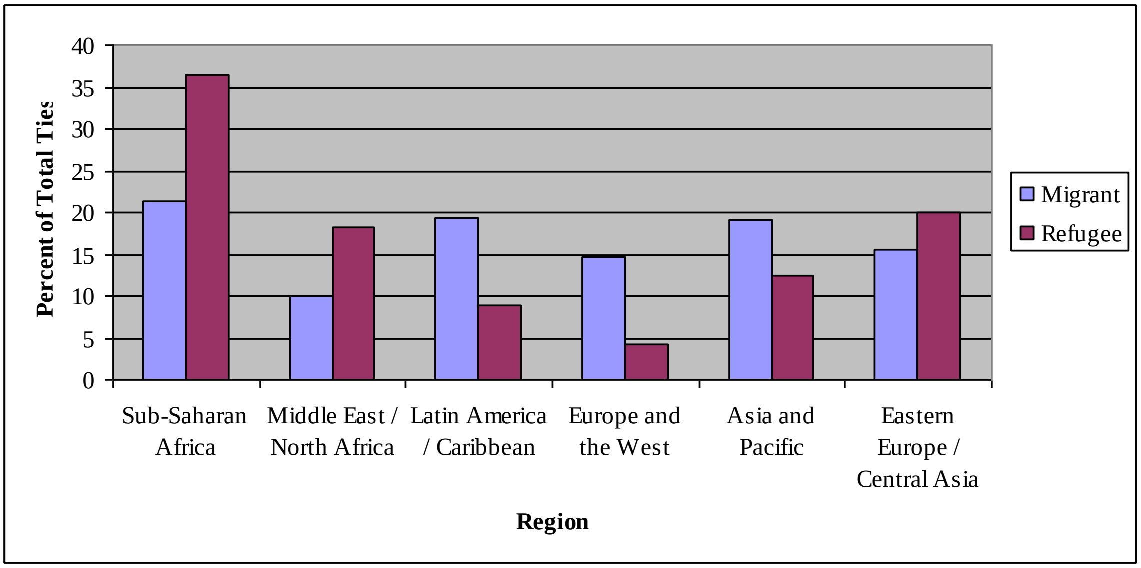
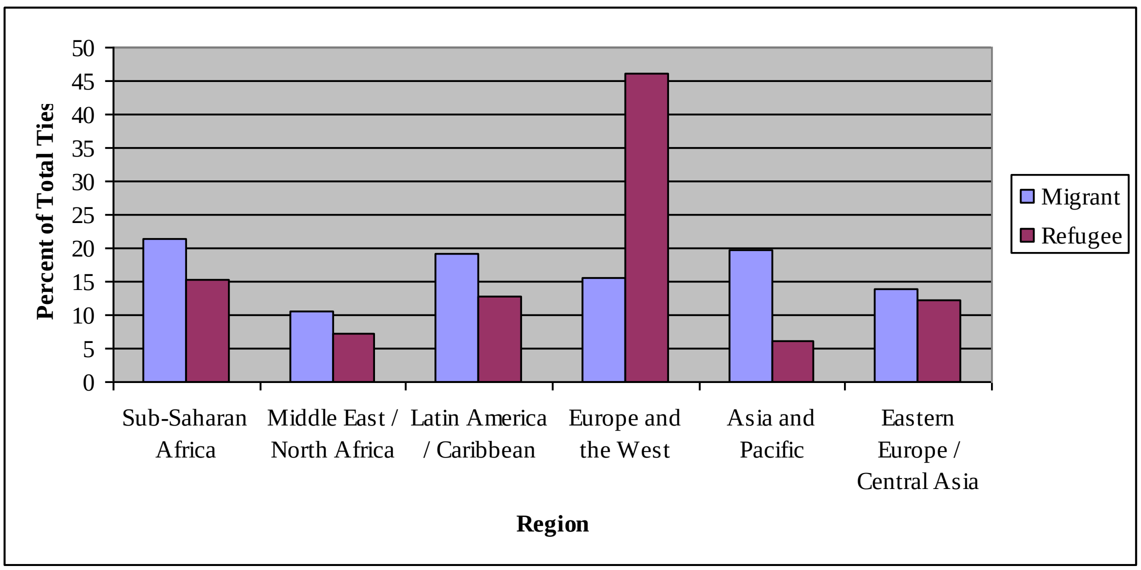


Figure 4.12. Percentage of Receiving Ties Held by Region, 2000



Figures 4.11 and 4.12 show regional variation in the dichotomized sending and receiving networks. Like the valued migrant-sending network, the dichotomized migrant-sending network displays a fairly even distribution. Middle Eastern countries hold the fewest ties at around 10 percent, while countries in Africa account for the highest percentage of ties at around 21.5 percent. This narrow dispersion reflects the high degree of participation in the network by countries in all regions and at all levels of development

(see Table 4.3). In contrast, the dichotomized refugee-sending network demonstrates a wide variance, ranging from 4 percent (West) to over 36 percent (Africa). African countries contribute to sending ties at this level due to the high volume of refugees leaving these countries and the wide dispersion of African refugees across the world through global INGO networks and networks established through previous waves of migration. High levels of conflict and the availability of a wide range of potential destinations due to proximity also contribute to the higher levels of sending centrality demonstrated by countries in Asia, the Middle East, and Eastern Europe / Central Asia. Interestingly, while the Middle East contributes the fewest refugees of any region (see Figure 4.9), those refugees account for the second highest percentage of sending ties, demonstrating a very low concentration of refugees from this region in other regions of the world. Contrasting this pattern from the Middle East, Western countries hold few sending ties, indicating that refugees from these countries tend to settle in only a few other countries, presumably other Western nations or other countries at relatively high levels of development.

The pattern demonstrated by the dichotomized receiving networks mirrors that of the sending networks, only with different regions coming to the fore. The migrant network exhibits the most even distribution of any of the networks, ranging from 10 percent (Middle East) to 21 percent (Africa). Africa, Latin America, and Asia hold the highest number of receiving ties in this network, partly due to the presence of high numbers of potential sending partners in these regions. Again contrasting the egalitarian nature of the migrant network, the dichotomized refugee network shows a high degree of regional variation, ranging from 6 percent (Asia) to 46 percent (West). Countries in

Western Europe and other highly developed democracies present the best possible destination options for refugees and, as such, receive refugees from the widest possible number of partners. While some of these countries receive large numbers of refugees, the refugee population is highly diversified. The most central countries in the dichotomized refugee-receiving network are primarily in this group (see Table 3.14). In contrast, more restrictive entry policies, lower levels of development, and fewer potential refugee sources within the region cause Asian countries to receive refugees from relatively few partners. However, there are some instances (i.e., Pakistan), where large numbers of refugees come from a single country, creating a highly concentrated refugee population, often in a small geographic area.

Summary of descriptive comparisons

These various depictions of distinctions between the global migrant and refugee networks present clear differences in the two. Most clearly, the migrant networks are far more active than the refugee networks. The valued network includes over 175 million actors, more than 17 times more than the refugee network. Likewise, over ten times more potential ties are realized in the dichotomized migrant network than in the dichotomized refugee network. Almost 75 percent (37,342) of all possible ties (50,400) are realized in the migrant network. This difference in activity level is clearly seen in the differences in means, network density levels, and number of countries contributing to the network. This greater level of activity in the migrant network is also demonstrated by the visualizations presented in Figures 4.1 to 4.8, as most countries in the migrant networks reach the maximum level of participation while countries in the refugee networks tend to exhibit the lowest level of participation.

The higher degree of activity in the migrant networks also causes them to be far more equally distributed than the refugee networks. The majority of countries in the migrant networks sends and receives migrants at high levels. In contrast, most countries participate sparingly in the refugee networks with only a few countries sending or receiving at a high level. This is reflected in higher centralization scores for most of the refugee networks relative to their migrant counterparts. The single exception to this pattern, the valued migrant-receiving network, is a product of the degree to which migrants move to highly developed countries in Western Europe and the West (see Figure 4.10), particularly the United States. Figures 4.3 and 4.4 clearly demonstrate that the wider variation in this network comes as a result of the higher levels of movers within it as most countries that receive refugees do so at the lowest level presented in these figures. The relatively narrower range of regional variation in the migrant networks compared to the comparable refugee networks further demonstrates the more egalitarian nature of the migrant networks (See Figures 4.9 to 4.12). As in the centrality comparisons, the valued migrant-sending network is the exception to this pattern, due to the domination of the network by countries in the West.

CORRELATIONS OF THE MIGRANT AND REFUGEE NETWORKS

Examining correlations between the migrant and refugee networks provides a picture of the extent to which the networks are different. Higher degrees of correlation indicate a greater degree of similarity. In this section, the results of two types of correlations are presented. Pearson's Correlation results (Table 4.5) demonstrate the extent to which the centrality scores of each migrant network are related to those of its refugee counterpart. These results were developed from a correlation analysis of centrality scores in STATA. QAP correlation results (Table 4.6 and 4.7) examine the extent to which the network matrices of both types of movement are related. These results were derived from comparisons of the networks in UCINET (1999). In these analyses and all subsequent regression analyses, the degree centrality scores for all networks are logged to account for their skewed distribution.

Table 4.5 Bivariate Correlations for Migrant and Refugee Networks, 2000

	Pearson's Correlation
Valued Sending	.098
Valued Receiving	.256***
Dichotomized Sending	.422***
Dichotomized Receiving	.335***

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)

Table 4.5 presents the pairwise Pearson's Correlation coefficients for the centrality scores of the migrant and refugee networks. The key comparisons in this table are those between the paired sets of networks (i.e., migrant and refugee valued sending). These coefficients show the extent to which the centrality scores of each migrant network are correlated to those of its corresponding refugee network. Higher correlations indicate greater levels of similarity between the networks. Of the four pairs of networks, only the valued sending networks are not significantly correlated, demonstrating that there is no statistical similarity between centrality in these networks. Each of the other network pairs is significantly correlated, albeit at different levels. The dichotomized sending networks exhibit the highest degree of correlation at .422, indicating the strongest relationship between networks for any of the pairs. While relatively high, this coefficient indicates that these networks are still more dissimilar than alike. Although weaker than the dichotomized sending networks, the dichotomized receiving networks and valued receiving networks also demonstrate significant relationships (.335 and .256, respectively). Centrality scores in these networks are correlated, but again at relatively low levels.

Table 4.6. QAP Correlation Results for Valued Migrant and Refugee Networks, 2000

	Value	Significance
Pearson Correlation	.099	.000
Hamming Distance	37,441.000	.000

Table 4.6 presents QAP correlation results for the valued migrant and refugee networks. While this procedure can develop measures of association between matrices at nominal, ordinal, and interval levels, only Pearson Correlation and Hamming Distance statistics are presented as scores for these networks are both at the interval level. The Pearson Correlation score indicates that the network matrices are significantly related, but at a very low level (.099). The Hamming Distance score further supports this result. Hamming Distance captures the extent to which scores in one matrix would have to be changed to make them the same as the second matrix. The Hamming Distance of 37,441 indicates that over 74 percent of the values in the refugee matrix would have to be changed to match their counterparts in the migrant network. These results clearly demonstrate a high degree of difference between the valued networks.

Table 4.7. QAP Correlation Results for Dichotomized Migrant and Refugee Networks, 2000

	Value	Significance
Pearson Correlation	.159	.000
Simple Matching	.330	.000
Hamming Distance	33,759.000	.000

Results of the QAP Correlation of the dichotomized migrant and refugee networks are presented in Table 4.7. As these networks are binary, Simple Matching scores can be included along with the Pearson Correlation and Hamming Distance. The Pearson Correlation of the dichotomized network indicates a stronger relationship between these matrices, compared to those of the valued networks. This is to be expected as the only possible values in dichotomized networks are “1” or “0”, creating a stronger possibility of scores matching. This coefficient still indicates a fairly weak relationship between these networks. Reflecting the proportion of cells in the two matrices that are the same, the Simple Matching score of .330 indicates that 33 percent of the cells in the migrant and refugee networks have the same value. These represent countries that have either the presence or absence of ties in both networks. The Hamming Distance demonstrates this level of similarity in another way, showing that 33,759 cells (67 percent) in the migrant matrix would have to change in order to match their counterparts in the refugee network. While this score shows that these matrices are more similar than the valued migrant and refugee matrices, the dichotomized networks are still quite different.

Correlation results show that the migrant and refugee networks are highly dissimilar. Pearson Correlation results show that while centrality scores for three of the four networks are correlated, it is at relative low levels. QAP results present a picture of network matrices that are quite different. This dualism of similarity and difference is a recurring theme across analyses, one that continues as the relationships of centrality scores and other variables are examined.

EXAMINING THE EFFECTS OF DOMESTIC CONDITIONS AND INTERNATIONAL INTEGRATION ON NETWORK CENTRALITY

Understanding how centrality scores for the different networks are affected by domestic and global factors has the potential to shed further light on the degree to which these networks differ. This section provides comparisons of OLS regression results examining the effects of a series of variables representing different areas of domestic conditions and international integration on centrality scores for the different networks. For each of the four networks (valued sending, valued receiving, dichotomized sending, dichotomized receiving), results for migrant and refugee centrality are presented and compared across five models: economic, political, demographic, environmental, and international. Each set of models includes examination of individual relationships between a single variable and the appropriate centrality score, net of regional variation. As the primary goal of this chapter is the comparison of the individual effects of these variables, full models will not be presented. For these comparisons, a floating sample is used. While the samples are different for each model, they are the same across networks, allowing for comparisons to be made.

It is expected that economic and development variables will generally be related to lower refugee sending but greater migrant sending and greater receiving centrality in both networks. Additionally, it is anticipated that political instability will be related to greater migrant and refugee sending and reduced receiving centrality across networks. A full list of hypotheses for these comparisons is available in chapter two.

Comparison of the valued sending networks

OLS regression results for analyses of centrality in the valued migrant-sending and refugee-sending networks are compared in Tables 4.8 through 4.17. Each comparison is conducted in a separate examination of a particular model. The effects of economic variables on the networks are compared in Tables 4.8 and 4.9; political variables in Tables 4.10 and 4.11; demographic variables in Tables 4.12 and 4.13; environmental variables in Tables 4.14 and 4.15; and international integration variables in Tables 4.16 and 4.17. Each table presents individual relationships for each variable and the appropriate network centrality scores, net of regional variation. Results are discussed with each set of tables and a full discussion of the comparisons is included at the end of each section.

Economic model

In the migrant results (Table 4.8), only state strength reaches significance, and only then at a marginal level. Stronger states contribute fewer migrants to the network. In the refugee analysis (Table 4.9), the same result for state strength is present at almost an identical level. Additionally, secondary enrollment demonstrates a strong negative relationship with refugee-sending centrality, indicating that countries with higher levels of secondary education contributed fewer refugees to the network.

Table 4.8. OLS Regression Results for Economic Conditions on Migrant Sending Centrality (Valued), 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.140 (.094)				
State strength			-.145† (.073)			
Economic growth				-.045 (.074)		
Urban population					-.059 (.078)	
Secondary school enrollment						-.118 (.107)
Region						
Middle East / North Africa	.025 (.082)	-.038 (.084)	.020 (.081)	.047 (.083)	.021 (.079)	-.004 (.091)
Latin America / Caribbean	-.064 (.094)	-.092 (.103)	-.016 (.101)	-.042 (.100)	-.041 (.094)	-.093 (.105)
Sub Saharan Africa	-.046 (.095)	-.163 (.127)	-.065 (.099)	.022 (.098)	-.074 (.103)	-.157 (.134)
Asia and Pacific	-.121 (.096)	-.168 (.112)	-.097 (.106)	-.074 (.102)	-.101 (.100)	-.103 (.113)
Eastern Europe / Central Asia	.020 (.087)	-.056 (.095)	-.021 (.087)	.026 (.086)	.003 (.084)	-.020 (.092)
R^2	.016	.018	.024	.013	.010	.013
N	225	189	172	175	203	165

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.9. OLS Regression Results for Economic Conditions Refugee Sending Centrality (Valued), circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.131 (.100)				
State strength			-.138† (.075)			
Economic growth				-.047 (.079)		
Urban population					-.071 (.083)	
Secondary school enrollment						-.339** (.109)
Region						
Middle East / North Africa	-.018 (.082)	-.076 (.090)	.020 (.084)	.015 (.089)	-.022 (.084)	-.080 (.093)
Latin America / Caribbean	-.024 (.095)	-.062 (.111)	.079 (.104)	-.015 (.107)	-.013 (.100)	-.030 (.108)
Sub Saharan Africa	.029 (.096)	-.112 (.137)	.029 (.102)	.062 (.105)	-.025 (.110)	-.238 (.137)
Asia and Pacific	-.050 (.096)	-.109 (.121)	.065 (.109)	.027 (.109)	-.051 (.107)	-.018 (.116)
Eastern Europe / Central Asia	.044 (.087)	-.026 (.102)	.036 (.090)	.051 (.092)	.020 (.089)	.003 (.094)
R^2	.007	.014	.026	.006	.006	.062
N	225	189	172	175	203	165

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

In both tables political terror and the presence of conflict demonstrate significant positive relationships with centrality scores. Countries that were engaged in conflict during the period and had poor human rights regimes contributed more migrants and refugees to these global networks. Political repression also demonstrates a positive relationship in both analyses, but it achieves only marginal significance in the migrant network analysis.

Table 4.10. OLS Regression Results for Political Conditions Migrant Sending Centrality (Valued), 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.158† (.086)			
Political terror		.207* (.075)		
Collapse			.028 (.068)	
Conflict				.182* (.074)
Region				
Middle East / North Africa	-.077 (.096)	-.101 (.085)	.023 (.082)	-.016 (.083)
Latin America /Caribbean	-.026 (.102)	-.039 (.103)	-.065 (.094)	-.048 (.093)
Sub Saharan Africa	-.152 (.110)	-.190 (.105)	-.052 (.097)	-.097 (.096)
Asia and Pacific	-.133 (.107)	-.108 (.107)	-.125 (.097)	-.126 (.095)
Eastern Europe / Central Asia	-.067 (.091)	-.105 (.087)	.018 (.087)	-.045 (.089)
R^2	.021	.041	.017	.043
N	185	177	225	225

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.11. OLS Regression Results for Political Conditions on Refugee Sending Centrality (Valued), circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.280**			
	(.090)			
Political terror		.284**		
		(.078)		
Collapse			.019	
			(.069)	
Conflict				.214**
				(.074)
Region				
Middle East / North Africa	-.191	-.148	-.019	-.066
	(.100)	(.088)	(.083)	(.083)
Latin America / Caribbean	-.034	-.013	-.025	-.005
	(.106)	(.107)	(.095)	(.093)
Sub Saharan Africa	-.167	-.167	.025	-.031
	(.115)	(.109)	(.097)	(.096)
Asia and Pacific	-.089	.002	-.053	-.057
	(.112)	(.111)	(.097)	(.095)
Eastern Europe / Central Asia	-.060	-.063	.043	-.031
	(.095)	(.091)	(.087)	(.089)
R^2	.053	.080	.008	.044
N	191	177	225	225

† *p*< .1 * *p*< .05 ** *p*< .01 *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Demographic model

None of the demographic variables examined in Table 4.12 demonstrate a significant relationship with migrant-sending centrality. These measures of demographic conditions within a country do not have any bearing on a country's level of emigration. In Table 4.13, only life expectancy exhibits a significant relationship with refugee-sending centrality. Countries with higher life expectancies contribute fewer refugees to the global network. This relationship achieves only marginal significance in the individual analysis.

Demographic variables seem to have very little effect on sending levels of either migrants or refugees.

Table 4.12. OLS Regression Results for Demographic Variables on Migrant Sending Centrality (Valued), 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	.003			
	(.099)			
Population density		-.007		
		(.070)		
Infant mortality			.065	
			(.103)	
Life expectancy				-.058
				(.106)
Region				
Middle East / North Africa	-.010	.025	.003	-.108
	(.090)	(.080)	(.088)	(.083)
Latin America / Caribbean	-.062	-.042	-.003	-.085
	(.105)	(.095)	(.111)	(.099)
Sub Saharan Africa	-.089	-.035	-.102	-.140
	(.126)	(.094)	(.137)	(.135)
Asia and Pacific	-.106	-.073	-.101	-.132
	(.109)	(.096)	(.116)	(.105)
Eastern Europe / Central Asia	-.006	.034	-.006	-.015
	(.087)	(.085)	(.089)	(.089)
R^2	.010	.010	.010	.013
N	194	203	189	195

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.13. OLS Regression Results for Demographic Variables on Refugee Sending Centrality (Valued), circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	.097			
	(.104)			
Population density		-.088		
		(.073)		
Infant mortality			.140	
			(.108)	
Life expectancy				-.217†
				(.111)
Region				
Middle East / North Africa	-.052	-.031	-.059	-.047
	(.095)	(.084)	(.093)	(.087)
Latin America / Caribbean	.000	-.019	-.004	-.018
	(.110)	(.099)	(.117)	(.104)
Sub Saharan Africa	-.057	-.006	-.104	-.175
	(.133)	(.098)	(.145)	(.142)
Asia and Pacific	-.024	-.012	-.031	-.055
	(.114)	(.100)	(.123)	(.110)
Eastern Europe / Central Asia	.052	.035	.003	.016
	(.092)	(.089)	(.094)	(.093)
R^2	.007	.011	.012	.022
N	194	203	189	195

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Like the results of the demographic model, environmental conditions demonstrate no significant effect on levels of migration in Table 4.14. In Table 4.15, cropland under cultivation demonstrates a marginally significant negative effect on refugee-sending centrality. Countries with more land under cultivation send fewer refugees. This may be because potential refugees in rural areas have stronger ties to the land and are less likely to leave it behind.

Table 4.14. OLS Regression Results for Environmental Conditions on Migrant Sending Centrality (Valued), 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.127 (.093)	
Cropland under cultivation		-.057 (.074)
Region		
Middle East / North Africa	-.006 (.080)	.003 (.085)
Latin America / Caribbean	-.136 (.098)	.003 (.106)
Sub Saharan Africa	-.172 (.120)	-.098 (.101)
Asia and Pacific	-.099 (.107)	-.119 (.107)
Eastern Europe / Central Asia	-.005 (.085)	.011 (.091)
R^2	.019	.023
N	194	191

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.15. OLS Regression Results for Environmental Conditions on Refugee Sending Centrality (Valued), circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.145	
	(.098)	
Cropland under cultivation		-.129†
		(.076)
Region		
Middle East / North Africa	-.024	.001
	(.084)	(.088)
Latin America / Caribbean	-.070	.107
	(.103)	(.110)
Sub Saharan Africa	-.093	.030
	(.126)	(.104)
Asia and Pacific	-.037	.025
	(.112)	(.110)
Eastern Europe / Central Asia	.038	.077
	(.090)	(.094)
R^2	.017	.024
N	194	191

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Of all of the analyses of the valued sending networks, the results presented in Tables 4.16 and 4.17 demonstrate the highest degree of difference between the two networks. For the migrant network (Table 4.16), trade openness, foreign aid (ODA), and peripheral status all have significant negative relationships with migrant-sending centrality. Countries that are more open to trade may have more opportunities for employment, reducing the need for economic emigration. By the same token, greater levels of foreign aid may also contribute to greater economic opportunities at home. For peripheral countries, potential emigrants may not have the resources necessary to leave the country or may not see the potential for economic opportunity in surrounding countries. Providing contrast to these negative relationships, INGO participation demonstrates a significant positive relationship with emigration. Countries that are more connected to the global polity through INGOs contribute more migrants to the global network than countries that hold fewer INGO membership ties.

Table 4.16. OLS Regression Results for International Integration on Migrant Sending Centrality (Valued), 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.031 (.071)				
Trade openness		-.185* (.071)			
Official Development Assistance (ODA)			-.327*** (.077)		
Semiperiphery				-.138 (.062)	
Periphery				-.468*** (.062)	
INGO membership ties					.402*** (.070)
Region					
Middle East / North Africa	-.008 (.085)	.015 (.083)	-.059 (.133)	.033 (.060)	.100 (.077)
Latin America / Caribbean	-.130 (.102)	-.037 (.099)	-.051 (.175)	.185† (.072)	.104 (.092)
Sub Saharan Africa	-.104 (.101)	-.076 (.095)	-.025 (.176)	.176† (.072)	.147 (.094)
Asia and Pacific	-.096 (.105)	-.047 (.102)	-.017 (.182)	.081 (.077)	.138 (.098)
Eastern Europe / Central Asia	-.019 (.090)	.033 (.085)	.041 (.156)	.094 (.078)	.084 (.081)
R^2	.014	.034	.109	.191	.139
N	193	173	149	144	223

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.17. OLS Regression Results for International Integration on Refugee Sending Centrality (Valued), circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.009 (.072)				
Trade openness		-.097 (.076)			
ODA			-.250** (.084)		
Semiperiphery				.208* (.082)	
Periphery				.260** (.081)	
INGO membership ties					.240** (.074)
Region					
Middle East / North Africa	-.014 (.086)	.040 (.088)	-.066 (.145)	-.029 (.079)	.027 (.082)
Latin America / Caribbean	-.067 (.104)	.041 (.105)	.011 (.192)	.128 (.095)	.077 (.098)
Sub Saharan Africa	.012 (.103)	.051 (.101)	.054 (.193)	.114 (.095)	.145 (.100)
Asia and Pacific	.029 (.107)	.028 (.109)	.056 (.200)	.050 (.101)	.108 (.104)
Eastern Europe / Central Asia	.053 (.091)	.093 (.090)	.039 (.170)	.052 (.104)	.082 (.086)
R^2	.010	.013	.062	.087	.051
N	194	173	149	144	223

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Several noteworthy differences are presented in the refugee-sending network analysis (Table 4.17). FDI penetration and trade openness do not demonstrate significant effects on levels of refugee sending. Like the migrant network analysis, ODA has a significant negative effect on the levels of refugees sent and INGO participation has a significant positive relationship. Perhaps the most important difference between the two networks is the effect of world system position. While non-significant in the migrant network model, semiperipheral status demonstrates a significant positive effect on refugee-sending centrality. Peripheral status also has a positive effect, a reversal of the relationship demonstrated in the migrant analysis. Countries in both the semiperiphery and the periphery contribute refugees at higher levels than countries in the core, with peripheral countries contributing slightly more than semiperipheral.

Discussion of valued sending network comparisons

The analyses of the valued migrant and refugee-sending networks highlight a number of similarities between the networks. The economic models show that centrality in both networks is lessened by a country's level of internal investment. Additionally, the presence of political repression, political terror, and conflict all increase centrality in both networks, although at higher levels for refugees than migrants. Finally, both demographic variables and environmental conditions have very little effect on centrality in either network. The marginal significance of life expectancy and cropland under cultivation in refugee analyses are the only exceptions to these results. The international model also presents some similarities. FDI penetration fails to achieve significance in either analysis and ODA and INGO participation demonstrate significant effects on both networks, the former having a negative relationship with centrality and the latter a positive one.

While a number of results in the international models are similar between the networks, the discovery of differential effects of some of the measures of international integration on centrality in the respective networks is a key finding from these comparisons. Trade openness reduces migrant-sending centrality, but demonstrates no effect on refugee-sending centrality. Greater trade may create internal conditions that present greater economic opportunities for potential emigrants, reducing the perceived benefit of moving to another country. It may be that these domestic economic opportunities are not enough to keep potential refugees from moving when internal conditions call for refugee movements or that countries with higher potential for refugee outflows do not attract levels of trade that would generate sufficient economic opportunities to dissuade potential refugees from moving. Whatever the case, this presents a clear difference between the networks.

The final difference observed between the networks is the effect of world system position on sending centrality. For the migration network, semiperipheral status fails to reach significance, while peripheral status has a significant negative relationship with migrant-sending centrality. Countries in the semiperiphery are not significantly different from core countries in their levels of emigration, and peripheral countries send fewer emigrants than those in the core. Residents of peripheral countries may be constrained by a lack of economic or social resources necessary for an economic migration (Piore 1979). In contrast to their effect on migrant-sending centrality, the world system measures both demonstrate significant positive relationships with refugee-sending centrality. Both semiperipheral and periphery countries send more refugees, relative to countries in the core. Of these, peripheral countries send at the highest level. This result is largely a function of a very low level of refugee sending among core countries coupled with high levels of refugees contributed by a handful of countries in the semiperiphery and periphery (see Figures 4.2 and 4.9).

These findings present a mixed bag with respect to the predictions offered in Chapter Two. Many of the predicted relationships failed to materialize in these analyses (economic growth, urban population, demographic variables, FDI penetration) or failed to emerge in both networks as predicted (secondary enrollment, state collapse, environmental conditions). Of the relationships that did emerge, several demonstrated the opposite of the predicted effect. State strength reduces centrality in both networks; conflict increases centrality in both networks; and INGO participation increases centrality across networks. While peripheral status performs in the expected direction with refugee-sending centrality, showing a positive relationship, the negative relationship it demonstrates with migrant-sending centrality is the opposite of the predicted effect. Of the two variables that were not expected to have an effect on centrality scores in these networks, only GDP per capita acted as predicted. While semiperipheral status did not demonstrate a significant effect on migrant-sending centrality (as predicted), it did have a significant effect on refugee-sending centrality, an unexpected finding. Of the hypotheses generated for the comparisons of these networks, only trade openness had the exact relationships predicted earlier.

Comparison of the valued receiving networks

Analyses of the valued migrant-receiving and refugee-receiving networks are presented in Tables 4.18 through 4.27. Each table progresses like those in the previous comparisons with individual models for each variable estimated net of regional variation. Like the comparisons of the valued network, tables are presented in pairs for comparison with the migrant network analyses followed by the refugee. The effects of economic variables on network centrality are presented in Tables 4.18 and 4.19; political variables in Tables 4.20 and 4.21; demographic in Tables 4.22 and 4.23; environmental in Tables 4.24 and 4.25; and, finally, variables examining the effects of international integration in tables 4.26 and 4.27. Each comparison includes a brief presentation of the results, with an expanded discussion following the full set of comparisons.

Economic model

Table 4.18 presents the effects of regional variation (Model 1) and economic variables on centrality in the migrant-receiving network. Among the regions, Latin America, Africa, and Asia exhibit significant negative relationships with migrant-receiving centrality. These regions receive fewer migrants than the advanced countries in Western Europe and North America (see Figure 4.10). These relationships are robust, maintaining significance across all of the models in this analysis. Among the economic variables, only state strength gains a measure (albeit marginal) of significance. Stronger states receive fewer migrants. This relationship persists at a slightly stronger level in the full model. GDP per capita, economic growth, urban population, and secondary education all fail to reach significance.

Many of the same patterns are present in the economic analysis of the refugee-receiving network (Table 4.19). In the regional model, Latin America, Africa, and Asia all demonstrate significant negative relationships, reflecting their status as low receivers relative to the West and other regions (see Figure 4.10). These relationships are less persistent across economic models than in the migrant analysis.

Table 4.18. OLS Regression Results for Economic Conditions on Migrant Receiving Centrality (Valued), 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.087 (.094)				
State strength			-.149† (.070)			
Economic growth				-.086 (.071)		
Urban population					.005 (.076)	
Secondary enrollment						-.077 (.102)
Region						
Middle East / North Africa	-.060 (.081)	-.117 (.084)	-.115 (.079)	-.032 (.080)	-.062 (.077)	-.065 (.087)
Latin America / Caribbean	-.207* (.092)	-.236* (.103)	-.261* (.098)	-.213* (.097)	-.188* (.091)	-.290** (.101)
Sub Saharan Africa	-.216* (.093)	-.297* (.036)	-.284* (.095)	-.172† (.095)	-.198† (.100)	-.356* (.129)
Asia and Pacific	-.276** (.094)	-.315** (.112)	-.318** (.102)	-.249* (.099)	-.241* (.097)	-.347** (.088)
Eastern Europe /Central Asia	-.061 (.085)	-.139 (.095)	-.160 (.084)	-.081 (.083)	-.071 (.081)	-.124 (.088)
R^2	.052	.049	.071	.052	.042	.085
N	225	189	172	175	203	165

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.19. OLS Regression Results for Economic Conditions on Refugee Receiving Centrality (Valued), circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.147				
		(.101)				
State strength			-.235**			
			(.077)			
Economic growth				.002		
				(.079)		
Urban population					-.002	
					(.084)	
Secondary enrollment						-.160
						(.113)
Region						
Middle East / North Africa	-.080	-.167†	-.132	-.065	-.082	-.096
	(.082)	(.090)	(.086)	(.089)	(.084)	(.096)
Latin America / Caribbean	-.168†	-.212*	-.136	-.143	-.120	-.185†
	(.094)	(.111)	(.107)	(.107)	(.100)	(.112)
Sub Saharan Africa	-.156†	-.330*	-.267*	-.151	-.151	-.330*
	(.095)	(.137)	(.104)	(.104)	(.110)	(.142)
Asia and Pacific	-.212*	-.295*	-.240*	-.175†	-.176†	-.274*
	(.095)	(.121)	(.112)	(.109)	(.107)	(.120)
Eastern Europe / Central Asia	-.052	-.149	-.138	-.073	-.059	-.137
	(.086)	(.102)	(.092)	(.091)	(.089)	(.097)
R^2	.028	.041	.076	.021	.019	.042
N	225	189	172	175	203	165

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Reflecting the results of the analysis of the refugee valued sending network, state strength is the only economic variable to achieve significance, demonstrating a strong negative effect on refugee-receiving centrality. As in the analysis of the migrant valued sending network, GDP per capita, economic growth, urban population, and secondary enrollment all fail to exhibit significant independent effects on refugee receiving centrality.

Political model

Table 4.20. OLS Regression Results for Political Conditions on Migrant Receiving Centrality (Valued), 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.138 (.086)			
Political terror		.124 (.074)		
Collapse			.018 (.067)	
Conflict				.168* (.073)
Region				
Middle East / North Africa	-.178† (.096)	-.207* (.084)	-.061 (.081)	-.098 (.081)
Latin America / Caribbean	-.228* (.102)	-.266* (.102)	-.207* (.093)	-.192* (.092)
Sub Saharan Africa	-.338** (.111)	-.383** (.104)	-.220* (.095)	-.263** (.095)
Asia and Pacific	-.350** (.107)	-.319** (.105)	-.279** (.095)	-.281** (.093)
Eastern Europe / Central Asia	-.169† (.091)	-.223* (.086)	-.062 (.085)	-.121 (.088)
R^2	.061	.064	.052	.075
N	191	177	225	225

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.21. OLS Regression Results for Political Conditions on Refugee Receiving Centrality (Valued), circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.107 (.093)			
Political terror		.139† (.081)		
Collapse			-.038 (.068)	
Conflict				.207** (.074)
Region				
Middle East / North Africa	-.167 (.103)	-.202† (.092)	-.078 (.082)	-.127 (.082)
Latin America / Caribbean	-.116 (.110)	-.137 (.111)	-.166† (.094)	-.150 (.092)
Sub Saharan Africa	-.250* (.119)	-.307* (.114)	-.148 (.096)	-.214* (.095)
Asia and Pacific	-.235* (.115)	-.214† (.115)	-.207* (.096)	-.218* (.094)
Eastern Europe / Central Asia	-.111 (.098)	-.166 (.095)	-.050 (.086)	-.125 (.089)
R^2	.030	.043	.029	.062
N	191	177	225	225

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Results for the analysis of the effects of political conditions on receiving centrality are presented in Tables 4.20 and 4.21. Both networks show very similar patterns with respect to these variables. Repression and collapse fail to demonstrate significant effects on receiving centrality in either network. However, conflict has a significant positive relationship with centrality in both analyses. Countries engaged in conflict have more immigrants and more refugees than those without conflict. The lone difference between these networks is in the effect of political terror. This measure achieves marginal significance in the refugee analysis, demonstrating that countries with higher levels of political terror are more central in the refugee-receiving network. The presence of this relationship provides evidence that refugees may have a reduced ability to choose a destination, relative to migrants, thus moving from one difficult human rights situation into another.

Demographic model

Table 4.22. OLS Regression Results for Demographic Variables on Migrant Receiving Centrality (Valued), 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.155 (.093)			
Population density		.038 (.067)		
Infant mortality			.027 (.102)	
Life expectancy				.055 (.101)
Region				
Middle East / North Africa	-.069 (.085)	-.074 (.078)	-.098 (.087)	-.120 (.079)
Latin America / Caribbean	-.197† (.099)	-.216* (.091)	-.194† (.110)	-.258* (.095)
Sub Saharan Africa	-.166 (.119)	-.214* (.091)	-.264† (.136)	-.246† (.129)
Asia and Pacific	-.270* (.102)	-.276** (.092)	-.312** (.116)	-.319** (.100)
Eastern Europe / Central Asia	-.142 (.082)	-.080 (.082)	-.110 (.089)	-.131 (.084)
R^2	.078	.052	.056	.069
N	194	203	189	195

† *p*< .1 * *p*< .05 ** *p*< .01 *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.23. OLS Regression Results for Demographic Variables on Refugee Receiving Centrality (Valued), circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.005 (.103)			
Population density		-.030 (.072)		
Infant mortality			.058 (.109)	
Life expectancy				-.014 (.111)
Region				
Middle East / North Africa	-.125 (.093)	-.104 (.084)	-.120 (.093)	-.128 (.087)
Latin America / Caribbean	-.139 (.109)	-.153 (.099)	-.108 (.118)	-.167 (.104)
Sub Saharan Africa	-.211 (.131)	-.184† (.098)	-.232 (.146)	-.226 (.141)
Asia and Pacific	-.235* (.113)	-.201* (.100)	-.235* (.124)	-.238* (.109)
Eastern Europe / Central Asia	-.090 (.091)	-.064 (.089)	-.095 (.095)	-.092 (.092)
R^2	.033	.028	.028	.033
N	194	203	189	195

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Tables 4.22 and 4.23 present the effects of demographic variables on centrality scores for the migrant and refugee-receiving networks, respectively. Neither analysis includes a significant effect for a demographic variable with receiving centrality in either network, demonstrating a clear lack of connection between population issues and receipt of immigrants or refugees.

Environmental model

In Table 4.24, neither CO_2 per capita nor cropland under cultivation demonstrates a significant relationship with migrant-receiving centrality. In contrast, both achieve marginal significance with the refugee-receiving network, demonstrating negative relationships with refugee-receiving centrality. It is possible that these variables are serving as proxies for level of development, which could explain the significance and direction of the effects exhibited in these models.

Table 4.24. OLS Regression Results for Environmental Conditions on Migrant Receiving Centrality (Valued), 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.102 (.091)	
Cropland under cultivation		-.093 (.073)
Region		
Middle East / North Africa	-.106 (.078)	-.147† (.085)
Latin America / Caribbean	-.299** (.096)	-.239* (.106)
Sub Saharan Africa	-.342** (.118)	-.365** (.100)
Asia and Pacific	-.293** (.105)	-.363** (.106)
Eastern Europe / Central Asia	-.118 (.084)	-.157† (.091)
R^2	.061	.096
N	194	191

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.25. OLS Regression Results for Environmental Conditions on Refugee Receiving Centrality (Valued), circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.182†	
	(.098)	
Cropland under cultivation		-.126†
		(.074)
Region		
Middle East / North Africa	-.127	-.140
	(.084)	(.086)
Latin America / Caribbean	-.240*	-.109
	(.103)	(.107)
Sub Saharan Africa	-.336*	-.251*
	(.126)	(.101)
Asia and Pacific	-.251*	-.252*
	(.112)	(.107)
Eastern Europe / Central Asia	-.096	-.098
	(.090)	(.092)
R^2	.044	.063
N	194	191

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

The international integration models, presented in Tables 4.26 and 4.27, demonstrate a number of similarities between the two networks. Neither FDI penetration nor trade openness manages to reach significance with centrality in either network. ODA has a significant negative relationship with both migrant and refugee receiving centrality, at similar levels. INGO participation has a significant positive relationship with centrality in both networks, with a stronger effect on migrant-receiving centrality than refugee centrality (.443 and .334, respectively). The key difference among these relationships is again found in the effects of world system position on centrality. For the migrant-receiving network (Table 4.26), countries in the semiperiphery and the periphery receive fewer migrants than the core, with the periphery showing the stronger negative relationship of the two. In the refugee analysis, only the periphery demonstrates a significant relationship with centrality. While peripheral countries receive fewer refugees than the core, the level of refugees received by countries in the semiperiphery is not significantly different than that of the core.

Table 4.26. OLS Regression Results for International Integration on Migrant Receiving Centrality (Valued), 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.032 (.067)				
Trade openness		-.118 (.072)			
ODA			-.208* (.079)		
Semiperiphery				-.187* (.065)	
Periphery				-.611*** (.065)	
INGO membership ties					.443*** (.068)
Region					
Middle East / North Africa	-.133 (.081)	-.081 (.083)	-.191 (.136)	-.090 (.063)	.022 (.075)
Latin America / Caribbean	-.338** (.097)	-.245* (.100)	-.276 (.180)	-.134 (.076)	-.022 (.090)
Sub Saharan Africa	-.321** (.096)	-.300** (.096)	-.298 (.181)	-.121 (.076)	-.003 (.092)
Asia and Pacific	-.314** (.100)	-.267* (.103)	-.307 (.187)	-.148 (.081)	-.011 (.096)
Eastern Europe / Central Asia	-.161† (.085)	-.127 (.085)	-.186 (.160)	-.101 (.083)	.008 (.079)
R^2	.071	.064	.066	.316	.205
N	194	173	149	144	223

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.27. OLS Regression Results for International Integration on Refugee Receiving Centrality (Valued), circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.034 (.073)				
Trade openness		-.130 (.078)			
ODA			-.227** (.082)		
Semiperiphery				-.142 (.080)	
Periphery				-.351*** (.080)	
INGO membership ties					.334*** (.072)
Region					
Middle East / North Africa	-.119 (.087)	-.091 (.091)	-.176 (.143)	-.174† (.078)	-.019 (.079)
Latin America / Caribbean	-.235* (.105)	-.160 (.108)	-.136 (.188)	-.147 (.093)	-.029 (.094)
Sub Saharan Africa	-.214† (.104)	-.236* (.104)	-.175 (.190)	-.151 (.093)	.004 (.097)
Asia and Pacific	-.190† (.108)	-.198† (.112)	-.179 (.196)	-.220* (.099)	-.002 (.101)
Eastern Europe / Central Asia	-.081 (.093)	-.078 (.093)	-.029 (.167)	-.136 (.102)	.000 (.083)
R^2	.034	.041	.069	.122	.113
N	194	173	149	144	223

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of valued receiving network comparisons

This comparison of the effects of factors on centrality in the valued migrant-receiving and refugee-receiving networks shows a high degree of similarity between the two. In the economic analysis, centrality in both networks is reduced by state strength, while GDP, growth, and other development measures fail to exert independent effects. Similarities also present themselves in the political model, where conflict is positively related to centrality in both models and political repression and collapse fail to demonstrate relationships. The lack of effect demonstrated by demographic variables on either network is another key area of similarity. Finally, in the international model, FDI penetration, trade openness, ODA, peripheral status, and INGO participation all demonstrate similar effects across both analyses.

While a good deal of the effects of variables (or lack thereof) in these analyses is similar across networks, a number of differences do occur. In the political analyses, the political terror measure demonstrates a marginally significant positive relationship with refugee-receiving centrality that does not exist in the migrant analysis. Countries with poor human rights records receive more refugees than more positive human rights regimes. This finding may provide evidence for the importance of proximity in refugee destination choices or may indicate that refugees have less time and ability to evaluate potential destinations based on these kinds of elements than migrants.

The negative effects on refugee-receiving centrality demonstrated by environmental variables are another area of difference. These variables fail to reach significance in the migrant analysis, but have marginally significant negative relationships in the refugee analysis. The effect of CO_2 persists into the full environmental model. While it is difficult to discern a theoretical reason for these relationships, their presence in these models indicates a clear distinction between migrants and refugees in conditions within destination countries.

The effects of semiperipheral status on receiving centrality differ across networks, as well. Countries in the semiperiphery receive fewer migrants, relative to the core, but show no difference in refugees received. Most countries participate in the migrant-receiving network, but core (primarily Western) countries receive a much higher percentage of migrants than those in the semiperiphery or periphery (see Figures 4.3 and 4.10). This distinction, however, is less clear in the refugee-receiving network, partially due to lower levels of participation by core countries. As core countries become more selective about refugee-receiving policies, the overflows from these countries often find their way to less-developed countries in the semiperiphery that are more open (Betts 2008). The difference presented in these analyses provides evidence for this scenario.

Like the valued sending analysis, a number of predicted relationships in the valued receiving analysis failed to emerge. GDP per capita, economic growth, enrollment, urbanization, political repression, collapse, fertility, density, CO_2, and FDI penetration all fail to demonstrate relationships of any kind in these models. While state strength does have significant relationships with both networks, they are negative, the opposite of the predicted direction. The opposite of predicted effects are also observed for conflict in the migrant model, ODA in the refugee model, and semiperipheral status in the migrant model. This analysis also demonstrates a number of correct predictions, with conflict and trade acting as expected in the refugee models and INGO participation and peripheral status demonstrating predicted relationships in both models.

Comparison of the dichotomized sending networks

Analyses of the dichotomized migrant-sending and refugee-sending networks are presented in Tables 4.28 through 4.37. Each table progresses in a similar fashion to those in the previous comparisons with individual models for each variable, net of regional variation. Like the comparisons of the valued networks, tables are presented in pairs for comparison with the migrant network analyses followed by the refugee. The effects of economic variables on network centrality are presented in Tables 4.28 and 4.29; political variables in Tables 4.30 and 4.31; demographic in Tables 4.32 and 4.33; environmental in Tables 4.34 and 4.35; and, finally, variables examining the effects of international integration in tables 4.36 and 4.37. Each comparison includes a brief discussion of the results, with an expanded discussion following the full set of comparisons.

Economic Model

The effects of regional variation (Model 1) and economic variables on the dichotomized migrant-sending network are presented in Table 4.28. The regional variables are consistently non-significant in the base model and across all economic models. This reflects the lack of regional variation demonstrated in Figure 4.11. Among the economic variables, this lack of significant effect persists. None of the economic variables demonstrates a significant relationship with dichotomized migrant-sending centrality. Generally, economic conditions do not influence centrality in this network.

The effects of these variables on the dichotomized refugee-sending network, presented in Table 4.29, tell a different tale. While the regional variables fail to reach significance in any of these models, relationships are present among the economic variables. State strength and secondary enrollment both have significant negative relationships with centrality in the dichotomized refugee-sending network. Strong states and countries with higher levels of secondary enrollment send refugees to fewer partners than countries with lower scores for these variables. In the full model, the effect of state strength does not persist; however, education remains (marginally) significant and urban population becomes marginally significant. The significant effects of these economic variables mark an important difference between the migrant and refugee networks.

Table 4.28. OLS Regression Results for Economic Conditions on Migrant Sending Centrality (Dichotomized), 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.112 (.087)				
State strength			-.085 (.068)			
Economic growth				.000 (.068)		
Urban population					-.055 (.072)	
Secondary enrollment						-.092 (.097)
Region						
Middle East / North Africa	.023 (.082)	-.026 (.078)	.016 (.076)	.043 (.076)	.018 (.073)	.014 (.082)
Latin America / Caribbean	-.106 (.094)	-.108 (.096)	-.036 (.095)	-.063 (.092)	-.078 (.087)	-.120 (.095)
Sub Saharan Africa	-.089 (.095)	-.167 (.118)	-.071 (.093)	-.027 (.090)	-.111 (.095)	-.160 (.121)
Asia and Pacific	-.183† (.095)	-.201 (.104)	-.137 (.099)	-.137 (.094)	-.146 (.093)	-.119 (.102)
Eastern Europe / Central Asia	-.041 (.086)	-.114 (.088)	-.084 (.082)	-.055 (.079)	-.068 (.077)	-.092 (.097)
R^2	.027	.020	.019	.020	.015	.019
N	225	189	172	175	203	165

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.29. OLS Regression Results for Economic Conditions on Refugee Sending Centrality (Dichotomized), circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.095 (.099)				
State strength			-.160* (.073)			
Economic growth				-.029 (.077)		
Urban population					-.067 (.081)	
Secondary enrollment						-.304** (.109)
Region						
Middle East / North Africa	-.005 (.082)	-.033 (.088)	.048 (.082)	.031 (.086)	-.003 (.082)	-.045 (.092)
Latin America / Caribbean	-.113 (.094)	-.112 (.109)	.001 (.102)	-.087 (.104)	-.094 (.097)	-.093 (.107)
Sub Saharan Africa	-.012 (.095)	-.091 (.135)	.008 (.100)	.050 (.102)	-.058 (.107)	-.239 (.136)
Asia and Pacific	-.163† (.095)	-.181 (.119)	-.034 (.107)	-.089 (.106)	-.166 (.104)	-.130 (.115)
Eastern Europe / Central Asia	-.001 (.086)	-.042 (.100)	-.001 (.088)	.015 (.089)	-.020 (.087)	-.030 (.094)
R^2	.027	.022	.026	.021	.021	.047
N	225	189	172	175	203	165

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Table 4.30 presents results for analyses of the effects of political variables on dichotomized migrant-sending centrality. Like the migrant results of the economic models, relationships are largely non-significant. Only conflict demonstrates a marginally significant positive relationship with sending centrality. Countries that experienced conflict in 2000 sent migrants to more partners than those that did not.

Table 4.30. OLS Regression Results for Political Conditions on Migrant Sending Centrality (Dichotomized), 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.117 (.077)			
Political terror		.096 (.066)		
Collapse			.055 (.068)	
Conflict				.131† (.074)
Region				
Middle East / North Africa	-.054 (.085)	-.040 (.075)	.020 (.082)	-.006 (.083)
Latin America / Caribbean	-.049 (.091)	-.036 (.091)	-.108 (.094)	-.095 (.093)
Sub Saharan Africa	-.168 (.098)	-.146 (.093)	-.101 (.096)	-.126 (.097)
Asia and Pacific	-.162 (.095)	-.097 (.094)	-.191* (.096)	-.187* (.097)
Eastern Europe / Central Asia	-.122 (.081)	-.128 (.077)	-.044 (.086)	-.087 (.090)
R^2	.021	.018	.030	.041
N	191	177	225	225

† $p<.1$ * $p<.05$ ** $p<.01$ *** $p<.001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.31. OLS Regression Results for Political Conditions on Refugee Sending Centrality (Dichotomized), circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.205*			
	(.089)			
Political terror		.260**		
		(.077)		
Collapse			.023	
			(.068)	
Conflict				.174*
				(.074)
Region				
Middle East / North Africa	-.125	-.112	-.007	-.045
	(.099)	(.087)	(.082)	(.082)
Latin America / Caribbean	-.093	-.076	-.113	-.097
	(.105)	(.106)	(.094)	(.093)
Sub Saharan Africa	-.154	-.176	-.017	-.061
	(.114)	(.108)	(.096)	(.096)
Asia and Pacific	-.176	-.112	-.167†	-.169
	(.110)	(.110)	(.096)	(.094)
Eastern Europe / Central Asia	-.079	-.096	-.002	-.063
	(.094)	(.090)	(.086)	(.089)
R^2	.031	.055	.027	.051
N	191	177	225	225

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

In contrast to the migrant results, political variables demonstrate a number of significant relationships with centrality in the dichotomized refugee-sending network. These results are presented in Table 4.31. Countries that experience higher levels of political repression, political terror, and conflict send refugees to more partners than those with greater freedom, better human rights records, and no conflict. These effects are similar in strength with political terror as the strongest (.260), followed by political repression (.205), and conflict (.174). Collapse does not demonstrate a significant effect on refugee-sending centrality.

Demographic model

Table 4.32. OLS Regression Results for Demographic Variables on Migrant Sending Centrality (Dichotomized), 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.006 (.092)			
Population density		.000 (.065)		
Infant mortality			-.004 (.091)	
Life expectancy				-.039 (.099)
Region				
Middle East / North Africa	.001 (.084)	.025 (.075)	.025 (.078)	-.007 (.077)
Latin America / Caribbean	-.092 (.097)	-.080 (.089)	-.008 (.098)	-.107 (.092)
Sub Saharan Africa	-.104 (.118)	-.068 (.088)	-.078 (.122)	-.146 (.126)
Asia and Pacific	-.144 (.101)	-.129 (.089)	-.113 (.103)	-.165 (.097)
Eastern Europe / Central Asia	-.070 (.081)	-.037 (.080)	-.063 (.079)	-.076 (.082)
R^2	.015	.015	.015	.017
N	194	202	189	195

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.33. OLS Regression Results for Demographic Variables on Refugee Sending Centrality (Dichotomized), circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.018 (.103)			
Population density		-.016 (.072)		
Infant mortality			.064 (.106)	
Life expectancy				-.130 (.110)
Region				
Middle East / North Africa	.017 (.093)	-.010 (.083)	-.014 (.090)	-.009 (.086)
Latin America / Caribbean	-.052 (.109)	-.111 (.098)	-.054 (.114)	-.085 (.103)
Sub Saharan Africa	.012 (.131)	-.032 (.097)	-.068 (.141)	-.124 (.140)
Asia and Pacific	-.087 (.113)	-.141 (.099)	-.123 (.120)	-.144 (.108)
Eastern Europe / Central Asia	.013 (.091)	-.009 (.088)	-.019 (.092)	-.008 (.092)
R^2	.011	.020	.009	.020
N	194	203	189	195

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

The results of examination of demographic variables on centrality in the dichotomized migrant and refuge-receiving networks are presented in Tables 4.32 and 4.33, respectively. Both tables clearly demonstrate a lack of relationship between these variables and centrality in either network. Demographic factors do not influence the number of partners to which countries send migrants or refugees.

Environmental model

As in the examination of the effects of Demographic Variables, the results of examining environmental effects on dichotomized sending centrality (presented in Tables 4.34 and 4.35) show that these factors do not influence levels of sending in either network. A country's number of migrant or refugee destinations is not affected by environmental conditions within the sending country.

Table 4.34. OLS Regression Results for Environmental Conditions on Migrant Sending Centrality (Dichotomized), 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.099 (.084)	
Cropland under cultivation		-.071 (.071)
Region		
Middle East / North Africa	.002 (.072)	.010 (.082)
Latin America / Caribbean	-.164 (.088)	-.022 (.103)
Sub Saharan Africa	-.183 (.109)	-.134 (.097)
Asia and Pacific	-.111 (.096)	-.148 (.103)
Eastern Europe / Central Asia	-.071 (.077)	-.049 (.088)
R^2	.021	.030
N	194	191

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.35. OLS Regression Results for Environmental Conditions on Refugee Sending Centrality (Dichotomized), circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.133 (.097)	
Cropland under cultivation		-.094 (.074)
Region		
Middle East / North Africa	-.003 (.083)	.021 (.086)
Latin America / Caribbean	-.150 (.101)	.017 (.108)
Sub Saharan Africa	-.120 (.125)	-.008 (.102)
Asia and Pacific	-.121 (.111)	-.114 (.108)
Eastern Europe / Central Asia	-.005 (.089)	.031 (.092)
R^2	.024	.030
N	194	191

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Tables 4.36 and 4.37 present a number of similarities between the effects of international integration on centrality in the migrant and refugee networks. Neither FDI penetration nor trade openness demonstrates a significant effect on centrality scores. Regional variation also fails to achieve significance in any of these models. ODA has a significant negative effect on centrality in both networks, demonstrating that foreign aid reduces the number of partners to which countries send migrants and refugees. Potential migrants or refugees in these countries may not have the means to make international moves or aid may create conditions within potential high-sending countries that make it more favorable for potential migrants or refugees to stay, rather than emigrate. Contrasting the effect of ODA, INGO participation demonstrates a significant positive effect on both sets of centrality scores. Higher levels of integration in the world polity may create networks that increase potential destinations for migrants or refugees.

The effect of world system position on centrality is the most interesting difference between networks presented in these results. For the dichotomized migrant-sending network (Table 4.36), semiperipheral status is not significant, while peripheral status has a significant negative relationship with centrality. Countries in the semiperiphery send migrants to partners at a similar rate to countries in the core, while peripheral countries send to fewer partners. The effects of world system position on centrality in the dichotomized refugee-sending network (Table 4.37) are quite different. Both semiperipheral and peripheral status demonstrate significant positive relationships with refugee-sending centrality. Countries at these positions send refugee to more partners than their counterparts in the core, with peripheral countries having more partners than those in the semiperiphery.

Table 4.36. OLS Regression Results for International Integration on Migrant Sending Centrality (Dichotomized), 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.096 (.066)				
Trade openness		-.124 (.064)			
ODA			-.310*** (.071)		
Semiperiphery				-.111 (.046)	
Periphery				-.400*** (.046)	
INGO membership ties					.410*** (.068)
Region					
Middle East / North Africa	.004 (.080)	.021 (.074)	-.064 (.123)	.040 (.045)	.100 (.074)
Latin America / Caribbean	-.162 (.096)	-.064 (.089)	-.112 (.163)	.092 (.054)	.060 (.089)
Sub Saharan Africa	-.121 (.095)	-.096 (.086)	-.088 (.164)	.123 (.054)	.104 (.091)
Asia and Pacific	-.140 (.099)	-.071 (.092)	-.093 (.170)	.009 (.057)	.089 (.095)
Eastern Europe / Central Asia	-.079 (.084)	-.053 (.076)	-.017 (.145)	.044 (.059)	.022 (.078)
R^2	.027	.021	.103	.132	.152
N	194	173	149	144	223

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.37. OLS Regression Results for International Integration on Refugee Sending Centrality (Dichotomized), circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.038 (.071)				
Trade openness		-.096 (.075)			
ODA			-.306*** (.080)		
Semiperiphery				.243* (.076)	
Periphery				.308** (.075)	
INGO membership ties					.306*** (.072)
Region					
Middle East / North Africa	.008 (.085)	.059 (.087)	-.045 (.138)	-.059 (.074)	.051 (.079)
Latin America /Caribbean	-.153 (.103)	-.032 (.104)	-.087 (.183)	-.008 (.088)	.015 (.095)
Sub Saharan Africa	-.021 (.102)	.028 (.100)	.021 (.184)	.048 (.088)	.135 (.097)
Asia and Pacific	-.052 (.106)	-.036 (.107)	-.054 (.190)	-.031 (.094)	.034 (.101)
Eastern Europe / Central Asia	.006 (.090)	.051 (.089)	-.015 (.162)	.022 (.096)	.047 (.083)
R^2	.021	.017	.101	.097	.096
N	194	173	149	144	223

† *p*< .1 * *p*< .05 ** *p*< .01 *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of dichotomized sending network comparisons

The comparison of these networks is marked by both similarities and important differences. Demographic and environmental factors in sending countries do not affect sending centrality in either network. Regional variation shows very little effect on either network across most models. Additionally, GDP per capita, economic growth, urban population, state collapse, FDI penetration, and trade openness fail to demonstrate significant relationships with dichotomized sending centrality. Many of the variables that do have effects on centrality affect both networks in similar ways, particularly in the international model. ODA and INGO participation demonstrate similar relationships with centrality in both networks.

While a number of similarities exist between these networks, the comparisons reveal a number of ways in which centrality scores are affected differently by variables in these models. In the economic model, state strength and education both reduce sending centrality in the refugee network, while demonstrating no effect on migrant centrality. While strong states are associated with fewer sent refugees (Table 4.9), they also send fewer migrants (Table 4.8). However, as there are far fewer refugees in the global network compared to migrants (see Table 4.3), there are also fewer potential sending ties. This reduced level of activity may allow for elements like state strength to demonstrate a significant effect in this less active network. It may also be that residents of stronger states who choose to move as refugees have more ability to choose their host, thus eliminating less desirable destination options. The effect of enrollment levels may reflect the presence of a more educated population or greater levels of stability that allow for more students to participate in school. Either of these could lead to reduced refugee flows.

The political models demonstrate the greatest level of difference between the networks. While the migrant analysis (Table 4.30) shows that only conflict has a significant effect on sending centrality, political repression, political terror, and conflict all have significant relationships with refugee-sending centrality (Table 4.31). These are not surprising findings, but they mark important differences between the networks. Refugee sending ties are affected by internal political conditions in the sending country, while migrant ties are largely not. Many of the countries that experience these conditions have done so for an extended period of time, creating opportunities for refugees to move to more varied destinations as potential hosts become more or less receptive to refugees or as refugees move from one location to another.

The differential effects of world system position on centrality are a final important difference between these networks. Countries in the periphery send migrants to fewer partners than countries in the core. It may be that migrants from these countries have fewer resources to migrate across long distances or that there are fewer established networks through which migrants from poor countries move. In contrast, peripheral countries have more refugee-sending ties than core countries. This is largely a product of the volume of refugees sent by poor countries, relative to their wealthier counterparts. It may also reflect the ability of refugees from core countries to choose destinations in other core countries while refugees from the periphery tend to reach destinations based on proximity, placement by INGOs or other organizations, family networks, or limits placed by receiving policies. These factors result in the potential for greater dispersion.

Differences in the effect of semiperipheral status also emerge between these networks. While being in the semiperiphery has no effect on migrant-sending centrality, semiperipheral countries are more central in the dichotomized refugee-sending network than their counterparts in the core. Core countries contribute very few refugees to the network and, therefore, hold very few ties. As semiperipheral countries contribute more refugees, they have greater potential for sending ties, potential that appears to be realized.

Many of the predicted relationships for these analyses are realized in these results. GDP per capita and state strength; enrollment, political repression, political terror, and conflict in the refugee models; ODA and INGO participation in the migrant models; and peripheral status all demonstrate significant relationships in the predicted directions. Like previous analyses, a number of variables operate in the opposite of the predicted direction. In refugee models, the effects ODA, and INGO participation are the reverse of predictions, as is that of conflict in the migrant model. While semiperiphery was not expected to affect these centrality scores, it demonstrates a positive effect on refugee-sending centrality. Economic growth, urbanization, collapse, demographic variables, environmental conditions, FDI penetration and trade openness all fail to achieve predicted relationships across these models.

Comparison of the dichotomized receiving networks.

The final set of comparisons examines effects on centrality in the dichotomized migrant-receiving and refugee-receiving networks. Results of these analyses are presented in Tables 4.38 through 4.47. Each table progresses like those in the previous comparisons with individual models for each variable, net of regional variation. Like the comparisons of the valued network, tables are presented in pairs for comparison with the migrant network analyses followed by the refugee. The effects of economic variables on network centrality are presented in Tables 4.38 and 4.39; political variables in Tables 4.40 and 4.41; demographic in Tables 4.42 and 4.43; environmental in Tables 4.44 and 4.45; and, finally, variables examining the effects of international integration in Tables

4.46 and 4.47. Each comparison includes a brief discussion of the results, with an expanded discussion following the full set of comparisons.

Economic model

Table 4.38. OLS Regression Results for Economic Conditions on Migrant Receiving Centrality (Dichotomized), 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.062 (.089)				
State strength			-.115 (.051)			
Economic growth				-.061 (.070)		
Urban population					-.081 (.070)	
Secondary enrollment						-.018 (.084)
Region						
Middle East / North Africa	.023 (.083)	.007 (.080)	.027 (.057)	.024 (.080)	.024 (.071)	.070 (.071)
Latin America / Caribbean	-.086 (.095)	-.115 (.099)	-.044 (.071)	-.125 (.097)	-.100 (.085)	-.033 (.083)
Sub Saharan Africa	-.091 (.096)	-.086 (.122)	-.023 (.070)	-.049 (.094)	-.083 (.093)	-.085 (.105)
Asia and Pacific	-.092 (.097)	-.076 (.108)	-.071 (.075)	-.044 (.098)	-.073 (.091)	-.039 (.089)
Eastern Europe / Central Asia	-.053 (.087)	-.098 (.091)	-.133 (.061)	-.085 (.082)	-.078 (.076)	-.106 (.073)
R^2	.011	.012	.028	.016	.014	.020
N	224	188	171	174	202	164

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.39. OLS Regression Results for Economic Conditions on Refugee Receiving Centrality (Dichotomized), circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.138 (.101)				
State strength			-.149† (.078)			
Economic growth				-.033 (.077)		
Urban population					.030 (.083)	
Secondary enrollment						-.080 (.113)
Region						
Middle East / North Africa	-.003 (.082)	-.083 (.090)	-.078 (.087)	.027 (.086)	-.006 (.084)	-.011 (.096)
Latin America / Caribbean	-.174† (.094)	-.210† (.111)	-.161 (.108)	-.178† (.104)	-.143 (.100)	-.188 (.111)
Sub Saharan Africa	-.125 (.095)	-.271† (.137)	-.212† (.106)	-.096 (.102)	-.095 (.109)	-.247 (.141)
Asia and Pacific	-.171† (.095)	-.245* (.121)	-.200† (.113)	-.152 (.106)	-.115 (.107)	-.226 (.119)
Eastern Europe / Central Asia	-.049 (.086)	-.134 (.102)	-.120 (.093)	-.060 (.089)	-.046 (.089)	-.111 (.097)
R^2	.028	.032	.039	.032	.019	.040
N	225	189	172	175	203	165

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Results of analyses examining the effects of economic variables on dichotomized migrant and refugee-receiving centrality are presented in Tables 4.38 and 4.39, respectively. The migrant results show that there are no significant effects of regional variation or economic conditions on migrant-receiving centrality. The results with refugee-receiving centrality fare little better. Among the regional variables, Latin America and Asia have marginally significant negative relationships with centrality, confirming that these regions hold fewer receiving ties relative to countries in the more developed West (see Figure 4.12). The significance of regional variation comes and goes across models, occasionally including Sub-Saharan Africa (Models 2 and 3), but rarely reaches significance at the .05 level. Among the economic variables, only state strength demonstrates any level of significance, and then only at a marginal level. GDP per capita, economic growth, urban population, and secondary enrollment do not influence refugee-receiving ties in individual models.

Political models

Results of analyses of the effects of political variables on dichotomized migrant and refugee receiving centrality show a high degree of similarity between the networks. In individual models, political repression, political terror, and collapse all fail to reach significance with either centrality measure. However, conflict demonstrates a significant positive effect on receiving centrality for both networks. Countries that experienced conflict during this period received more migrants and refugees than those that did not. Beyond these similarities, regional variation presents a key difference. As in the economic model, none of the regional variables have significant relationships with migrant centrality, while Latin America, Sub-Saharan Africa, Asia, and Eastern Europe all move in and out of significance in different models of the refugee analysis. Each of these receives refugees from fewer partners than the West.

Table 4.40. OLS Regression Results for Political Conditions on Migrant Receiving Centrality (Dichotomized), 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.054 (.069)			
Political terror		.062 (.061)		
Collapse			.058 (.068)	
Conflict				.141† (.075)
Region				
Middle East / North Africa	-.019 (.076)	-.023 (.069)	.019 (.083)	-.008 (.084)
Latin America / Caribbean	-.041 (.081)	-.034 (.084)	-.088 (.096)	-.073 (.095)
Sub Saharan Africa	-.104 (.088)	-.117 (.086)	-.103 (.098)	-.129 (.098)
Asia and Pacific	-.116 (.085)	-.047 (.087)	-.100 (.098)	-.095 (.097)
Eastern Europe /Central Asia	-.124 (.072)	-.137 (.072)	-.056 (.088)	-.102 (.091)
R^2	.013	.016	.014	.027
N	190	176	224	224

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.41. OLS Regression Results for Political Conditions on Refugee Receiving Centrality (Dichotomized), circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.095 (.092)			
Political terror		.108 (.082)		
Collapse			-.097 (.068)	
Conflict				.133† (.074)
Region				
Middle East / North Africa	-.090 (.102)	-.144 (.093)	.003 (.081)	-.033 (.083)
Latin America / Caribbean	-.141 (.109)	-.182† (.112)	-.170 (.093)	-.163† (.093)
Sub Saharan Africa	-.216† (.118)	-.302* (.115)	-.104 (.096)	-.162† (.096)
Asia and Pacific	-.213† (.114)	-.222* (.116)	-.158 (.096)	-.176† (.095)
Eastern Europe / Central Asia	-.124 (.097)	-.192† (.095)	-.044 (.086)	-.096 (.090)
R^2	.024	.037	.037	.042
N	191	177	225	225

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Demographic models

As in the analyses of centrality in the dichotomized migrant and refugee-sending networks, demographic variables consistently fail to demonstrate significant relationships with centrality in the dichotomized migrant-receiving and refugee-receiving networks. Results of these analyses – presented in Tables 4.42 and 4.43 – show that the only significant effects are those of regional variation that have been observed in previous analyses of the refugee-receiving network. Fertility, population density, infant mortality, and life expectancy do not affect centrality in these networks.

Table 4.42. OLS Regression Results for Demographic Variables on Migrant Receiving Centrality (Dichotomized), 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.031			
	(.090)			
Population density		.034		
		(.064)		
Infant mortality			-.097	
			(.081)	
Life expectancy				.030
				(.096)
Region				
Middle East / North Africa	.018	.022	.053	.010
	(.082)	(.074)	(.069)	(.076)
Latin America / Caribbean	-.102	-.102	.022	-.111
	(.096)	(.087)	(.087)	(.091)
Sub Saharan Africa	-.040	-.038	.035	-.038
	(.115)	(.087)	(.108)	(.123)
Asia and Pacific	-.053	-.079	-.046	-.057
	(.099)	(.088)	(.092)	(.096)
Eastern Europe / Central Asia	-.094	-.074	-.067	-.089
	(.080)	(.078)	(.071)	(.081)
R^2	.012	.012	.017	.012
N	193	202	188	194

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.43. OLS Regression Results for Demographic Variables on Refugee Receiving Centrality (Dichotomized), circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.032 (.103)			
Population density		-.048 (.072)		
Infant mortality			.045 (.109)	
Life expectancy				.013 (.110)
Region				
Middle East / North Africa	-.043 (.093)	-.032 (.084)	-.045 (.093)	-.053 (.086)
Latin America / Caribbean	-.175† (.109)	-.188† (.099)	-.129 (.117)	-.200† (.103)
Sub Saharan Africa	-.158 (.131)	-.153 (.098)	-.192 (.145)	-.173 (.141)
Asia and Pacific	-.182 (.113)	-.147 (.100)	-.201† (.123)	-.198† (.109)
Eastern Europe / Central Asia	-.089 (.091)	-.059 (.089)	-.090 (.095)	-.086 (.092)
R^2	.029	.029	.022	.031
N	194	203	189	195

† p< .1 * p< .05 ** p< .01 *** p< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Tables 4.44 and 4.45 present the results of examinations of the effects of environmental variables on receiving centrality in the dichotomized migrant and refugee networks. In the migrant analysis (Table 4.44), neither CO_2per capita nor cropland under cultivation demonstrates a significant effect on receiving centrality. These environmental conditions do not influence the number of migrant-receiving partners held by countries.

In contrast, the refugee analysis (Table 4.45) demonstrates that these variables do affect levels of refugee-receiving ties held by countries. Both CO_2per capita and cropland under cultivation have significant negative relationships with refugee-receiving centrality, although CO_2per capita is only marginally significant. Both of these environmental conditions reduce the number of receiving ties held by refugee-receiving countries.

Table 4.44. OLS Regression Results for Environmental Conditions on Migrant Receiving Centrality (Dichotomized), 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.049 (.073)	
Cropland under cultivation		-.072 (.078)
Region		
Middle East / North Africa	.022 (.063)	-.019 (.091)
Latin America / Caribbean	-.066 (.077)	-.117 (.114)
Sub Saharan Africa	-.085 (.094)	-.162 (.108)
Asia and Pacific	-.069 (.084)	-.094 (.114)
Eastern Europe / Central Asia	-.094 (.067)	-.102 (.098)
R^2	.010	.022
N	193	190

† p< .1   * p< .05   ** p< .01   *** p< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.45. OLS Regression Results for Environmental Conditions on Refugee Receiving Centrality (Dichotomized), circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.186† (.098)	
Cropland under cultivation		-.177* (.074)
Region		
Middle East / North Africa	-.059 (.084)	-.074 (.086)
Latin America / Caribbean	-.264* (.102)	-.160 (.107)
Sub Saharan Africa	-.322* (.126)	-.231* (.102)
Asia and Pacific	-.223* (.112)	-.202† (.108)
Eastern Europe / Central Asia	-.098 (.090)	-.099 (.092)
R^2	.049	.068
N	194	191

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

The effects of international variables on centrality in the respective receiving networks exhibit a number of differences between the two. As in previous models, regional variation is only significant in the refugee analysis, with several regions moving in and out of significance in different models. When comparing models, several differences emerge. Trade openness and ODA are not significant in the migrant analysis, but both demonstrate significant (marginally so for trade openness) negative relationships with centrality in the dichotomized refugee-receiving network. Global trade integration and receipt of development assistance reduce the number of refugee receiving ties held by countries. As in comparisons of the dichotomized sending networks, world system position demonstrates different effects on migrant and refugee-receiving centrality. In the migrant analysis, only peripheral status has a significant effect on receiving centrality; countries in the periphery have fewer receiving ties than countries in the core. By contrast, both peripheral and semiperipheral status have a significant negative effect on levels of refugee-receiving ties.

Table 4.46. OLS Regression Results for International Integration on Migrant Receiving Centrality (Dichotomized), 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	-.068 (.051)				
Trade openness		-.019 (.071)			
ODA			-.072 (.065)		
Semiperiphery				-.040 (.072)	
Periphery				-.263** (.072)	
INGO membership ties					.342*** (.073)
Region					
Middle East / North Africa	.010 (.062)	.027 (.083)	-.060 (.113)	.040 (.070)	.085 (.080)
Latin America / Caribbean	-.008 (.075)	-.122 (.100)	-.097 (.149)	-.069 (.084)	.055 (.096)
Sub Saharan Africa	-.086 (.074)	-.049 (.097)	-.129 (.150)	.053 (.084)	.073 (.099)
Asia and Pacific	-.081 (.077)	-.037 (.103)	-.117 (.155)	.028 (.090)	.100 (.103)
Eastern Europe / Central Asia	-.114 (.066)	-.082 (.085)	-.216 (.132)	-.015 (.091)	-.001 (.085)
R^2	.018	.016	.030	.077	.104
N	193	172	149	143	222

† $p<.1$ * $p<.05$ ** $p<.01$ *** $p<.001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.47. OLS Regression Results for International Integration on Refugee Receiving Centrality (Dichotomized), circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.038 (.073)				
Trade openness		-.136† (.078)			
ODA			-262** (.083)		
Semiperiphery				-.160† (.075)	
Periphery				-.542*** (.074)	
INGO membership ties					.355*** (.071)
Region					
Middle East / North Africa	-.047 (.088)	-.048 (.091)	-.244 (.143)	-.066 (.072)	.063 (.078)
Latin America / Caribbean	-.212* (.106)	-.170 (.108)	-.405* (.188)	-.124 (.087)	-.026 (.094)
Sub Saharan Africa	-.176 (.105)	-.209† (.104)	-.399† (.190)	-.097 (.087)	.046 (.096)
Asia and Pacific	-.139 (.109)	-.172 (.112)	-.351† (.196)	-.132 (.092)	.051 (.100)
Eastern Europe / Central Asia	-.076 (.093)	-.083 (.093)	-.231 (.167)	-.068 (.095)	.007 (.082)
R^2	.027	.039	.104	.251	.125
N	194	173	149	144	223

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

While differences occur across models, similarities exist as well. As in previous comparisons, FDI penetration fails to demonstrate a significant effect in either analysis. Additionally, INGO participation has a significant positive relationship with centrality in both networks.

Discussion of dichotomized receiving network comparisons

The comparison of the effects of domestic conditions and international integration on centrality in the dichotomized migrant-receiving and refugee-receiving networks reveals a number of similarities and differences between the two. Among the economic variables, GDP per capita, economic growth, urban population, and secondary enrollment all fail to reach significance with centrality in either network. Political models in these analyses are also identical across networks. Political repression, political terror, and collapse all fail to achieve significance, but conflict demonstrates a marginally significant relationship with both migrant and refugee-receiving centrality. The demographic models are also identical, demonstrating no significant effects of demographic variables on dichotomized receiving centrality in either network. Finally, FDI penetration and INGO participation affect centrality similarly in the international model with the former having no effect and the latter increasing centrality in both networks. Greater participation in the global polity through INGOs may create larger potential receiving networks as countries connect through participation in organizations. It is also possible that scripts are dispersed through these institutions that value openness to migration from as many partners as possible, potentially increasing the willingness of countries to receive both migrants and refugees more widely. Interestingly, findings in Chapter Three demonstrate that this willingness to receive refugees from many partners does not necessary indicate a willingness to receive large numbers of refugees (see Table 3.17).

While there are many similarities between effects on centrality in these networks, key differences emerge as well. Regional variation is consistently different between the networks. Regional variables fail to reach significance with dichotomized migrant-receiving centrality in almost every model. This reflects the lack of regional variation in this network depicted in Figure 4.12. By contrast, several of the regional variables move in and out of significance across models in all of the analyses. While the Middle East is not significant in any of the models, Latin America, Sub-Saharan Africa, Asia, and Eastern Europe all demonstrate significant negative relationships with dichotomized refugee-receiving centrality at different points in the analysis.

While relatively minor, the differential effect of state strength in the economic model represents a clear difference between the networks. Stronger states receive refugees from fewer partners, perhaps indicating a greater level of control over the receiving process in these countries. Whatever the case, these results differentiate the refugee network from the migrant network.

One of the clearest differences between these networks is presented in the environmental models. While neither of the variables has a significant effect on migrant-receiving centrality, both CO_2per capita levels and cropland under cultivation yield fewer refuge-receiving partners. There is no clear theoretical connection that accounts for this result, but it is possible that these variables are serving as proxies for levels of development, as many of the countries at the highest levels for these variables are smaller countries at medium-low to low levels of development.

The final key difference between the networks identified in this comparison is in the effects of international integration variables on centrality in the networks. While similarities exist in the effects of FDI and INGOs on the networks, key differences also present themselves. Trade openness and ODA exhibit significant negative effects on refugee-receiving centrality that are not present in the migrant models. Greater trade participation and the receipt of foreign aid yield fewer refugee-receiving ties. The aid finding is more easily interpreted, as countries that need to receive foreign aid are less attractive destinations for refugees and may, therefore, only attract refugees from countries in close proximity who have little autonomy in destination decisions. The trade finding is more difficult to interpret. Countries that participate at higher levels in the global trade network receive refugees from fewer partners. While some of the most active countries in global trade receive refugees at high levels (see Table 3.14), many countries at high and medium levels of activity are less active in receiving refugees. This finding is consistent with these realities as the volume of lesser receiving countries may negate the influence of high-trade, high-receiving countries.

In addition to trade and ODA, the networks differ in the effects of world system position on centrality. In the migrant network, only peripheral status has a significant relationship. Countries in the periphery hold fewer receiving ties relative to the core. These countries would be less attractive destinations to migrants, who tend to move for education or economic opportunities. In contrast, both semiperipheral and peripheral status are negatively related to dichotomized refugee-receiving centrality. This finding reflects the finding in Chapter Three that the top countries in receiving centrality tend to be wealthier, developed countries (see Table 3.14).

Like the analysis of the dichotomized sending networks, a number of relationships emerge as predicted in these results. The lack of effect of GDP per capita, infant mortality, and life expectancy are all as predicted. The negative effect of peripheral status and the positive effects of INGO participation on centrality in both networks also follow predicted patterns. Additionally, the effects of collapse, trade openness, and ODA on refugee-receiving centrality follow predictions for these variables. Conversely, predicted relationships (or lack of relationship) for economic growth, urbanization, secondary enrollment, repression, political terror, fertility, population density, cropland under cultivation, and FDI penetration all proved to be incorrect in both models while predictions about state strength, urbanization, collapse, CO_2 per capita, trade openness, and ODA were incorrect in the migrant models. A number of relationships presented themselves in the opposite of the expected direction. State strength and semiperipheral status had opposite relationships with refugee centrality, while conflict did so with migrant centrality. Two unexpected relationships emerged from the environmental analysis as CO_2 per capita and cropland under cultivation demonstrated significant effects on refugee-receiving centrality.

Comparing effects on centrality in the migrant and refugee networks

Tables 4.48 and 4.49 summarize the observed relationships between domestic and international variables and the various permutations of the migrant and refugee networks. Valued results are presented in Table 4.48, and dichotomized results in Table 4.49. Significant relationships are indicated by a + (positive relationship) or – (negative relationship). Models in which no significant relationship occurred are left blank. Looking at the differential effects of variables on centrality in the various migrant and refugee networks yields mixed conclusions about the extent to which these networks are different. While many of the effects of variables are almost identical, even to the strength of the effect, key differences emerge that indicate that centrality in the networks is shaped by different forces, making them clearly different.

Table 4.48. Summary of Relationships for Valued Sending and Receiving Networks

	Migrant Valued Sending	Refugee Valued Sending	Migrant Valued Receiving	Refugee Valued Receiving
Economic Variables				
GDP per capita				
State strength	-	-	-	-
Economic growth				
Urban population				
Secondary enrollment		-		
Political Variables				
Political repression	+	+		
Political terror	+	+		+
Collapse				
Conflict	+	+	+	+
Demographic Variables				
Fertility rate				
Population density				
Infant mortality				
Life expectancy		-		
Environmental Variables				
CO2 per capita				-
Cropland under cultivation		-		-
International Variables				
FDI penetration				
Trade openness	-			
ODA	-	-	-	-
Semiperiphery		+	-	
Periphery	-	+	-	-
INGO membership ties	+	+	+	+
Region				
Middle East / North Africa				
Latin America / Caribbean			-	-
Sub-Saharan Africa			-	-
Asia and Pacific			-	-
Eastern Europe / Central Asia				

Table 4.49. Summary of Relationships for Dichotomized Sending and Receiving Networks

	Migrant Dichotomized Sending	Refugee Dichotomized Sending	Migrant Dichotomized Receiving	Refugee Dichotomized Receiving
Economic Variables				
GDP per capita				
State strength		-		-
Economic growth				
Urban population				
Secondary enrollment		-		
Political Variables				
Political repression		+		
Political terror		+		
Collapse				
Conflict	+	+	+	+
Demographic Variables				
Fertility rate				
Population density				
Infant mortality				
Life expectancy				
Environmental Variables				
CO2 per capita				-
Cropland under cultivation				-
International Variables				
FDI penetration				
Trade openness				-
ODA	-	-		-
Semiperiphery		+		-
Periphery	-	+	-	-
INGO membership ties	+	+	+	+
Region				
Middle East / North Africa				
Latin America / Caribbean				-
Sub-Saharan Africa				
Asia and Pacific	-	-		-
Eastern Europe / Central Asia				

Regional variation demonstrates different effects on the migrant and refugee networks based on whether the network is sending or receiving. Many of the relationships exhibited in these results reflect relationships portrayed in Figures 4.9 through 4.12. Regional variables have almost no significant relationships with centrality in the migrant and refugee sending networks, whether valued or dichotomized. Levels of outward flows and ties are not determined by region. However, centrality in the receiving networks is affected, to different degrees, by regional variation. In the valued migrant-receiving network, Latin America, Sub-Saharan Africa, and Asia demonstrate consistent significant negative relationships with centrality across models. These regions receive fewer migrants than the West and the relationships tend to persist in spite of the presence of economic, political, demographic, environmental, and international variables. While regional variables also have some significant effect on valued refugee-receiving network centrality, the significance is typically to a lesser degree and is less consistent across models.

The dichotomized receiving networks exhibit the opposite results of the valued networks. Regional variables demonstrate no significant relationships with the dichotomized migrant-receiving network. Migrant-receiving ties are not influenced by region. In contrast, Latin America, Sub-Saharan Africa, Asia, and (to a lesser extent) Eastern Europe demonstrate significant negative relationships with dichotomized refugee-sending centrality. In many models, these regions hold fewer refugee-receiving ties than the West. These relationships are less consistent across models than those in the valued migrant-receiving network, but occur frequently enough for this to be a noticeable difference between the migrant and refugee networks in these analyses.

The economic and development models demonstrate both similarities and differences between networks. State strength is significant across most of the analyses, at least at a marginal level. Countries with higher spending levels are less central in all of the refugee networks and in the valued migrant networks. Strength is not significant in either of the dichotomized migrant networks, indicating that this measure impacts the total migrants sent and received, but not the number of partners with which they are traded. Another similarity in the economic models is the consistent lack of effect of GDP per capita or economic growth. The effect of secondary education provides a point of difference between migrant and refugee networks, as greater secondary enrollment has a significant negative relationship with refugee-sending centrality in both the valued and dichotomized networks, but has no significant effect on sending or receiving centrality in the migrant networks.

Like the economic models, the political models demonstrate both similarities and differences between migrant and refugee networks in the effects of political variables on centrality. The clearest similarity in the networks is in the consistent significant positive effect of conflict on centrality. This relationship exists in all eight networks, representing one of the few findings in any model that does so. Beyond the effect of conflict, the valued sending networks demonstrate a high degree of similarity in the effects for all of the political variables. Repression, political terror, and conflict all increase valued sending centrality in both the migrant and refugee networks. While the strength of these effects is somewhat higher in the refugee analysis, the relationships are the same for both. A final area of similarity between these networks is the consistent lack of effect of state collapse on centrality.

The clearest difference between migrant and refugee networks in these models is the importance of human rights in the refugee models. Political terror is significantly associated with centrality in three of the four refugee networks, with only the dichotomized sending network showing no effect. While political terror scores are positively associated with valued migrant-sending centrality, this measure does not affect centrality in any of the other migrant networks. As the definition of refugee includes a fear of persecution, reflecting the potential for human rights violations, it stands to reason that countries with poor human rights records would contribute more refugees and ties to the networks. Interestingly, political terror also demonstrates a marginally significant positive effect on valued refugee-receiving centrality, possibly showing the lack of choice presented to many refugees as they move to host countries.

While the effects of economic and political variables have both similar and different effects on migrant and refugee network centrality, the effects of demographic variables on the networks are almost identical across all eight networks. Demographic variables consistently demonstrate no significant effects on centrality. The only exception to this finding is a marginally significant effect of life expectancy in the valued refugee-sending network. Variation in these factors may be captured in the regional variables, or they may have no effect. Whatever the case, this lack of effect is a clear similarity between the networks.

The environmental models demonstrate a high degree of dissimilarity between the networks. While both the dichotomized migrant and refugee-sending networks fail to have any significant relationships with either CO_2 per capita or cropland under cultivation, one or both of these variables are significantly related to centrality in each of the other refugee networks, but not in the remaining migrant networks. When significant, environmental conditions are negatively related to sending and receiving centrality, demonstrating that these factors decrease valued outflows and ties in both directions.

The analyses of international models are marked by a number of similarities between centrality in the migrant and refugee networks, with one key difference. Across all networks, FDI penetration fails to reach significance and INGO participation is consistently significant. These variables affect centrality in each network in the same way, if not always at the same level. While not identical in effects, generally the network pairs demonstrate similar relationships with trade openness and ODA. ODA is significant and negative in seven of the eight models. Trade openness acts in an opposite fashion, becoming significant in only two of the eight models.

The differential effects of world system position mark the primary difference in effects of international variables on centrality in the migrant and refugee networks. These differences manifest themselves in two ways. First, semiperipheral status demonstrates different effects in each of the network comparisons. For the valued sending and both dichotomized network comparisons, semiperipheral status affects only refugee network centrality. In each of these networks, being in the semiperiphery increases refugee-sending centrality and decreases refugee-receiving centrality, but has no effect on centrality in the migrant networks. The opposite is true of the valued receiving networks in which semiperipheral status demonstrates a significant relationship with migrant centrality but not refugee. Semiperipheral countries receive fewer migrants than the core, but do not differ from the core in levels of refugees received.

The second difference between the networks is in the direction of the effect of peripheral status. The periphery measure is significant in every model in the analysis. Peripheral status is an important contributing factor to both migrant and refugee network centrality. However, the effects of peripheral status differ across the migrant and refugee networks in analyses of sending centrality. In models examining centrality in both the valued and dichotomized sending networks, peripheral status is negatively related to migrant-sending centrality but positively related to refugee-sending centrality. In other words, peripheral countries contribute fewer migrants and ties to the sending networks, while contributing greater numbers of refugees and sending ties. This marks perhaps the most critical distinction between these networks and an important area for further examination.

In evaluating the success of the hypotheses presented in Chapter Two to predict outcomes in this analysis, three trends emerge. First, the prediction that clear differences between the networks would be identified in these analyses proved to be true. Each pairing of the migrant and refugee networks demonstrated differences in relationships between variables. While some pairs showed more similarity than others, all were different. Second, a number of predicted relationships failed to achieve significance in these models. Predictions of centrality in the migrant networks failed to emerge at a particularly high frequency. Additionally, several predicted relationships emerged in the opposite direction of expectations. Upon evaluation of the descriptive and geographic analyses presented earlier in the chapter, most of these relationships make sense, given the nature of the networks involved. The final trend is that, in general, predicted relationships occurred as would be expected. Positive economic and development variables increased centrality in the receiving networks while variables capturing negative development outcomes (i.e., peripheral status) were associated with decreased centrality. Sending centrality was influenced positively by political instability and poor development outcomes and reduced by positive economic conditions. The key exception to these expectations is the findings with respect to conflict and receiving centrality. Countries that experienced conflict around the year 2000 had higher receiving centrality across all networks relative to those that were not engaged in conflict. It is possible that this finding reflects high levels of migrants and refugees that moved in previous time periods to countries that experienced conflict, as well as the positive conflict status of many of the highest migrant-receiving countries during this time period (i.e., the United States).

EXPLAINING DIFFERENCES IN THE MIGRANT AND REFUGEE NETWORKS

To this point, a number of differences between the migrant and refugee networks have been identified. However, the question remains, why are these networks different? Understanding elements that explain differences in centrality in these networks may shed light on policy and humanitarian interventions that can help countries better control flows of both migrants and refugees across their borders.

To examine the efficacy of variables in explaining differences between the migrant and refugee network, a final series of ordinary least squares regressions was performed. For each of the four networks (valued sending and receiving, dichotomized sending and receiving), the refugee network was regressed on the migrant network with the residual from each regression saved as a new variable. This residual represents the unexplained difference between the two networks. Each set of residual scores was then used as the dependent variable in a series of regressions designed to examine relationships between economic, political, demographic, environmental, and international variables and these residuals. Significant relationships indicate areas in which the refugee centrality scores for a country are different than what would be expected, given the migrant centrality score for that country. Models proceed as they did in the previous analyses with each table presenting individual relationships, net of regional variation.

It is expected that a number of variables will demonstrate significant relationships with these residual scores. Specifically, regional variation is expected to be significant, particularly among the receiving networks. Additionally, it is expected that positive economic and development variables will lead to lower than expected refugee-sending centrality while instability and poor development outcomes will lead to greater refugee-sending centrality. The opposite pattern is expected to hold true for the receiving network, with positive economic conditions generating greater than expected refugee-receiving centrality and negative economic conditions and instability yielding lower than expected centrality.

Analysis of valued sending residuals

Tables 4.50 through 4.54 present results of analyses of the effects of variables on the residuals of the valued sending networks. Each table presents individual relationships, net of regional variation. A regional base model and economic variables are included in Table 4.50, political variables in Table 4.51,demographic variables in Table 4.52, environmental variables in Table 4.53, and international variables in Table 4.54.

Economic Model

The results of analyses of the effects of economic variables on the valued-sending residuals are presented in Table 4.50. None of the regional variables have a significant effect on the residual, indicating that regional variation does not explain differences in these networks. Of the examined economic variables, only secondary enrollment demonstrates a significant effect on the residual scores. This negative relationship indicates that countries with high levels of secondary enrollment send fewer refugees than would be expected, given their position in the migrant network. In other words, secondary enrollment provides one explanation of difference between the networks. GDP per capita, state strength, economic growth, and urban population fail to demonstrate significant relationships in this analysis.

Table 4.50. OLS Regression Results for Economic Conditions on Sending Centrality (Valued) Residuals, circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		.049 (.046)				
State strength			.003 (.034)			
Economic growth				-.078 (.037)		
Urban population					-.096 (.087)	
Secondary enrollment						-.355** (.127)
Region						
Middle East / North Africa	-.031 (.082)	-.066 (.041)	-.054 (.039)	-.079 (.041)	-.035 (.088)	-.094 (.108)
Latin America /Caribbean	.035 (.094)	.089 (.051)	.131 (.048)	.054 (.050)	.030 (.105)	-.022 (.125)
Sub Saharan Africa	.017 (.095)	.078 (.063)	.047 (.047)	.053 (.049)	-.043 (.115)	-.284† (.159)
Asia and Pacific	.119 (.096)	.062 (.055)	.099 (.050)	.037 (.051)	.096 (.112)	.050 (.134)
Eastern Europe / Central Asia	-.010 (.087)	-.007 (.047)	-.039 (.041)	-.036 (.043)	-.022 (.093)	-.033 (.109)
R^2	.015	.018	.030	.024	.027	.087
N	225	189	172	175	203	165

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Table 4.51. OLS Regression Results for Political Conditions on Sending Centrality (Valued) Residuals, circa 2000

-	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.174† (.100)			
Political terror		.154† (.093)		
Collapse			.262*** (.066)	
Conflict				.084 (.075)
Region				
Middle East / North Africa	-.147 (.110)	-.094 (.105)	-.047 (.080)	-.050 (.084)
Latin America / Caribbean	-.023 (.118)	-.004 (.127)	.025 (.091)	.042 (.094)
Sub Saharan Africa	-.114 (.128)	-.081 (.129)	-.040 (.093)	-.006 (.097)
Asia and Pacific	.057 (.124)	.119 (.131)	.082 (.093)	.117 (.096)
Eastern Europe / Central Asia	-.089 (.105)	-.063 (.108)	-.023 (.084)	-.040 (.090)
R^2	.042	.051	.082	.021
N	191	177	225	225

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

The results of political variables on the valued sending residual are presented in Table 4.51. Political repression, political terror, and state collapse all demonstrate positive significant relationships with the residual scores, with collapse showing the strongest effect. Countries with greater levels of repression, poor human rights scores, and the experience of state collapse send refugees at higher rates than would be expected, given the extent to which they send migrants. This finding makes sense, as countries that experience these political conditions would be relatively low senders of migrants, while these conditions would generate large numbers of refugees. Interestingly, conflict does not demonstrate a significant effect in this model, reflecting findings from the previous section that conflict influences both migrant and refugee centrality in this network.

Demographic model

Table 4.52. OLS Regression Results for Demographic Variables on Sending Centrality (Valued) Residuals, circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	.258*			
	(.110)			
Population density		-.059		
		(.076)		
Infant mortality			.225*	
			(.118)	
Life expectancy				-.465***
				(.114)
Region				
Middle East / North Africa	-.121	-.035	-.117	-.089
	(.100)	(.088)	(.100)	(.090)
Latin America / Caribbean	-.019	.044	-.068	-.011
	(.117)	(.104)	(.127)	(.107)
Sub Saharan Africa	-.189	.005	-.215	-.400**
	(.141)	(.103)	(.157)	(.146)
Asia and Pacific	.043	.141	.026	.018
	(.121)	(.105)	(.133)	(.113)
Eastern Europe / Central Asia	.004	-.011	-.083	-.073
	(.097)	(.094)	(.102)	(.096)
R^2	.054	.022	.048	.111
N	194	203	.189	195

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

While demographic variables consistently failed to produce an effect on centrality in either the migrant or refugee networks in the previous section, the results of analyzing the effects of these variables on the valued sending residual present a different picture. Table 4.52 shows that fertility rates, infant mortality levels, and life expectancy all have significant relationships with the residual scores, while population density does not. Countries with higher fertility rates and infant mortality send refugees beyond what would be expected, while countries with higher life expectancies send fewer refugees.

Environmental model

Table 4.53. OLS Regression Results for Environmental Conditions on Sending Centrality (Valued) Residuals, circa 2000

	Model 15	Model 16	Model 17
Environmental Variables			
CO_2 per capita	-.211*		-.221*
	(.105)		(.085)
Cropland under cultivation		-.116	-.123
		(.082)	(.085)
Region			
Middle East / North Africa	-.038	-.016	-.032
	(.090)	(.095)	(.096)
Latin America / Caribbean	-.013	.089	.017
	(.110)	(.118)	(.125)
Sub Saharan Africa	-.144	.031	-.152
	(.135)	(.112)	(.145)
Asia and Pacific	.072	.188	.103
	(.120)	(.119)	(.132)
Eastern Europe / Central Asia	-.022	.016	-.009
	(.096)	(.101)	(.103)
R^2	.047	.034	.062
N	194	191	181

† p< .1 * p< .05 ** p< .01 *** p< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Results of the environmental analyses, presented in Table 4.53, show that CO_2 per capita has a significant negative relationship with the residual, while cropland under cultivation does not. Countries with higher levels of CO_2 per capita send fewer refugees than would be expected, given their level of migrants sent. These countries tend to be newly developing economies (i.e., China) that send high levels of migrants (see Figure 4.1), but have high levels of internal stability that limit levels of refugee outflows.

International model

Table 4.54. OLS Regression Results for International Integration on Sending Centrality (Valued) Residuals, circa 2000

	Model 18	Model 19	Model 20	Model 21	Model 22
International Variables					
FDI penetration	-.132† (.078)				
Trade openness		-.060 (.032)			
ODA			-.066 (.103)		
Semiperiphery				.041 (.117)	
Periphery				.176† (.117)	
INGO membership ties					-.057 (.076)
Region					
Middle East / North Africa	-.036 (.093)	-.058 (.038)	-.016 (.179)	-.008 (.114)	-.042 (.084)
Latin America /Caribbean	.039 (.113)	.056 (.045)	.066 (.236)	.055 (.136)	.011 (.100)
Sub Saharan Africa	.020 (.111)	.073 (.043)	.055 (.237)	.021 (.137)	-.010 (.102)
Asia and Pacific	.150 (.116)	.032 (.046)	.185 (.245)	.190 (.145)	.091 (.107)
Eastern Europe / Central Asia	-.001 (.099)	.014 (.038)	.041 (.209)	-.007 (.149)	-.019 (.088)
R^2	.039	.016	.023	.053	.019
N	194	173	149	144	223

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

The final table in the valued sending analysis, Table 4.54, presents the results of international variables on the residual scores. In the individual analyses, only FDI penetration and peripheral status demonstrate significant effects. Higher levels of foreign investment yield fewer refugees sent, given the amount of migrants sent, while countries in the periphery send more refugees than would be expected. Both findings make intuitive sense. Sanderson and Kentor (2008) found that countries with higher levels of investment have more mobile populations. These countries also tend to be more stable, yielding fewer refugees. Peripheral countries tend to contribute fewer migrants to the global network, causing them to be relatively low in migrant-sending centrality. However, these countries contribute the bulk of refugees to the global network, creating the disparity observed in this finding.

Discussion of analysis of valued sending residual

The models in this analysis tell a fairly consistent and expected story: countries that experience difficult economic and political conditions send more refugees than would be expected, while countries at higher levels of development and economic opportunity send fewer. Political repression, political terror, state collapse, high fertility and infant mortality rates, and peripheral status all contribute to higher than expected refugee outflows. Countries high in these areas are typically poorer states that do not send large numbers of migrants and are, therefore, low in migrant-sending centrality. The presence of these conditions contributes to high levels of refugee sending, creating the disparity identified in these analyses. On the other hand, education, high life expectancy, CO_2 per capita, and foreign investment each yields lower refugee flows than would be expected. Countries with these positive elements tend to send high levels of migrants, but are more stable, reducing the potential for the development of conditions that would yield refugee outflows. These findings demonstrate clear differences in valued sending centrality between the networks.

Analysis of valued receiving residuals

Tables 4.55 through 4.59 present results of analyses of the effects of variables on the residual scores of the valued receiving networks. Each table presents individual relationships, net of regional variation. A regional base model and economic variables are included in Table 4.55, political variables in Table 4.56,demographic variables in Table 4.57, environmental variables in Table 4.58, and international variables in Table 4.59.

Economic model

Table 4.55 presents the results of the regional base model and economic variables with the valued receiving residual. In the regional model (Model 1), only Eastern Europe reaches significance at a marginal level. Countries in this region receive fewer refugees than would be expected, given their level of migrants received. Unlike the analysis of the valued sending residual, some significant regional variation occurs across models in this analysis, with regions moving in and out of significance, depending on the other included variables. In all of these instances, regions receive fewer refugees than would be expected.

Of the economic variables, none demonstrates a significant relationship with the valued receiving residuals. These factors do not influence a country’s level of refugee inflows to an extent that it becomes different than would be expected, given its level of migrant inflows.

Table 4.55. OLS Regression Results for Economic Conditions on Valued Receiving Residuals, circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.086				
		(.111)				
State strength			-.076			
			(.090)			
Economic growth				-.056		
				(.088)		
Urban population					-.017	
					(.088)	
Secondary enrollment						-.064
						(.106)
Region						
Middle East / North Africa	-.126	-.166†	-.147	-.105	-.124	-.165†
	(.082)	(.099)	(.101)	(.099)	(.088)	(.090)
Latin America / Caribbean	-.134	-.159	-.139	-.101	-.120	-.176
	(.094)	(.122)	(.126)	(.120)	(.105)	(.105)
Sub Saharan Africa	-.153	-.250†	-.200†	-.115	-.162	-.274†
	(.095)	(.151)	(.123)	(.117)	(.115)	(.133)
Asia and Pacific	-.104	-.146	-.108	-.054	-.098	-.248*
	(.096)	(.133)	(.132)	(.122)	(.112)	(.112)
Eastern Europe / Central Asia	-.159†	-.222*	-.200†	-.152	-.164†	-.210*
	(.086)	(.112)	(.108)	(.102)	(.093)	(.091)
R^2	.020	.028	.033	.021	.021	.039
N	225	189	172	175	203	165

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Table 4.56. OLS Regression Results for Political Conditions on Valued Receiving Residuals, circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.077 (.100)			
Political terror		.053 (.094)		
Collapse			.165** (.067)	
Conflict				.057 (.075)
Region				
Middle East / North Africa	-.184† (.111)	-.186† (.106)	-.136† (.081)	-.139† (.084)
Latin America / Caribbean	-.136 (.119)	-.159 (.129)	-.140 (.093)	-.129 (.094)
Sub Saharan Africa	-.222† (.128)	-.229† (.131)	-.189* (.095)	-.169† (.097)
Asia and Pacific	-.145 (.124)	-.139 (.133)	-.127 (.095)	-.106 (.096)
Eastern Europe / Central Asia	-.206* (.106)	-.228* (.109)	-.167† (.085)	-.179* (.090)
R^2	.026	.031	.046	.023
N	191	177	225	225

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Results from the examination of the effects of political variables on the valued receiving residual are presented in Table 4.54. As has been previously noted, some regional variables move in and out of significance across the models, but Sub-Saharan Africa and Eastern Europe maintain significant negative effects across each model in this analysis. These regions consistently receive fewer refugees than would be expected. Of the political variables, only collapse has a significant effect. Collapsed states received more refugees than would be expected, given their level of migrants received. Several elements contribute to this finding. First, collapsed states are not attractive destinations for migrants, causing these countries to have low migrant-receiving centrality. Additionally, these states are not able to adequately control their borders, making refugee entrance relatively easy. Finally, these states are often in close proximity to other countries that are experiencing conditions that generate refugee flows. These low levels of migrant receiving, coupled with high levels of refugee receipt, create the disparity reflected in this finding.

Demographic model

While demographic elements demonstrated significant effects on the valued sending residual, the opposite occurs in regressions with the valued receiving residual. Table 4.55 shows that the demographic variables do not have a significant effect on the receiving residual. In other words, none of these elements create a disparity between refugee and migrant centrality.

Table 4.57. OLS Regression Results for Demographic Variables on Valued Receiving Residuals, circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	.033 (.112)			
Population density		.064 (.076)		
Infant mortality			.118 (.118)	
Life expectancy				.010 (.120)
Region				
Middle East / North Africa	-.152 (.102)	-.120 (.088)	-.179† (.101)	-.138 (.094)
Latin America / Caribbean	-.139 (.119)	-.118 (.104)	-.165 (.127)	-.134 (.113)
Sub Saharan Africa	-.202 (.143)	-.142 (.103)	-.286† (.158)	-.165 (.153)
Asia and Pacific	-.126 (.123)	-.103 (.105)	-.172 (.134)	-.105 (.119)
Eastern Europe / Central Asia	-.177† (.099)	-.157† (.093)	-.211* (.103)	-.176† (.100)
R^2	.024	.025	.029	.024
N	194	203	189	195

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Like the demographic model, the environmental model fails to yield any significant results with the valued receiving residual. While the significant negative relationships of Sub-Saharan Africa and Eastern Europe persist in these models and the Middle East shows some significance, neither of the environmental variables demonstrates a relationship with the residual scores.

Table 4.58. OLS Regression Results for Environmental Conditions on Valued Receiving Residuals, circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.079 (.107)	
Cropland under cultivation		.037 (.082)
Region		
Middle East / North Africa	-.136 (.092)	-.155† (.094)
Latin America / Caribbean	-.146 (.112)	-.146 (.118)
Sub Saharan Africa	-.223† (.138)	-.197† (.112)
Asia and Pacific	-.117 (.122)	-.158 (.118)
Eastern Europe / Central Asia	-.175† (.098)	-.197* (.101)
R^2	.026	.027
N	194	191

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

In results for the international variables, presented in Table 4.57, only the world system variables demonstrate any significant effect on the valued receiving residual. In a somewhat surprising finding, both semiperipheral and peripheral status are negatively related to the residual scores. Countries with these statuses are less central in the refugee-receiving network than would be predicted by their position in the migrant-receiving network.

Table 4.59. OLS Regression Results for International Integration on Valued Receiving Residuals, circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	-.041 (.078)				
Trade openness		-.094 (.090)			
ODA			-.044 (.072)		
Semiperiphery				-.160† (.116)	
Periphery				-.218* (.115)	
INGO memberships ties					.120 (.076)
Region					
Middle East / North Africa	-.168† (.094)	-.140 (.105)	-.198 (.125)	-.155 (.112)	-.104 (.083)
Latin America / Caribbean	-.187† (.114)	-.144 (.125)	-.149 (.166)	-.141 (.135)	-.084 (.099)
Sub Saharan Africa	-.208† (.113)	-.204† (.121)	-.213 (.167)	-.167 (.135)	-.095 (.102)
Asia and Pacific	-.135 (.117)	-.102 (.129)	-.118 (.172)	-.107 (.143)	-.030 (.106)
Eastern Europe / Central Asia	-.205* (.100)	-.178† (.107)	-.128 (.147)	-.173† (.147)	-.140 (.087)
R^2	.032	.035	.018	.071	.032
N	194	173	149	144	223

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of analysis of the valued receiving residual

OLS regressions with the valued receiving residual reveal few significant effects. There is a regional effect in this analysis that does not exist in the valued sending analysis. Countries in Sub-Saharan Africa, Eastern Europe, and – to a lesser extent – the

Middle East are less central in the refugee network than would be expected, given their position in the migrant network. This may again be the result of the domination of the refugee-receiving network by a handful of key actors. Most of the countries in these regions receive migrants, but many may not receive any refugees, creating a disparity in centrality between the networks.

Of the other variables, only collapse and world system position reach significance with the receiving residual. While both of these findings seem to be in counter-intuitive directions, both can be explained in terms of disparities created by levels at which migrants are received. Collapsed states receive few migrants, as they are decidedly unattractive destination choices for those who have the ability to choose. Refugees often do not have this degree of autonomy and enter whatever country they can reach, without regard to the political conditions of the potential host. Additionally, collapsed states tend to be in politically unstable regions, often in close proximity to other countries with the potential for refugee outflows. This proximity makes these states more likely hosts than countries across the world. The combination of low migrant-receiving centrality and any appreciable level of refugee-receiving centrality would generate the disparity seen in the significant finding.

As for the world system findings, these may be the result of the extent to which the refugee-receiving network is dominated by only a handful of countries (see Table 3.17), leaving other countries at these world system positions with greater migrant than refugee inflows. If most countries in semiperipheral or peripheral positions receive few or no refugees, then any level of migrant-receiving centrality would create an appreciable gap between the expected level of refugees and the reality.

Analysis of dichotomized sending residuals

Tables 4.60 through 4.64 present results of analyses of the effects of variables on the residual scores for the dichotomized sending networks. Each table presents individual relationships, net of regional variation. A regional base model and economic variables are included in Table 4.60, political variables in Table 4.61, demographic variables in Table 4.62, environmental variables in Table 4.63, and international variables in Table 4.64.

Economic model

Table 4.60. OLS Regression Results for Economic Conditions on Dichotomized Sending Residuals, circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		.041 (.103)				
State strength			-.032 (.079)			
Economic growth				-.114 (.081)		
Urban population					-.035 (.084)	
Secondary enrollment						-.254* (.112)
Region						
Middle East / North Africa	-.097 (.082)	-.088 (.092)	-.034 (.089)	-.078 (.091)	-.095 (.085)	-.121 (.096)
Latin America /Caribbean	-.024 (.094)	-.024 (.114)	.056 (.110)	-.072 (.111)	-.043 (.101)	.005 (.111)
Sub Saharan Africa	.032 (.095)	.045 (.141)	.070 (.108)	.050 (.108)	-.024 (.110)	-.149 (.141)
Asia and Pacific	-.042 (.096)	-.046 (.124)	.027 (.115)	-.072 (.113)	-.072 (.108)	-.071 (.119)
Eastern Europe / Central Asia	-.079 (.087)	-.066 (.105)	-.053 (.095)	-.091 (.094)	-.092 (.090)	-.078 (.097)
R^2	.016	.015	.016	.029	.012	.050
N	225	189	172	175	203	165

† *p*< .1 * *p*< .05 ** *p*< .01 *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Table 4.60 presents the results of regressions with the regional base model and economic variables on the dichotomized sending residual scores. Among the regional variables, there are no significant relationships. This result holds across most of the models throughout the analysis of this network's residuals. Each region holds refugee-sending ties at the level that would be expected, given its level of migrant-sending centrality. The economic variables provide little more in the way of relationships. Of these, only secondary enrollment demonstrates a significant negative effect on the residual scores. Countries with higher levels of enrollment send refugees to fewer partners than would be expected given the levels at which they hold migrant-sending ties.

Political model

Like the variables in the economic model, the political variables demonstrate very limited effects on the sending residuals. In Table 4.61, only the political terror measure reaches significance, and then only at a marginal level. The positive relationship shows that countries with worse human rights scores are more central in the dichotomized refugee-sending network than would be expected based on their centrality in the dichotomized migrant-sending network. These countries tend to send large amounts of refugees, increasing the potential pool of movers to create ties with host countries. Interestingly, repression, collapse, and conflict do not demonstrate significant effects. For these measures, refuge-sending centrality is as it would be expected.

Table 4.61. OLS Regression Results for Political Conditions on Dichotomized Sending Residuals, circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	.117 (.096)			
Political terror		.154† (.085)		
Collapse			.025 (.068)	
Conflict				-.001 (.075)
Region				
Middle East / North Africa	-.157 (.106)	-.132 (.096)	-.099 (.082)	-.097 (.084)
Latin America / Caribbean	-.041 (.113)	-.003 (.117)	-.025 (.094)	-.024 (.095)
Sub Saharan Africa	-.068 (.123)	-.062 (.119)	.026 (.097)	.032 (.098)
Asia and Pacific	-.067 (.119)	-.012 (.121)	-.045 (.097)	-.042 (.096)
Eastern Europe / Central Asia	-.113 (.101)	-.107 (.099)	-.080 (.087)	-.079 (.091)
R^2	.018	.032	.016	.016
N	191	177	225	225

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Demographic model

As in previous analyses, the demographic model fails to demonstrate any significant relationships with the residual scores. Table 4.62 shows that none of the measures of demographic conditions causes refugee-sending centrality to differ from what would be expected, based on migrant-sending centrality.

Table 4.62. OLS Regression Results for Demographic Variables on Dichotomized Sending Residuals, circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.005 (.105)			
Population density		-.039 (.074)		
Infant mortality			.040 (.113)	
Life expectancy				-.122 (.112)
Region				
Middle East / North Africa	-.060 (.095)	-.098 (.085)	-.096 (.097)	-.080 (.088)
Latin America / Caribbean	.024 (.111)	-.039 (.100)	-.020 (.122)	-.008 (.105)
Sub Saharan Africa	.050 (.134)	-.102 (.099)	-.023 (.151)	-.066 (.143)
Asia and Pacific	.010 (.115)	-.042 (.101)	-.046 (.128)	-.038 (.111)
Eastern Europe / Central Asia	-.046 (.093)	-.086 (.090)	-.084 (.099)	-.065 (.094)
R^2	.010	.012	.012	.016
N	194	203	189	195

† p< .1 * p< .05 ** p< .01 *** p< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Like the demographic model, the environmental model (presented in Table 4.63) shows no significant effects on the dichotomized sending residuals. Refugee-sending centrality does not differ from expectations in models that include these measures of environmental conditions.

Table 4.63. OLS Regression Results for Environmental Conditions on Dichotomized Sending Residuals, circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	.017	
	(.099)	
Cropland under cultivation		-.051
		(.076)
Region		
Middle East / North Africa	-.065	-.051
	(.085)	(.088)
Latin America / Caribbean	-.008	.059
	(.104)	(.111)
Sub Saharan Africa	.055	.059
	(.128)	(.105)
Asia and Pacific	.016	.010
	(.114)	(.111)
Eastern Europe / Central Asia	-.048	-.030
	(.091)	(.095)
R^2	.010	.014
N	194	191

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Table 4.64 presents regression results from models that examine the effects of international variables on the dichotomized sending network residual scores. These results show two clear effects. Trade openness has a significant negative relationship with the residual measure, indicating that countries that are more active in global trade send refugees to fewer partners than would be expected, given their centrality in the dichotomized migrant-sending network. Participation in trade opens channels to other countries through which migrants can more readily flow, increasing centrality in this network. Additionally, countries with high levels of trade tend to be more stable, reducing the possibility of refugee outflows. Taken together, these factors demonstrate the potential for differences in centrality in the respective networks observed in this finding.

Table 4.64. OLS Regression Results for International Integration on Dichotomized Sending Residuals, circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.054 (.071)				
Trade openness		-.157* (.075)			
ODA			-.073 (.085)		
Semiperiphery				.204* (.104)	
Periphery				.268** (.104)	
INGO memberships ties					.004 (.076)
Region					
Middle East / North Africa	-.060 (.085)	-.032 (.087)	-.027 (.147)	-.125 (.101)	-.096 (.084)
Latin America / Caribbean	-.058 (.102)	-.008 (.104)	.069 (.194)	.010 (.121)	-.022 (.100)
Sub Saharan Africa	.047 (.101)	.061 (.100)	.137 (.195)	.040 (.121)	.033 (.103)
Asia and Pacific	.043 (.105)	-.031 (.108)	.082 (.202)	.021 (.129)	-.036 (.107)
Eastern Europe / Central Asia	-.048 (.090)	-.007 (.089)	.013 (.172)	-.072 (.132)	-.079 (.088)
R^2	.018	.035	.016	.095	.016
N	194	173	149	144	223

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

The second significant finding in these results is the relationship of world system position to the residual scores. Both semiperipheral and peripheral status have significant positive relationships with the dichotomized sending residual. Countries at both of these levels have refugee-sending ties to more countries than would be expected based on their dichotomized migrant-sending centrality. While the effect of being in the periphery is stronger, both findings are robust. This finding may reflect the extent to which migrants from countries at these levels tend to move to countries in which networks are already established, limiting the number of migrant ties, while refugees leaving these countries settle wherever they can. It is also possible that many countries at these levels have longer histories of sending refugees than they do of sending migrants, which creates greater potential for developing partners over time in the refugee network than the migrant.

Discussion of analysis of the dichotomized sending residual

The results of examining the effects of variables on the dichotomized sending network residual scores demonstrate few significant relationships. Centrality in the migrant and refugee networks is affected similarly by most of these factors. Regional variation, demographic variables, and environmental conditions show no effect on the residuals scores. However, in spite of this high level of similarity, clear differences present themselves.

Two variables demonstrate significant negative relationships with the residual scores. These cause countries to have lower than expected refugee-sending centrality, given their level of migrant-sending centrality. Countries with higher levels of secondary enrollment have more educated populations, making potential migrants more attractive to potential host countries and increasing sending centrality in this network. Additionally, countries that are able to enroll children in secondary education at high levels tend to be more stable, limiting the potential for refugee outflows that might elevate the number of sending ties. The combination of these elements yields the disparity identified by this result.

Like secondary education, trade openness is related to disparities in network centrality through higher migrant sending and lower refugee sending. Countries that are active in global trade have more connections and networks through which migrants can move. Increased trade may also generate economic conditions in sending countries that yield income levels for potential migrants that make it possible for them to emigrate. These same economic conditions typically create stability that limits the number of refugees sent by these countries and gives those that do leave as refugees the ability to choose destination countries, eliminating potential hosts that are less attractive to those who are moving.

Political terror and world system position demonstrate significant positive relationships with the residual scores. Both lead to higher levels of refugee-sending centrality than would be anticipated based on migrant-sending centrality. This typically happens through a combination of few migrant-sending ties and many refugee-sending ties. Countries with poor human rights records tend to generate refugee outflows as populations try to move away from abusive regimes. As these refugees often differ in their economic status, different host countries may more or less readily accept them. Additionally, those with fewer economic resources have limited options in terms of potential destinations. These refugees tend to cross the nearest border, rather than make a longer move. This potential dispersion of refugees over more countries would lead to high sending centrality. These same countries often have large populations that are poor and less educated, making them less likely prospects to become emigrants.

The world system findings also depend on countries having high levels of refugee centrality with relatively low migrant centrality. While semiperipheral countries tend to send migrants at a high level, these migrants typically move to a handful of countries where networks and labor patterns are already established (i.e., Mexican migrants to the United States). For peripheral countries, emigration is constrained by limited economic and educational resources among the population. Without a population with the means to migrate or education levels that make migrants attractive to potential hosts as workers, these countries stay low in dichotomized migrant-sending centrality.

High dichotomized refugee-sending centrality may be a product of long histories of refugee sending by many countries in the semiperiphery and periphery. While some countries at both world system positions continue to send refugees at high levels, many have high centrality in this network due to outflows that took place earlier in their history. Countries like Vietnam and Russia are stable semiperipheral countries that contributed very few refugees to the global network in 2000, but have high centrality due to refugee movements that took place during past conflicts. Many peripheral countries have been sending refugees for decades (e.g., Afghanistan, Sudan) and some of these waves of refugees have been forced to find new destinations as previous channels closed. This history of refugee sending can generate high numbers of ties as new destinations develop.

Analysis of dichotomized receiving residuals

Tables 4.65 through 4.69 present results of analyses of the effects of variables on the residual scores of the dichotomized receiving networks. As in the previous analyses, each table presents individual relationships, net of regional variation. A regional base model and economic variables are included in Table 4.65, political variables in Table 4.66, demographic variables in Table 4.67, environmental variables in Table 4.68, and international variables in Table 4.69.

Economic model

Table 4.65 presents the results of regressions examining regional and economic variables with the dichotomized receiving network residual scores. Unlike the dichotomized sending analyses, regional variables demonstrate a number of significant relationships with the residual scores. Latin America shows a consistent negative effect on residuals, demonstrating that these countries have fewer refugee-receiving ties than would be expected with their level of migrant-receiving centrality. Other regions move in and out of significance across models, depending on the other variables involved. Of these, the Middle East shows the lowest level of significance, only demonstrating an effect in the international analysis (Table 4.69). In every instance where regional variables reach significance, the relationship is negative.

Of the economic variables presented in Table 4.65, only state strength demonstrates a marginally significant negative relationship with the residual scores. Stronger states hold refugee-receiving ties at lower levels than would be expected based on their level of migrant-receiving ties. These countries are typically attractive destinations for migrants and are able to choose who is allowed to enter. This creates disparate migrant populations, but allows the country to place limits on refugee entry. All other measures fail to reach significance.

Table 4.65. OLS Regression Results for Economic Conditions on Dichotomized Receiving Residuals, circa 2000

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Economic Variables						
GDP per capita		-.094 (.107)				
State strength			-.138† (.085)			
Economic growth				-.012 (.078)		
Urban population					.050 (.087)	
Secondary enrollment						.074 (.123)
Region						
Middle East / North Africa	-.079 (.082)	-.139 (.095)	-.140 (.096)	-.027 (.088)	-.077 (.087)	-.067 (.105)
Latin America / Caribbean	-.219* (.094)	-.265* (.117)	-.259* (.119)	-.197† (.107)	-.203* (.104)	-.235* (.122)
Sub Saharan Africa	-.186† (.095)	-.301* (.145)	-.281* (.116)	-.120 (.104)	-.149 (.114)	-.181 (.155)
Asia and Pacific	-.152 (.095)	-.232* (.128)	-.239* (.125)	-.113 (.109)	-.113 (.111)	-.207† (.130)
Eastern Europe / Central Asia	-.115 (.086)	-.189† (.108)	-.182† (.102)	-.079 (.091)	-.104 (.092)	-.141 (.106)
R^2	.027	.037	.055	.024	.029	.048
N	225	189	172	175	203	165

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Domestic political conditions show no significant effects on the dichotomized receiving residuals. The results of these regressions, presented in Table 4.66, represent the only network of the four in which no political variables affect the residual scores. When political conditions are considered, dichotomized refugee-receiving centrality is in line with expectations based on dichotomized migrant-receiving centrality.

Table 4.66. OLS Regression Results for Political Conditions on Dichotomized Receiving Residuals, circa 2000

	Model 7	Model 8	Model 9	Model 10
Political Variables				
Political repression	-.051 (.097)			
Political terror		-.078 (.090)		
Collapse			-.097 (.068)	
Conflict				-.026 (.075)
Region				
Middle East / North Africa	-.066 (.107)	-.124 (.102)	-.073 (.082)	-.073 (.084)
Latin America / Caribbean	-.185† (.115)	-.220* (.123)	-.215* (.094)	-.221* (.094)
Sub Saharan Africa	-.173 (.124)	-.234† (.126)	-.165† (.096)	-.179† (.097)
Asia and Pacific	-.155 (.120)	-.195† (.128)	-.138 (.096)	-.151 (.096)
Eastern Europe / Central Asia	-.121 (.102)	-.179† (.105)	-.110 (.086)	-106 (.090)
R^2	.031	.049	.036	.028
N	191	177	225	225

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Demographic model

In the demographic model, presented in Table 4.67, none of the included variables demonstrate significant relationships with the residual scores. Like those observed in the political model, demographic conditions do not seem to explain any of the difference between centrality in the dichotomized migrant and refugee receiving networks.

Table 4.67. OLS Regression Results for Demographic Variables on Dichotomized Receiving Residuals, circa 2000

	Model 11	Model 12	Model 13	Model 14
Demographic Variables				
Fertility rate	-.025 (.108)			
Population density		-.023 (.076)		
Infant mortality			.024 (.115)	
Life expectancy				.141 (.115)
Region				
Middle East / North Africa	-.108 (.098)	-.091 (.087)	-.109 (.098)	-.097 (.090)
Latin America / Caribbean	-.240* (.114)	-.224* (.103)	-.213† (.124)	-.239* (.108)
Sub Saharan Africa	-.215 (.138)	-.199* (.102)	-.234 (.153)	-.106 (.147)
Asia and Pacific	-.198† (.118)	-.143 (.104)	-.192 (.130)	-.168 (.114)
Eastern Europe / Central Asia	-.147 (.095)	-.115 (.092)	-.144 (.100)	-.124 (.096)
R^2	.038	.031	.030	.048
N	194	203	189	195

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Presented in Table 4.68, results from the analysis of the effects of environmental conditions on the dichotomized receiving residual scores show no significant relationships. Like those in the previous two models, these elements do not explain any difference between the refugee and migrant networks.

Table 4.68. OLS Regression Results for Environmental Conditions on Dichotomized Receiving Residuals, circa 2000

	Model 15	Model 16
Environmental Variables		
CO_2 per capita	-.129	
	(.102)	
Cropland under cultivation		-.081
		(.080)
Region		
Middle East / North Africa	-.118	-.136
	(.088)	(.093)
Latin America / Caribbean	-.280**	-.247*
	(.108)	(.116)
Sub Saharan Africa	-.323*	-.265*
	(.132)	(.110)
Asia and Pacific	-.226*	-.191†
	(.117)	(.117)
Eastern Europe / Central Asia	-.150	-.162†
	(.094)	(.100)
R^2	.045	.048
N	194	191

† $p< .1$ * $p< .05$ ** $p< .01$ *** $p< .001$ (two-tailed tests)
Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Models that include international variables, presented in Table 4.69, include two significant negative relationships. Trade openness and the world system position measures are negatively related to the dichotomized receiving residual scores. In these models, countries that are more involved in international trade or that are located in the semiperiphery or periphery have lower refugee-receiving centrality than would be expected given their level of migrant-receiving centrality. The world system findings are particularly robust, representing the strongest results in the analysis of this network.

These results also reach the highest level of significance of any in the analyses of any of the four networks (p < .001).

Table 4.69. OLS Regression Results for International Integration on Dichotomized Receiving Residuals, circa 2000

	Model 17	Model 18	Model 19	Model 20	Model 21
International Variables					
FDI penetration	.005 (.075)				
Trade openness		-.140† (.085)			
ODA			-.059 (.088)		
Semiperiphery				-.368*** (.092)	
Periphery				-.635*** (.091)	
INGO memberships ties					.094 (.075)
Region					
Middle East / North Africa	-.112 (.090)	-.124 (.099)	-.301† (.152)	-.125 (.089)	-.062 (.083)
Latin America / Caribbean	-.239* (.109)	-.255* (.118)	-.536** (.201)	-.199* (.107)	-.179† (.099)
Sub Saharan Africa	-.228* (.108)	-.283* (.114)	-.554* (.203)	-.174† (.107)	-.141 (.102)
Asia and Pacific	-.178† (.112)	-.212* (.122)	-.453* (.210)	-.177† (.114)	-.089 (.106)
Eastern Europe / Central Asia	-.144 (.096)	-.153 (.101)	-.302* (.179)	-.128 (.117)	-.101 (.087)
R^2	.030	.057	.059	.361	.034
N	194	173	149	144	223

† *p*< .1   * *p*< .05   ** *p*< .01   *** *p*< .001 (two-tailed tests)

Notes: Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of analysis of the dichotomized receiving residual scores

Like the analyses of other residual scores, this examination of the effects of variables on the residual scores from the dichotomized sending networks presents a number of areas that explain differences between centrality in the migrant and refugee networks. While political, demographic, and environmental variables fail to demonstrate any relationships with the residual scores, variables in the economic and international models affect these scores.

Regional variation has a consistent effect on the residual scores across most of the models in the analysis. The negative relationship with Latin American status is particularly robust, persisting across almost every model. Latin American countries consistently hold fewer refugee-receiving ties than would be expected at their level of migrant-receiving ties. These countries may be less available as targets for refugee entry due to their distance and relative isolation from high refugee-sending areas. In addition to Latin America, Sub-Saharan Africa and Asia show fairly consistent negative relationships with the residuals scores. Finally, Eastern Europe and the Middle East demonstrate significant relationships in relatively few models. Interestingly, all regional relationships are negative, indicating that each region receives fewer ties than would be expected. This demonstrates the central role played by more advanced Western countries in the dichotomized refugee-receiving network.

State strength and trade openness both demonstrate marginally significant negative relationships with the residual scores in this analysis. Countries with high scores on these variables have lower dichotomized refugee-receiving centrality than would be anticipated at their levels of migrant-receiving centrality. Strong states may be able to better control refugee flows into their borders, reducing their level of refugee ties, while also being attractive to migrants due to the potential for economic opportunity, increasing potential refugee ties. These same issues may explain the finding with respect to trade openness. Countries that are highly active in global trade may be better able to control refugee inflows. Additionally, the presence of global trade routes increases the likelihood of labor migration following those routes (Massey et al. 1993), making active trading countries more likely migrant destinations. High migrant-receiving centrality coupled with relatively low refugee-receiving centrality would account for the variation demonstrated in these results.

The strongest finding in this analysis is the effect of world system position on the residuals. Countries in the semiperiphery and periphery receive refugee ties from fewer partners than would be expected based on the number of ties they receive from migration partners. These findings represent the most robust ($p < .001$) and strongest (-.334 and -.629 in the full model) in any of the analyses of residual scores. Countries in the semiperiphery are relatively new destinations for refugees, becoming more open as entry policies in core countries become more restrictive. As these countries have a limited history of receiving refugees, they have few ties to countries that sent refugees in previous eras, but do so no longer (i.e., Vietnam). Having only ties to the most recent refugee-sending countries would generate relatively low centrality in this network. Peripheral countries typically receive refugees from surrounding sending partners, but are not attractive as destinations for refugees who are able to travel. While some of these countries receive refugees at high levels, they do so from a limited number of partners (see Table 3.14), giving them low dichotomized receiving centrality. Peripheral countries are not high in migrant-receiving centrality; however, there is clearly enough difference between centrality in the two networks to generate the strong finding demonstrated in this analysis.

Summary of examining residuals to determine differences between centrality in the migrant and refugee networks

This attempt to understand differences between the migrant and refugee networks generates important insights into distinctions between the two. The analysis of residuals created from regressions of the migrant and refugee networks with variables from a number of perspectives identifies key elements that explain differences between centrality scores in the two networks. While many of the variables in the analyses fail to demonstrate significant relationships with the residual scores, those that do reveal important areas of explanation about differences in how centrality in the networks is developed. Table 4.70 presents a summary of relationships observed in these analyses. Significant relationships are indicated by a + (positive relationship) or – (negative relationship). Models in which no significant relationship occurred are left blank.

In the examination of the valued-sending residual scores, political instability, infant mortality, and peripheral status demonstrated positive relationships. These factors are associated with elevated refugee-sending centrality. All make intuitive sense as countries that experience political instability or high levels of infant mortality, as well as countries in the periphery tend to be unattractive destinations for migrants, but generate disproportionately high refugee flows. Alternatively, secondary enrollment, life expectancy, levels of CO_2 per capita, and FDI penetration demonstrate significant negative relationships with residual scores. Countries that are high in these areas are relatively low refugee-sending countries. With the exception of FDI, these variables may be serving as proxies for development level in this analysis. More developed countries tend to send fewer refugees, but often contribute migrants at high levels. High levels of foreign investment may contribute to this economic development, providing stronger economic incentive for potential refugees to stay and generating a pool of potential migrants with more resources and education to make a move. Regional variation shows no significant relationship in these models.

The valued-receiving residual analysis yielded few significant results. Unlike the valued-sending analysis, regional variation showed some significant relationships, particularly among the Sub-Saharan Africa and Eastern Europe regions. Across this analysis, when regions demonstrate significant relationships with the residual scores, they are consistently negative. This indicates that these regions receive refugees at lower than expected levels based on the extent to which they receive migrants. The only positively signed variable in this analysis is state collapse. Collapsed states receive refugees at higher levels than would be expected given their level of migrant receiving. While counter-intuitive, this finding is the product of the extremely low level at which collapsed states receive migrants. These states may receive refugees from neighboring countries that are experiencing turmoil, but almost universally fail to receive migrants. This disparity would yield the observed result.

Table 4.70. Summary of Relationships for Residual Scores for all Network Pairs

	Valued Sending	Valued Receiving	Dichotomized Sending	Dichotomized Receiving
Economic Variables				
GDP per capita				
State strength				-
Economic growth				
Urban population				
Secondary enrollment	-		-	
Political Variables				
Political repression	+			
Political terror	+		+	
Collapse	+	+		
Conflict				
Demographic Variables				
Fertility rate	+			
Population density				
Infant mortality	+			
Life expectancy	-			
Environmental Variables				
CO2 per capita	-			
Cropland under cultivation				
International Variables				
FDI penetration	-			
Trade openness			-	-
ODA				
Semiperiphery		-	+	-
Periphery	+	-	+	-
INGO membership ties				
Regions				
Middle East / North Africa				
Latin America / Caribbean				-
Sub-Saharan Africa				-
Asia and Pacific				
Eastern Europe / Central Asia		-		

The only significant negative result in this analysis is the effects of world system position on the residual scores. Both semiperipheral and peripheral status are associated with lower than expected valued refugee-receiving centrality. Countries in these positions receive refugees at lower rates than migrants. This is a difficult finding to interpret. As many countries at these levels receive few or no refugees, any appreciable level of migrant inflow would generate a negative disparity in centrality. This explanation would be particularly salient in the case of countries in the semiperiphery as these tend to receive moderate levels of migrants.

As in the valued sending residual analysis, regional variation fails to demonstrate any significant effects in the examination of the dichotomized sending residual scores. Of the explanatory variables, only political terror and world system position have significant positive relationships with the residual scores. These variables cause countries to have higher than expected levels of refugee-sending ties. Again, both findings make intuitive sense. Countries with poor human rights regimes tend to send refugees at relatively high levels, while sending few migrants due to the lack of economic or educational resources necessary for successful emigration. As the highest senders of refugees are all in semiperipheral or peripheral countries, while many of the most active migrant-sending countries are in the core, the world system finding is also as would be expected.

In this analysis, secondary enrollment and trade openness demonstrate significant negative relationships with the residual scores. Countries that are high on both of these variables tend to also be high in migrant-sending centrality. Heavy activity in global trade opens routes through which migrants can more readily move, while educated populations are more attractive to potential hosts, providing more options for migrant destinations. High levels of migrant sending associated with these factors explain the disparity identified in these findings.

Examination of the residuals of the dichotomized-receiving network again finds few significant relationships. While only Latin America and Africa reach significance in the base model, analyses of this network show the highest degree of significance for regional variation. Latin America is consistently significant and each of the other regions demonstrates significance across a number of models in the analysis. As in the valued-receiving analysis, every significant regional relationship is negative.

While state strength and trade openness demonstrate marginally significant negative relationships with the residual scores in this analysis, the most prominent finding is the effects of world system position. Semiperipheral and peripheral countries hold refugee-receiving ties at lower levels than expected based on their level of migrant-receiving ties. Countries at these levels receive refugees from few partners; many do not receive from any other countries. Given this low level of participation in the refugee-receiving network, any appreciable level of migrant ties would create the gap identified in this analysis.

Three key pictures emerge from this examination of the residuals generated from regressions with the migrant and refugee networks. Each of these demonstrates important differences between centrality in the networks. First, regional variation explains some of the difference between the receiving networks. Latin America in particular, but all of the non-Western regions in general, show some sign of receiving fewer refugees or refugee ties than would be expected at their level of migrant-receiving centrality. Countries in these regions are far less active in the migrant and refugee-receiving networks than Western European and other advanced countries (see Table 3.14), but this gap is less pronounced in the migrant networks, accounting for the disparity demonstrated in these findings. Interestingly, these relationships are not present in the sending analyses. This may be due to the highly centralized nature of these networks. Only a handful of countries send refugees at a high level and the disparities generated beyond these countries may not be appreciable enough to register in these analyses.

The second finding from these analyses is the role of development and conflict variables in explaining differences in the networks. While the results are expressed in a number of different variables, countries that are more highly developed are less central in the refugee-sending networks (both valued and dichotomized) than would be expected and more central in the refugee-receiving networks. Differences between the networks are created by the low levels of refugees sent by developed countries and the high levels of refugees received. With the more egalitarian distribution demonstrated by the migrant networks, these extremes account for the disparities identified by these variables. The reverse holds true for countries that are less developed and experience political turmoil. Measures like collapse, political terror, and infant mortality capture differences generated by the high levels of refugees sent from countries with high scores in these areas and low levels of refugees received. Again, these extremes create the gaps revealed in the analyses of the residual scores.

The final key story from these analyses is the role of world system position in explaining differences in centrality in these networks. At least one of the world systems variables is significant in each analysis. Semiperipheral and / or peripheral status are consistently associated with higher than expected refugee-sending centrality and lower than expected refugee-receiving centrality. Peripheral countries in particular send refugees at much higher rates and to far more partners than they do migrants. These gaps are less distinct among countries in the semiperiphery, accounting for the weaker relationships exhibited by this variable in the sending analyses. The negative relationships evidenced in the receiving analyses are largely a product of the high level of receiving centrality held by countries in the core. Domination of these networks by core actors lead to low levels of centrality for semiperipheral and peripheral countries, leading to the negative gaps identified in these models.

Each of these stories reflects predicted relationships identified prior to this analysis. The central hypothesis driving this chapter is the belief that the migrant and refugee networks are fundamentally different. This examination of the effects of domestic conditions and global integration on residual scores further demonstrates that this hypothesis is accurate. Centrality in these networks is shaped by different conditions, making the networks different. A second hypothesis verified by this analysis is that centrality in these networks varies by region. The effects of regional variation on residual scores identified in these models reflect descriptive data developed earlier in the chapter. Finally, the effects of economic, development, and political variables on residual scores generally act as expected. While not all of these variables have the predicted relationships, those that do tend to affect the residual scores in anticipated directions that match expectations based on theory and previous analysis.

CONCLUSION

The goal of this chapter was to examine centrality in the migrant and refugee networks circa 2000 to determine the extent to which the two are different. While a number of similarities emerged in these analyses, enough differences are identified to indicate that the networks are clearly different. Migrant and refugee networks differ in scope, structure, and relationships with variables capturing domestic conditions and global integration. These trends present themselves in a number of ways across the analyses in this chapter.

The first clear trend is the difference in the level of activity demonstrated by the respective networks. While the valued and dichotomized refugee networks are somewhat limited in scope, the migrant networks are extremely active. Almost every country in the world contributes and receives migrants to the global network. In fact, countries in the migrant network realize over 74 percent of the possible ties (37,432 of 50,400) while only 7.5 percent of possible ties are realized in the migrant network (3,775 out of 50,400). Over 175 million migrants in 225 countries and territories participated in the migrant network in 2000. By contrast, the refugee network consisted of just over 10 million refugees moving among 187 countries, most of which contributed very little to this total.

These different levels of activity result in the networks having very different structures. The centralization scores (presented in Tables 4.1 through 4.4) for each network demonstrate that the refugee networks tend to be more centralized than the migrant. Central actors are more dominant in most of the refugee networks than they are in the migrant networks. The clearest example of this is the dichotomized refugee-receiving network in which the top ten actors account for almost a third of the total ties (see Table 3.17), resulting in a centralization score of over 67 percent. The sole exception to this pattern is the valued receiving networks. While more actors are involved in the migrant network, relative to the refugee network, the migrant network is the more centralized of the two.

Network density is another important area of difference between the migrant and refugee networks. The greater level of activity in the migrant networks makes them far denser than their refugee counterparts. This trend holds for both the dichotomized and valued networks. In the dichotomized networks, migrant network density is over 11 times greater than refugee network density (.737 versus .065), showing that the majority of ties in the migrant network are realized, while a relatively small number of ties are held in the refugee network. The density measure for the valued networks is actually an average value measure that captures the total of all values divided by the total number of possible ties. In essence, it captures the number of migrants or refugee per possible tie in the respective network. As Tables 4.1 and 4.2 show, the valued migrant network is again far denser than the refugee network (3455 versus 186).

Another area of structural difference is regional variation. Figures 4.9 through 4.12 show the percentage of total movers and total ties held by each region. While the migrant networks generally show a high level of equality in the percentage held by each region, the refugee networks are quite varied. In three of the four networks, the range of variation among regions in the migrant networks is smaller than that of the refugee networks. The exception to this pattern is again the valued migrant-receiving network (Figure 4.10), which is dominated by the percentage of migrants received by Western countries (45 percent). Among the refugee networks, Western countries receive higher percentages of ties and total refugees, while Eastern Europe / Central Asia (driven by Afghanistan) sends relatively more refugees than other regions and Africa contributes more sending ties than the others. The distinction between egalitarian migrant networks and more varied refugee networks further clarifies the differences in activity levels between the networks.

Pearson's and QAP correlations demonstrate the extent to which the networks are statistically different. While three of the four networks are correlated in the pairwise Pearson's analyses of centrality scores, the coefficients for these correlations are relatively low (see Table 4.5). This indicates that while there is some relationship between centrality in the networks, it is not strong. Statistics derived from the QAP correlations verify the level of difference that exists between these networks. Most telling among these is the Hamming Distance scores of 37441 (valued) and 33759 (dichotomized). These indicate that 75 percent of cells in the valued refugee network and 67 percent of cells in the dichotomized refugee network would have to be changed to match their counterparts in the migrant networks.

Examining the effects of variables that capture domestic conditions and global integration provides a mixed bag of findings about distinctions between the networks. While the comparisons do identify a number of differences that demonstrate that the migrant and refugee networks are shaped by different elements and differently shaped by some elements, a number of similarities also emerge. The identification of these relationships provides a launching point for the development of theory specifically related to refugee studies.

The networks demonstrate a high degree of similarity in terms of relationships (or lack of relationships) with variables in the different models. Interestingly, many of the relationships are similar down to the strength of the effect. While many of the similarities occurred in analyses with variables that did not have significant relationships with network centrality (i.e., the demographic models), a number of important areas of similarity in significant relationships were also identified. Among the valued networks, state strength reduced both sending and receiving centrality for both networks. Conflict demonstrated a significant positive effect on centrality across all eight networks – one of the most persistent relationships in the analysis. Finally, among the international variables, the effects of INGO participation, trade openness, and foreign aid are consistent across most networks.

A number of key differences also emerge that indicate areas in which the networks are differentially affected by these variables. These demonstrate clear distinctions between the networks, further indicating the extent to which migrant and refugee networks are different. The effect of development variables, particularly secondary enrollment, on refugee networks is one such distinction. This measure demonstrates significant relationships across refugee models, but seldom reaches any level of significance in the migrant models. Another area of difference is in the analyses of the environmental models. While these variables demonstrate no significant relationships with centrality in any of the migrant networks, they do present significant relationships in three of the four refugee networks. A third key difference is in the effect of political terror on centrality. Poor human rights scores only affect migrant centrality in the valued sending network, but show significant relationships with refugee centrality in all but the dichotomized receiving network. Human rights regimes impact refugee movement and receipt more than that of migrants across most networks.

Perhaps the most important distinction between the networks in these analyses is the effect of world system position. Semiperipheral status affects centrality in the refugee networks, but not the migrant networks in three of the four comparisons, showing a positive relationship with sending centrality and a negative relationship with receiving centrality. Comparisons of the valued receiving networks show the opposite trend. For these networks, the migrant network has a significant relationship with semiperipheral status, while this status fails to reach significance with the refugee network. The periphery measure is significant in every network, but the direction of the relationship differs based on the network under consideration. In analyses of receiving centrality, peripheral status has a consistent negative relationship with centrality across both migrant and refugee networks. Analyses of sending centrality, however, show that peripheral status is negatively related to centrality in the migrant networks but positively related to centrality in the refugee networks. Poorer countries send fewer migrants and hold fewer sending ties than countries in the core, while sending higher levels of refugees and hold more sending ties than core countries. This marks a clear difference between centrality in the networks. Understanding the mechanisms of these differences represents an important area for future study.

The examination of the effects of variables on the residual scores generated from the regression of a given refugee network on its migrant counterpart demonstrates a number of ways in which domestic conditions and global integration explain differences between the networks. While most of the variables examined in these analyses did not have significant relationships with the residual scores, several important significant effects emerged. First, regional variation plays a role in explaining distinctions between the receiving networks. While these variables show no relationships in the analyses of sending residual scores, several regions consistently demonstrate negative relationships with the receiving residuals. Countries in these regions, particularly Latin America, receive fewer refugees and hold fewer refugee-receiving ties than would be anticipated, based on the extent to which they receive migrants.

A second distinction between the networks identified in this analysis is the role of development and conflict variables in shaping the networks. Across analyses of the residual scores of different networks, CO_2 per capita, life expectancy, secondary enrollment, state strength, and trade openness all demonstrate significant effects in with at least one network. These measures cause countries to send and receive refugees at lower rates than would be expected, given their level of centrality in migrant networks. Countries that are more developed are less active in the refugee networks than the migrant networks. By contrast, state collapse, political terror, and world system position are associated with higher levels of refugee centrality relative to levels of migrant centrality. These measures cause countries to be more active in the refugee networks, particularly the sending networks. The world system findings are especially interesting. Lower world system position (semiperipheral or peripheral status) yields higher than expected refugee-sending centrality and lower than expected refugee-receiving centrality. While not surprising, these findings are noteworthy in that they demonstrate key areas of difference between centrality in the networks.

The analysis of differences between these networks answers a number of questions about the nature of these networks and about their relationships to each other. The research question that drives this chapter asks, “Are these networks different?” The analyses presented in this chapter yield a qualified “yes” to this question. The valued and dichotomized migrant and refugee sending and receiving networks are different in scope, in activity level, in structure, and in their relationships with variables from a number of perspectives. While they do prove to be similar in many ways, the differences that exist make the direct application of migrant theory to refugee movements problematic. Refugee movements are different than migrant movements. There is a need for further research into these refugee movements and destination choices with an eye toward the development of refugee-specific theory. Accomplishing this research will require better measures of refugees and would benefit from the collection of data that includes individuals who participate in “forced” moves for reasons beyond the political dynamics outlined in the UNHCR Convention.

While conflict and other political elements demonstrate important effects on refugee movements, it is noteworthy that these are not the only elements that were identified as important in these analyses. Measures capturing development level (life expectancy, CO_2 per capita, etc.) and international integration (world system position) consistently demonstrate significant relationships with centrality in the refugee networks and with residual scores. It seems that beyond political conditions, greater economic stability/development and participation in global trade networks impact refugee flows.

These analyses raise a number of questions and areas for further study. Future research should examine variables from other theoretical perspectives in an attempt to further understand and explain differences between migrant and refugee networks. Understanding how they are different will advance efforts to create refugee-specific theory and allow agencies to better predict origins and destinations of future refugee flows. Additionally, the examination of the role of development in refugee centrality, particularly sending centrality, will help policy-makers tailor interventions and development policy in ways that can help stop potential flows before they begin. Finally, more research is needed to help understand centrality and movements in these networks at the macro level. Understanding conditions that generate flows or make particular destinations more appealing can provide better predictions of movements and can advance the development of theory in both refugee and migrant research.

Chapter Five Outline

Chapter Five

CENTRALITY IN THE GLOBAL REFUGEE NETWORK

This chapter addresses the third research question by examining the effects of domestic conditions and international integration on a country's level of degree centrality in the valued and dichotomized sending and receiving networks. Measures reflecting economic, political, demographic, environmental, and international conditions are included in random effects and fixed effects models to examine how these conditions influence centrality across countries and over time for each of the four permutations of the global refugee network. The analyses in this study contribute to cross-national research in refugee studies in a number of ways. Most importantly, this is the first study to examine influences on refugee network centrality, either sending or receiving. Additionally, most cross-national refugee studies have focused on elements affecting destination choice (see Bocker and Havinga 1998; Moore and Shellman 2007). This analysis includes both sending and receiving centrality as dependent variables, examining both sides of refugee movement. Finally, the inclusion of over 200 countries and territories in the dataset and the examination of the 1990 to 2008 time period make this study among the most expansive and most recent analyses of refugee movements compiled to date.

To examine the effects of domestic and international factors on refugee network centrality, degree centrality scores were calculated for each of the four possible networks: valued sending, valued receiving, dichotomized sending, and dichotomized receiving. Countries with high centrality scores in the valued networks send or receive higher numbers of migrants or refugees than countries with lower centrality scores, while those with high centrality scores in the dichotomized networks exchange refugees with a large number of other countries. To develop these networks, I used data on refugees sent and received for 242 countries and territories for each year from 1990 to 2008. I calculated period averages for five waves: 1990-1993, 1994-1997, 1998-2001, 2002-2005, and 2006-2008, and used these to develop matrices for each wave and each network that included the total number of migrants and refugees sent and received by each country during that period. I then input these matrices into the UCINET (1999) software package and generated valued degree centrality scores. Next, I dichotomized each network, assigning a sending tie for each country that sent refugees to another country and a receiving tie to the destination country. I then calculated degree centrality scores for these networks using the dichotomized data. These procedures were repeated for each of the waves of the study, yielding four sets of centrality scores for each of the five waves. Altogether, this produces a maximum of 1210 observations for each network analysis.

I examine relationships between the independent variables and centrality in the different permutations of the global refugee network using random effects models (REMs) and fixed effects models (FEMs). I utilized a floating sample for the main REMs and FEMs in order to preserve as many observations as possible. However, I also conducted alternative analyses using a standardized sample, as well as a sample that excluded all countries that contributed only one observation. Additionally, I re-ran each model excluding outliers identified at the .05 level by the Hadi procedure. Results of these alternate analyses are reported following the presentation of the main results.

The analyses in this study progress in much the same manner as the OLS regressions of the comparative study in Chapter Four. A base model is included that examines regional and wave variables with each network centrality measure. Following this base model is each of the models outlined in the previous section: economic, political, demographic, international, and a final model that includes all of the variables that reach significance in any of the previous models in that particular network analysis. As some of the variables these final models demonstrated collinearity, I examined each model for problematic variables and then re-ran the final model, excluding those variables with high VIF scores. Besides this final model, a key difference between this analysis and that of Chapter Four is the inclusion of a full model that examines the effects of all of the variables for that section with the centrality measure and control variables.

Generally, it is expected that most of the variables will demonstrate some effect on centrality scores in the REMs. However, fewer significant relationships are anticipated in the FEMs due to the restricted attention to longitudinal change. Measures of economic growth and development are expected to yield higher receiving centrality, with greater instability and unrest yielding higher sending centrality. Among the international variables, it is anticipated that greater FDI penetration, trade openness, and INGO participation will reduce sending centrality and increase receiving centrality. For the world system positions, peripheral status should be associated with higher sending and lower receiving centrality, while semiperipheral status should demonstrate negative effects on both sending and receiving centrality.

RANDOM EFFECTS ANALYSIS OF THE GLOBAL REFUGEE NETWORK

Analysis of the valued sending network

Results of random effects models including variables from multiple perspectives on centrality in the valued refugee-sending network across five waves from 1990 to 2008 are presented in Tables 5.1 through 5.6. Each table presents results for individual models, net of wave and regional variation, culminating with a full model that includes all variables from that analysis, again controlling for region and time. A base model that includes only regional variables and time is presented in Model 1 of Table 5.1. Table 5.1 also includes economic and development variables. Political variables are presented in Table 5.2, demographic variables in Table 5.3, environmental variables in Table 5.4, and international variables in Table 5.5. Table 5.6 presents results from a final, multivariate model that includes all of the significant variables from the previous tables along with regional and wave controls.

Economic model

Table 5.1 presents REMs results for the regional base model, as well as variables capturing economic and development conditions within countries. In the base model (Model 1), each of the regional variables and time demonstrate positive significant relationships with valued sending centrality. Countries in each of these regions contributed significantly greater numbers of refugees to the global network than did Western countries. Of these regions, Sub-Saharan Africa shows the strongest relationship, followed closely by Eastern Europe and the Middle East. These relationships hold across most of the models in this analysis. Latin America demonstrates the weakest relationship of any of the regions, achieving only marginal significance in the base model and moving in and out of significance across the rest of the models. Regional measures show the least significance in the full model. Only Africa and Eastern Europe maintain significance when considered with all of the economic measures. Of these, both are reduced by 70 percent from their values in the base model, indicating that economic conditions explain the majority of regional variation in valued-sending centrality. The time measure demonstrates a consistent positive effect on centrality across all models in this analysis, indicating an increase in refugee-sending activity over time.

In the individual models, each of the economic variables demonstrates a significant negative relationship with valued sending centrality. GDP per capita, state strength, urbanization, and secondary education all negatively affect levels of refugee sending over the period of study. Of these, GDP per capita demonstrates the strongest relationship, increasing in strength in the final model. While state strength and secondary enrollment fail to maintain significance in the full model, the effect of urban population persists. The direction of this effect turns around in this model, indicating the presence of collinearity in this model. Collinearity checks revealed that urbanization and GDP per capita are highly correlated (.726), making the presence of both variables in this model problematic. When re-run without urbanization (Model 6a), the relationships identified in the full model do not change, however, the effect of GDP per capita becomes slightly weaker (-.616).

Table 5.1. Random Effects Models of Effects of Economic Conditions on Valued Sending Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 6a
Economic Variables							
GDP per capita		-.630*** (.056)				-.714*** (.074)	-.615*** (.065)
State strength			-.067*** (.027)			-.021 (.029)	-.022 (.029)
Urban population				-.287*** (.058)		.180** (.065)	
Secondary school enrollment					-.247*** (.048)	-.029 (.052)	-.008 (.052)
Control Variables							
Middle East / North Africa	.306*** (.065)	.092† (.053)	.216*** (.058)	.248*** (.061)	.182** (.056)	.051 (.050)	.069 (.050)
Latin America / Caribbean	.140† (.073)	-.055 (.063)	.175* (.072)	.121† (.072)	.088 (.068)	-.064 (.061)	-.068 (.063)
Sub-Saharan Africa	.454*** (.074)	-.130† (.077)	.386*** (.070)	.273*** (.080)	.199** (.077)	-.138† (.076)	-.155* (.078)
Asia and Pacific	.153* (.076)	-.157* (.072)	.264** (.077)	.102 (.080)	.169* (.076)	-.068 (.073)	-.094 (.074)
Eastern Europe / Central Asia	.391*** (.068)	.093 (.059)	.354*** (.062)	.341*** (.066)	.369*** (.060)	.117* (.057)	.119* (.058)
Time period	.129*** (.012)	.203*** (.015)	.166*** (.051)	.172*** (.014)	.198*** (.018)	.211*** (.019)	.212*** (.019)
Observations	1210	924	857	1030	824	745	745
States	242	191	182	206	190	170	170
R^2 Within	.13	.19	.18	.17	.15	.20	.21
R^2 Between	.22	.50	.23	.29	.32	.52	.49
R^2 Overall	.21	.44	.24	.27	.30	.47	.45

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Table 5.2. Random Effects Models of Effects of Political Variables on Valued Sending Network Centrality, 1990-2008

	Model 7	Model 8	Model 9	Model 10	Model 11
Political Variables					
Political repression	.420***				.315***
	(.038)				(.047)
Political terror		.262***			.155***
		(.028)			(.034)
Collapse			.029*		.045**
			(.013)		(.015)
Conflict				.173***	.104***
				(.021)	(.024)
Control Variables					
Middle East / North Africa	.017	.161**	.303***	.256***	-.026
	(.057)	(.052)	(.061)	(.053)	(.052)
Latin America / Caribbean	.077	.120†	.139*	.140*	.089
	(.064)	(.063)	(.069)	(.059)	(.062)
Sub-Saharan Africa	.133*	.266***	.449***	.404***	.099
	(.066)	(.062)	(.070)	(.060)	(.064)
Asia and Pacific	.020	.223***	.151*	.149*	.102
	(.068)	(.068)	(.072)	(.062)	(.069)
Eastern Europe / Central Asia	.186***	.268***	.388***	.345***	.164**
	(.057)	(.055)	(.065)	(.056)	(.054)
Time period	.197***	.142***	.131***	.145***	.202***
	(.014)	(.015)	(.012)	(.012)	(.018)
Observations	955	879	1210	1210	625
States	194	177	242	242	163
R^2 Within	.22	.20	.13	.15	.26
R^2 Between	.46	.43	.23	.35	.55
R^2 Overall	.42	.39	.22	.33	.51

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of REMs for the effects of domestic political conditions on centrality in the valued refugee-sending network are presented in Table 5.2. Like the economic analysis, regional variables and time hold significant positive relationships across most of the models. The exception again is Latin America, which moves in and out of significance and has the weakest effect of any of the regional variables. Interestingly, most of the regions fail to reach significance in the full model in this analysis, indicating that political instability accounts for much of the regional variation in valued-sending centrality. The exception to this trend is Eastern Europe. While political repression explains over half of the effect of this region, the rest remains largely unexplained by the other political measures.

Each of the political variables included in this analysis demonstrates a significant positive relationship with valued sending centrality. Countries experiencing these conditions contributed refugees to the global network at a high level. Political repression demonstrates the strongest relationship, followed by political terror, conflict, and collapse. Each of these relationships persists in the full model. Of the included variables, only state collapse demonstrates a strengthening of effect in the full model.

Demographic model

Table 5.3 presents the results of the analysis of the effects of population dynamics on valued sending centrality. While the significance of the regional variables shows less stability in these models, regional variation and time continue to generally demonstrate positive effects on centrality. Among the demographic variables, density, infant mortality, and life expectancy have significant effects on refugee-sending levels. Population density and life expectancy reduce centrality, while infant mortality rates positively affect increased sending levels. In the final model, the effect of population density fails to persist. However, infant mortality and life expectancy maintain significance. Fertility rate becomes significant in the final model, demonstrating a negative relationship with centrality. Collinearity checks indicate that these demographic variables are highly correlated (Mean VIF = 3.27; fertility = 4.23, infant mortality = 6.02, life expectancy = 5.73), reducing the validity of this full model.

Table 5.3. Random Effects Models of Effects of Demographic Variables on Valued Sending Network Centrality, 1990-2008

	Model 12	Model 13	Model 14	Model 15	Model 16
Demographic Variables					
Fertility rate	.022 (.059)				-.167* (.067)
Population density		-.137* (.055)			-.016 (.058)
Infant mortality			.337*** (.063)		.221** (.085)
Life expectancy				-.388*** (.053)	-.304*** (.067)
Control Variables					
Middle East / North Africa	.246*** (.067)	.261*** (.064)	.131* (.061)	.201*** (.058)	.181** (.061)
Latin America / Caribbean	.163* (.078)	.166* (.075)	.068 (.076)	.114† (.069)	.108 (.076)
Sub-Saharan Africa	.407*** (.088)	.422*** (.074)	.119 (.089)	.102 (.081)	.080 (.092)
Asia and Pacific	.217** (.085)	.230** (.079)	.076 (.083)	.124† (.075)	.130 (.084)
Eastern Europe / Central Asia	.369*** (.067)	.391*** (.068)	.286*** (.063)	.330*** (.062)	.287*** (.064)
Time period	.158*** (.018)	.154*** (.014)	.223*** (.050)	.198*** (.015)	.207*** (.020)
Observations	993	1023	959	991	900
States	203	211	192	203	187
R^2 Within	.16	.16	.16	.17	.17
R^2 Between	.18	.22	.34	.35	.37
R^2 Overall	.18	.21	.31	.31	.32

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Table 5.4. Random Effects Models of Effects of Environmental Conditions on Valued Sending Network Centrality, 1990-2008.

	Model 17	Model 18	Model 19
Environmental Variables			
CO_2 per capita	-.391***		-.383***
	(.049)		(.051)
Cropland under cultivation		-.116*	-.092†
		(.055)	(.049)
Control Variables			
Middle East / North Africa	.215***	.235***	.198***
	(.055)	(.066)	(.057)
Latin America / Caribbean	.062	.190*	.106
	(.066)	(.082)	(.072)
Sub-Saharan Africa	.143†	.390***	.117
	(.075)	(.079)	(.078)
Asia and Pacific	.088	.215*	.093
	(.074)	(.087)	(.079)
Eastern Europe / Central Asia	.360***	.397***	.360***
	(.060)	(.072)	(.063)
Time period	.173***	.160***	.184***
	(.014)	(.014)	(.015)
Observations	974	952	901
States	197	194	183
R^2 Within	.18	.17	.19
R^2 Between	.39	.19	.36
R^2 Overall	.37	.18	.33

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of models that include measures of environmental conditions and land use are presented in Table 5.4. Like the population models, regional variation shows varying degrees of significance across these models, but consistently in a positive direction. Both CO_2 per capita and cropland under cultivation demonstrate significant negative relationships with valued refugee-sending centrality. While both relationships persist in the full model, the effect of cropland under cultivation is reduced in both strength and level of significance, becoming marginally significant. By contrast, the effect of CO_2 per capita remains essentially unchanged.

International model

Table 5.5. Random Effects Models of Effects of International Integration on Valued Sending Network Centrality, 1990-2008

	Model 20	Model 21	Model 22	Model 23	Model 24
International Variables					
FDI penetration	.018 (.030)				-.061 (.041)
Trade openness		.042 (.028)			-.033 (.034)
Semiperiphery			.076 (.072)		.092 (.068)
Periphery			.115 (.084)		.073 (.090)
INGO membership ties				.167*** (.037)	.052 (.084)
Control Variables					
Middle East / North Africa	.270*** (.064)	.264*** (.060)	.200** (.064)	.319*** (.060)	.213*** (.061)
Latin America / Caribbean	.110 (.075)	.195** (.073)	.207* (.083)	.175* (.069)	.234** (.079)
Sub-Saharan Africa	.408*** (.076)	.445*** (.071)	.387*** (.088)	.497*** (.071)	.410*** (.084)
Asia and Pacific	.182* (.081)	.235** (.078)	.351*** (.088)	.246** (.076)	.342*** (.085)
Eastern Europe / Central Asia	.368*** (.070)	.372*** (.064)	.470*** (.089)	.447*** (.064)	.472*** (.081)
Time period	.147** (.018)	.157*** (.015)	.152*** (.015)	.073*** (.015)	.162*** (.027)
Observations	993	924	705	1117	645
States	202	194	141	233	134
R^2 Within	.16	.17	.18	.10	.17
R^2 Between	.20	.22	.27	.32	.31
R^2 Overall	.19	.22	.25	.30	.28

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

The effects of variables capturing levels of international integration on centrality in the valued refugee-sending network are presented in Table 5.5. Across these models, all of the regional variables demonstrate strong significant positive relationships with centrality. This includes the Latin America variable that has previously shown varying levels of significance. The persistence of the effects of regional variables in the full model indicates that international measures do not explain regional variation in the valued refugee-sending network. Among the international variables, however, there is little in the way of significant effects to be found. FDI penetration, trade openness, and world system position do not affect levels of refugee-sending centrality. Only INGO participation has a significant relationship with centrality, demonstrating a positive effect in the individual model (Model 23). Countries with more INGO membership ties were more central in the global network over the period of the analysis. This relationship fails to persist when included with other measures in the full model.

Final model

In Table 5.6, I estimate all of the variables that demonstrated significance in previous models simultaneously (Tables 5.1 through 5.5), net of regional variation and time. Although urban population demonstrated a significant effect in Model 4, it is excluded from this model due to the collinearity it introduces into models with GDP per capita. The change in direction demonstrated by population density and infant mortality in the final model indicate that multicollinearity remains, in spite of the exclusion of urbanization. Upon further examination of VIF scores in the model, infant mortality (14.19), CO_2 per capita (9.35), life expectancy (7.20), and secondary enrollment (6.67) were found to be highly correlated. I removed these measures and re-ran the final model with the remaining variables. These results are presented in Model 26.

In this model, the Middle East and Latin America fail to demonstrate a significant effect on centrality, while Sub-Saharan Africa, Asia, and Eastern Europe maintain significance. As in all previous models, the time measure demonstrates a significant positive relationship with centrality. A number of previously significant variables fail to achieve significance when evaluated with other measures. State strength, collapse, cropland under cultivation, and INGO participation all lose significance in this model. GDP per capita, repression, human rights, conflict, and population density demonstrate similar relationships to those presented in earlier models. GDP per capita reduces centrality, while the political variables and population density yield greater centrality. The persistence of these effects when considered together indicates that these root causes operate independently of each other. Of these, GDP per capita demonstrates the strongest effect.

Table 5.6. Random Effects Models of Effects of all Previously Significant Variables on Valued Sending Network Centrality, 1990-2008

	Model 25	Model 26
Predictor Variables		
GDP per capita	-.569***	-.380***
	(.102)	(.055)
State strength	-.014	.003
	(.029)	(.025)
Secondary school enrollment	.084	
	(.051)	
Political repression	.225***	.201***
	(.044)	(.041)
Political terror	.175***	.170***
	(.032)	(.029)
Collapse	.020	.019
	(.014)	(.023)

Conflict	.089***	.079***
	(.022)	(.020)
Population density	.099†	.099†
	(.057)	(.055)
Infant mortality	-.225*	
	(.093)	
Life expectancy	-.145*	
	(.062)	
CO_2 per capita	.087	
	(.082)	
Cropland under cultivation	-.030	-.017
	(.050)	(.049)
INGO membership ties	.080	.040
	(.057)	(.051)
Control Variables		
Middle East / North Africa	-.034	-.061
	(.046)	(.046)
Latin America / Caribbean	.000	-.056
	(.054)	(.055)
Sub-Saharan Africa	-.125†	-.179**
	(.068)	(.065)
Asia and Pacific	-.083	-.113†
	(.065)	(.066)
Eastern Europe / Central Asia	.100†	.111*
	(.051)	(.049)
Time period	.135***	.171***
	(.022)	(.018)
Observations	655	734
States	153	157
R^2 Within	.27	.27
R^2 Between	.71	.66
R^2 Overall	.64	.61

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of valued sending network results

The results of random effects models for domestic conditions and international integration on centrality in the valued refugee-sending network provide several interesting stories about conditions that influence sending levels across the network. Regional variation and time demonstrate consistent significant relationships with centrality across most models. These regional variables have positive effects on centrality, indicating that non-Western regions send more refugees than advanced Western countries. This finding reflects the trends identified in Chapter Three (see Figure 3.3). Interestingly, several variables cause some or all of the regions to lose significance. For instance, the political repression model (Model 7) causes the Middle East, Latin America, and Asia to fall out of significance, clearly explaining sending centrality in these regions. The wave measure is positively signed, indicating that sending centrality in this network increases over time. This reflects the finding presented in Table 3.4.

Along with regional variation and time, a number of variables show significant positive effects on valued sending centrality. Each of the variables in the political model (Table 5.2) demonstrates a positive effect on centrality. The presence of political repression, human rights abuse, state collapse, and conflict all cause countries to be more central in the valued-sending network. These findings are particularly robust as the effect of each persists in the full model, with the effect of collapse becoming stronger. In addition to the political variables, infant mortality and INGO participation both yield greater centrality. The INGO finding is surprising. The world polity perspective would predict that greater INGO participation would lead to better conditions within potential sending countries, limiting the need for refugees to leave. This does not appear to be the case. It may be that greater participation in the world polity generates networks through which refugees can more readily move, or it may be that countries that experience refugee movements gain INGO ties as aid and development organizations establish work in these countries to help in situations that have caused refugee flows. This relationship does not persist in the full model, indicating that the source of the effect is absorbed by the presence of other measures of international integration.

A number of variables demonstrate negative effects on centrality as well. GDP per capita, state strength, urbanization, and secondary enrollment all produce reductions in sending centrality. Countries at higher levels of economic development do not experience many of the conditions noted above that lead to increased refugee sending (i.e., political repression, state collapse). In addition to the economic variables, other indicators of development demonstrate negative relationships with centrality. Population density, life expectancy, and the environmental variables all yield reduced levels of refugee sending. Of all of these variables, the effect of GDP per capita is the strongest, with a coefficient of -.616 in the adjusted full economic model.

The importance of GDP per capita to centrality in the network is further demonstrated in the final model (Table 5.6, Model 26) in which GDP per capita has the strongest effect (-.380) in spite of the presence of the political variables and other factors. While three of the four political measures also demonstrate significant effects, the effect of GDP growth seems to be at least as important, if not more so, than these in predicting centrality. While political instability is certainly a primary contributor to refugee outflows, economic growth demonstrates the ability to counter these effects.

Two general trends emerge in this analysis. First, positive economic and development conditions lead to reduced refugee-sending centrality. The presence of economic growth, strong governments, high life expectancies, and other positive conditions create an environment in which refugee outflows are not initiated or take place on a limited scale. This limited level of refugee sending may be the product of potential refugees having greater economic ties to their native country and choosing to stay in circumstances when less connected individuals might choose to move.

The second clear trend is the role of political instability and difficult domestic conditions in increasing refugee flows. While these findings are not particularly surprising, they do confirm that addressing these conditions is an important step in the process of limiting refugee movement and eliminating the causes of potential future moves. The INGO finding is an anomaly among these positive variables, as greater INGO membership is typically not perceived as a negative situation. However, INGOs may be more tied to these countries as a result of the difficult political conditions within them, thereby increasing the strength of this relationship over time as many sending countries continue to contribute refugees over long periods of time. For these countries INGO participation may increase, but without limiting refugee outflows.

This analysis yields mixed success with respect to predicted relationships. The economic variables act as expected, with each demonstrating a negative relationship with centrality. Likewise, the political variables exhibit the predicted positive relationships with centrality. Among the demographic variables, infant mortality and life expectancy yielded the expected outcomes, but population density acted in the opposite of the predicted relationship, while fertility rate failed to achieve significance. Among the environmental measures CO_2 per capita demonstrated the opposite relationship to that predicted, having a negative effect on centrality rather than positive, while cropland under cultivation demonstrated the predicted negative effect. The international integration model provides the most surprising differences between predicted and observed relationships. While FDI penetration, trade openness, and world system position were all expected to have significant effects in this model, none of these variables achieved significance with valued sending centrality. The only significant international variable - INGO membership ties - acts in the opposite direction of what was predicted, exerting a positive effect on centrality, rather than negative.

Analysis of the valued receiving network

Results of random effects models including variables from multiple perspectives with centrality scores for the valued refugee-receiving network from 1990 to 2008 are presented in Tables 5.7 through 5.12. Each table presents results for individual models, net of wave and regional variation, and ends with a full model that includes all variables from that analysis, again controlling for region and time. A base model that includes only regional variables and time is presented in Table 5.7. This table also includes economic and development variables. Political variables are presented in Table 5.8, demographic variables in Table 5.9, environmental variables in Table 5.10, and international variables in Table 5.11. Table 5.12 presents results from a final, multivariate model that includes all of the significant variables from the previous tables along with regional and wave controls.

Economic model

The results of REMs examining the effects of regional variation and economic variables on valued refugee-receiving centrality are presented in Table 5.7. Time shows a consistent positive relationship with receiving centrality, reflecting trends identified in

Chapter Three (see Table 3.4). Regions show different effects on centrality. Latin America and Asia show consistent significant negative relationships with centrality across these models. These regions receive fewer refugees, relative to Western countries. Africa and Eastern Europe move in and out of significance across models while the Middle East generally fails to reach significance. Interestingly, Africa demonstrates a marginally significant positive relationship with centrality in the regional model (Model 1), indicating that African countries are more central relative to the West. However, this relationship changes direction in the presence of GDP per capita (Model 2 and Model 6), becoming negative at a greater level of significance. Unlike the analysis of the valued ending network, economic conditions demonstrate little efficacy in explaining regional variation in this analysis.

As in the valued-sending network analysis, each of the economic and development variables demonstrates a significant relationship with receiving centrality. However, these relationships are not as strong and, particularly in the case of secondary enrollment, not as robust across models. Of these measures, only the effects of GDP per capita and strength persist into the full model. Interestingly, both of these relationships become stronger in the presence of other variables in the model. The inclusion of urban population in this full model again introduces collinearity, however, the removal of this measure does not impact the other relationships demonstrated in Model 6.

Table 5.7. Random Effects Models of Effects of Economic Conditions on Valued Receiving Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 6a
Economic Variables							
GDP per capita		-.328*** (.069)				-.342*** (.094)	-.279** (.083)
State strength			-.060* (.030)			-.079* (.035)	-.079* (.035)
Urban population				-.144* (.065)		.119 (.085)	
Secondary school enrollment					-.090† (.054)	-.003 (.063)	.012 (.062)
Control Variables							
Middle East / North Africa	.081 (.066)	-.051 (.067)	-.049 (.064)	.044 (.067)	-.057 (.066)	-.116† (.066)	-.104 (.066)
Latin America / Caribbean	-.199** (.075)	-.364*** (.081)	-.288*** (.079)	-.242** (.079)	-.335*** (.079)	-.385*** (.081)	-.388*** (.083)
Sub-Saharan Africa	.141† (.076)	-.205* (.098)	-.004 (.077)	.032 (.088)	-.067 (.089)	-.228* (.100)	-.239* (.102)
Asia and Pacific	-.263*** (.078)	-.459*** (.092)	-.310*** (.085)	-.308*** (.088)	-.362*** (.088)	-.427*** (.097)	-.445*** (.097)
Eastern Europe / Central Asia	.046 (.070)	-.184* (.075)	-.087 (.069)	-.013 (.073)	-.078 (.071)	-.202** (.075)	-.201** (.076)
Time period	.037** (.013)	.076*** (.016)	.052** (.017)	.059*** (.015)	.062** (.020)	.067** (.022)	.068** (.022)
Observations	1210	924	857	1030	824	745	745
States	242	191	182	206	190	170	170
R^2 Within	.01	.02	.02	.02	.01	.01	.02
R^2 Between	.18	.25	.18	.18	.20	.25	.22
R^2 Overall	.16	.21	.13	.15	.15	.18	.16

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Political Model

Table 5.8. Random Effects Models of Effects of Political Variables on Valued Receiving Network Centrality, 1990-2008

	Model 7	Model 8	Model 9	Model 10	Model 11
Political Variables					
Political repression	.139** (.044)				.065 (.049)
Political terror		.084** (.032)			.059† (.035)
Collapse			-.003 (.013)		-.006 (.015)
Conflict				.154*** (.022)	.119*** (.025)
Control Variables					
Middle East / North Africa	-.039 (.071)	-.005 (.065)	.081 (.065)	.037 (.053)	-.068 (.065)
Latin America / Caribbean	-.245** (.081)	-.242** (.080)	-.199** (.074)	-.200*** (.060)	-.246*** (.076)
Sub-Saharan Africa	-.158 (.082)	.006 (.079)	.142† (.075)	.096 (.061)	-.053 (.078)
Asia and Pacific	-.356*** (.086)	-.269** (.087)	-.263*** (.077)	-.267*** (.063)	-.306*** (.085)
Eastern Europe / Central Asia	-.087 (.072)	-.090 (.070)	.046 (.069)	.004 (.057)	-.144* (.068)
Time period	.063*** (.016)	.050** (.017)	.037** (.013)	.051*** (.013)	.071*** (.018)
Observations	955	879	1210	1210	861
States	194	177	242	242	174
R^2 Within	.02	.01	.01	.02	.03
R^2 Between	.20	.17	.18	.32	.25
R^2 Overall	.17	.15	.16	.28	.21

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Table 5.8 presents REMs for the analysis of political variables. Political repression, political terror, and conflict all demonstrate positive significant relationships with receiving centrality. Countries that experience these factors receive refugees at higher rates than those that do not. Of these, political terror and conflict persist in the final model. Among the regional variables, only Latin America and Asia have consistent relationships with refugee receiving across these models, both having negative effects on centrality, indicating that these regions receive fewer refugees than the West. Variation in receiving centrality for the other included regions is explained by political conditions in these countries.

Demographic model

The results of REMs for demographic variables are presented in Table 5.9. As in the political analysis, only Latin America and Asia have significant relationships among the regional variables. Across the population measures, fertility rate has a positive effect on centrality, while population density and life expectancy have negative relationships with refugee receipt. Countries with high fertility rates have greater receiving centrality; those with greater levels of density and higher life expectancies have lower centrality. Infant mortality does not demonstrate a significant effect on centrality. Of the significant relationships, population density and life expectancy demonstrate marginal significance in the full model, while fertility rate fails to reach significance when other elements are included. As in the previous demographic model, the presence of collinearity (Mean VIF = 3.27) calls into question the validity of the results in Model 16.

Table 5.9. Random Effects Models of Effects of Demographic Variables on Valued Receiving Network Centrality, 1990-2008

	Model 12	Model 13	Model 14	Model 15	Model 16
Demographic Variables					
Fertility rate	.137*				.067
	(.062)				(.074)
Population density		-.170**			-.119†
		(.057)			(.067)
Infant mortality			.100		-.023
			(.071)		(.094)
Life expectancy				-.174**	-.128†
				(.059)	(.073)
Control Variables					
Middle East / North Africa	-.035	.049	-.012	.004	-.047
	(.071)	(.066)	(.070)	(.066)	(.071)
Latin America / Caribbean	-.309***	-.231**	-.242**	-.265***	-.290***
	(.082)	(.078)	(.087)	(.078)	(.088)
Sub-Saharan Africa	-.049	.090	-.013	-.072	-.122
	(.093)	(.077)	(.102)	(.091)	(.106)
Asia and Pacific	-.347***	-.230**	-.313***	-.314***	-.327***
	(.089)	(.082)	(.096)	(.085)	(.098)
Eastern Europe / Central Asia	-.043	.015	-.046	-.037	-.042
	(.071)	(.070)	(.073)	(.070)	(.074)
Time period	.073***	.052***	.073***	.068***	.080***
	(.019)	(.014)	(.020)	(.016)	(.021)
Observations	993	1023	959	991	900
States	203	211	192	203	187
R^2 Within	.02	.20	.01	.01	.02
R^2 Between	.18	.19	.16	.19	.18
R^2 Overall	.16	.17	.14	.17	.15

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Results of REMs that include environmental and land use measures with receiving centrality are presented in Table 5.10. As in the previous tables, Latin America and Asia are the only significant regional variables, both having strong negative relationships with centrality. CO_2 per capita and cropland under cultivation also demonstrate negative relationships with receiving centrality. High levels of each are associated with reduced centrality. These relationships persist in the full model, but at reduced levels of significance. In this model, CO_2 per capita manages to achieve only marginal significance. Additionally, the strength of both effects is reduced when they are estimated together.

Table 5.10. Random Effects Models of Effects of Environmental Conditions on Valued Receiving Network Centrality, 1990-2008

	Model 17	Model 18	Model 19
Environmental Variables			
CO_2 per capita	-.115*		-.102†
	(.056)		(.056)
Cropland under cultivation		-.186***	-.169**
		(.056)	(.056)
Control Variables			
Middle East / North Africa	.018	-.023	-.034
	(.065)	(.067)	(.065)
Latin America / Caribbean	-.272***	-.273***	-.284***
	(.079)	(.083)	(.083)
Sub-Saharan Africa	.013	-.013	-.066
	(.089)	(.080)	(.089)
Asia and Pacific	-.293***	-.326***	-.338***
	(.088)	(.088)	(.091)
Eastern Europe / Central Asia	-.024	-.035	-.062
	(.072)	(.073)	(.072)
Time period	.047**	.049***	.054***
	(.015)	(.015)	(.016)
Observations	974	952	901
States	197	194	183
R^2 Within	.01	.02	.02
R^2 Between	.19	.23	.21
R^2 Overall	.17	.20	.18

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Table 5.11. Random Effects Models of Effects of International Integration on Valued Receiving Network Centrality, 1990-2008

	Model 20	Model 21	Model 22	Model 23	Model 24
International Variables					
FDI penetration	.055†				-.033
	(.031)				(.047)
Trade openness		.067*			-.015
		(.029)			(.039)
Semiperiphery			-.182*		-.153*
			(.075)		(.071)
Periphery			-.386***		-.319**
			(.087)		(.096)
INGO membership ties				.339***	.134
				(.036)	(.097)
Control Variables					
Middle East / North Africa	-.018	.035	.091	.110*	.097
	(.066)	(.067)	(.067)	(.053)	(.063)
Latin America / Caribbean	-.034***	-.226**	-.059	-.128*	-.048
	(.078)	(.081)	(.087)	(.061)	(.083)
Sub-Saharan Africa	.021	.104	.309**	.232***	.307***
	(.079)	(.079)	(.091)	(.063)	(.087)
Asia and Pacific	-.355***	-.239**	-.055	-.085	-.016
	(.084)	(.086)	(.091)	(.067)	(.089)
Eastern Europe / Central Asia	-.066	-.031	.008	.096†	.008
	(.073)	(.071)	(.093)	(.056)	(.085)
Time period	.026	.047**	.045*	-.057***	.034
	(.018)	(.016)	(.018)	(.016)	(.031)
Observations	993	924	705	1117	645
States	202	194	141	233	134
R^2 Within	.03	.02	.01	.00	.01
R^2 Between	.19	.17	.24	.47	.27
R^2 Overall	.18	.13	.21	.41	.22

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Table 5.11 presents REMs results of the analyses of international integration measures with refugee-receiving centrality. The regional variables in this analysis demonstrate an interesting pattern. While Latin America and Asia have significant negative relationships in models with FDI penetration and trade openness (Models 20 and 21), these effects disappear in models with world system position and INGO participation (Models 22 and 23). By contrast, Sub-Saharan Africa fails to be significant in the first two models, but becomes the only significant regional variable in the world system and INGO models. Africa demonstrates a positive relationship with centrality in these models, indicating greater centrality for countries in these regions, relative to the West, when these variables are included. Also, the wave measure fails to reach significance in the model with FDI penetration (Model 20) and again in the full model (Model 24). Increased centrality in the network over time seems to be explained by the presence of foreign investment.

Unlike the analysis of the valued sending network (Table 5.5), all of the international variables demonstrate significant effects in this analysis. FDI penetration and trade openness are positively related to centrality, while both measures of world system position are negatively related to centrality. INGO participation is also significant and positive in this analysis. Greater levels of FDI and participation in global trade cause countries to be more central in the receiving network. This may reflect the primary role played by countries like the United States in investment and trade and also refugee receipt. Greater INGO participation also increases receiving centrality. Countries with greater connections to the world polity may feel a greater responsibility in the international community to receive refugees. It is also possible that some countries have high levels of INGO ties as a result of the presence of previous refugee flows and the presence of those earlier refugees makes these countries more likely hosts for future refugees as networks and services are more readily available.

Countries in the semiperiphery and the periphery receive fewer refugees, relative to the core. Many of the heaviest receiving countries (e.g., the United States, Germany, Pakistan) are in the core, and the volume of refugees received by these countries far outstrips that of countries at other world system positions. These relationships are particularly robust as they are the only variables in this analysis to reach significance in the full model.

Final model

Table 5.12 presents REMs results of a model that includes all of the significant variables from previous models with valued refugee-receiving centrality. As in the valued sending final model, examining VIF scores revealed a number of highly correlated variables. CO_2 per capita (VIF=10.53), secondary school enrollment (8.58), life expectancy (7.04), and fertility rate (6.95) were excluded, and the final model re-run. Results of this adjusted model are presented in Model 26. A number of interesting findings emerge. As in most of the previous models in this section, Latin America and Asia have significant relationships, along with the time measure. While Eastern Europe failed to reach significance in most of the models, this measure demonstrates a significant effect in this one. Of the economic variables, only GDP per capita maintains significance in this model, while conflict is the only political variable to reach significance. Development and instability do not seem to have the same levels of independent effects with receiving centrality that they demonstrate with sending centrality.

The international integration measures demonstrate varying degrees of robustness in this model. FDI and trade openness fail to reach significance, but the significant effects of world system position and INGO participation persist. Semiperipheral and peripheral status are negatively signed, indicating that core countries in the global trade network receive more refugees than those in these lower positions. The effect of peripheral position is particularly strong (-.362), representing the strongest relationship in any of the models in the analysis. The variables that persist in this model clearly demonstrate the independent functioning of three key sets of relationships: development, instability, and integration.

Table 5.12. Random Effects Models of Effects of all Previously Significant Variables on Valued Receiving Network Centrality, 1990-2008

	Model 25	Model 26
GDP per capita	-.097	-.345***
	(.135)	(.079)
State strength	-.044	-.039
	(.047)	(.041)
Secondary enrollment	.108	
	(.077)	
Political repression	.104	.070
	(.065)	(.062)
Political terror	.024	.051
	(.049)	(.046)
Conflict	.090**	.086**
	(.033)	(.030)
Fertility rate	.332**	
	(.096)	
Population density	.093	.002
	(.076)	(.070)
Life expectancy	-.229**	
	(.085)	
CO_2 per capita	-.003	
	(.121)	

Cropland under cultivation	-.029	-.046
	(.069)	(.065)
FDI penetration	-.036	-.044
	(.052)	(.050)
Trade openness	-.022	-.014
	(.042)	(.040)
Semiperiphery	-.179**	-.179**
	(.059)	(.059)
Periphery	-.407***	-.362***
	(.088)	(.087)
INGO membership ties	.334**	.287**
	(.104)	(.099)
Control Variables		
Middle East / North Africa	-.079	-.025
	(.066)	(.060)
Latin America / Caribbean	-.161*	-.181*
	(.074)	(.060)
Sub-Saharan Africa	-.103	-.011
	(.094)	(.088)
Asia and Pacific	-.214*	-.249**
	(.090)	(.086)
Eastern Europe / Central Asia	-.071	-.154*
	(.083)	(.077)
Time period	.066†	.040
	(.035)	(.033)
Observations	534	588
States	124	125
R^2 Within	.05	.01
R^2 Between	.53	.53
R^2 Overall	.44	.42

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of valued receiving network results

Analyses of the valued refugee-receiving network demonstrate a number of interesting and important relationships. Among the regional variables, only Latin

America and Asia consistently reach significance. The negative relationships demonstrated by these regions indicate that they receive refugees at a lower rate than Western countries. While these relationships are not present in international models with world system position or INGO ties, they are persistent across other models, including the final model that contains the position and INGO measures.

Domestic and international factors from a variety of models demonstrated significant positive relationships with receiving centrality. Interestingly, elements of political instability that increased centrality in the sending network also have a positive effect on centrality in the receiving network. Political repression, political terror, and conflict are all related to greater refugee-receiving centrality. The effect of conflict is particularly robust, persisting in the full political model and the final model. Two elements seem to be at work in these findings. First, countries that experience high levels of political repression and poor human rights scores tend to be in high refugee-sending regions. Proximity to other countries experiencing these conditions make these countries likely destinations for refugees who do not have the means to travel beyond crossing a border. Additionally, the United States and several other high-receiving countries were involved in conflicts away from their own country during several of the waves of the study. While previous studies have found that refugees tend to avoid moving to countries engaged in conflict when possible (Moore and Shellman 2007), the kind of conflict experienced by many high-receiving countries in this study would not deter inbound refugees.

In addition to political elements, several measures of international integration are related to increased receiving centrality. Countries that have high levels of FDI penetration, trade openness, and INGO participation receive refugees at high levels. These countries tend to be more active in global networks, particularly transportation networks, and may represent easy destinations for refugees. Additionally, countries that are high in INGO ties may be more open to receiving refugees due to the presence of scripts that identify such receipt as the appropriate thing for countries to do in global culture. The robustness of the INGO findings, demonstrated by the persistence of the relationship in the final model, indicates the importance of this relationship in understanding receiving centrality.

The analyses across these models also reveal a number of elements that are negatively related to valued receiving centrality. Each of the economic and development measures demonstrates a significant negative relationship with centrality. Countries with growing economies, strong governments, more urban populations, and high secondary enrollment receive fewer refugees than those facing opposite conditions. This demonstrates the role played by economic development in limiting refugee receipt. It is possible that these more-developed countries are removed from areas of political instability that generate refugee flows and that this distance limits the extent to which these countries are affected by these movements. It is also possible, as some have discussed (see Betts 2008), that these advanced countries are able to limit the number of refugees received, thus reducing their centrality. Other measures that capture different facets of development – life expectancy, CO_2 per capita, and cropland under cultivation – also demonstrate negative relationships with centrality.

The world system measures also have significant negative relationships with receiving centrality. Both semiperipheral and peripheral countries receive refugees at lower levels than countries in the core. Countries at these levels are less attractive as destinations for refugees who are able to choose where they go and may be bypassed for more advanced destinations when possible. When considered with the development findings, these results indicate that more-developed countries receive fewer refugees, but countries that are highly integrated in global networks receive more. Advanced countries have been primary destinations for refugees for most of the modern history of these movements. As such, many of those counted in these countries as refugees, have resided in these countries for decades. An interesting area for further study would be to examine the destination choices of refugees in recent flows to see the extent to which these dynamics have changed over time, resulting in the development of new refugee destinations.

Of the economic and political variables in the final model, only GDP per capita and conflict persist. Other economic and political measures demonstrate important effects individually and with other similar variables, however, their effects are not robust when estimated with the other measures in this model. Integration measures fare slightly better, with world system position and INGO participation persisting. Peripheral status demonstrates the strongest relationship of any in this model, again indicating the importance of this measure in understanding refugee movements (-.362).

Two general trends are observed from this analysis. First, two kinds of countries emerge as high-receiving refugee destinations. Countries with greater instability are more central in the valued receiving network. These countries may experience greater refugee inflows due to proximity to refugee-sending countries or due to a reduced ability to control refugee flows into their borders. The movement of refugees into these countries in which they may face similar circumstances as those from which they are fleeing indicates a lack of autonomy in destination decisions for many refugees. In addition to less-stable countries, those countries that are more connected to global networks are more central receivers of refugees. Countries with greater trade, investment, and participation in the INGO network are connected via communications and transportation, easing population movements between these countries. The world system position measures demonstrate this dynamic through the presence of negative relationships for semiperipheral and peripheral status, indicating that less connected countries receive fewer refugees.

The second general trend is the role of economic development in decreasing receiving centrality. Some advanced countries are highly central in the valued receiving network (e.g., the United States, Germany), demonstrating the effects of higher integration in global networks. However, many high-receiving countries are at medium and low levels of development. More-developed countries may be better able to limit refugee inflows, either through distance or through border protections, while less-developed countries are easier targets for refugees. Regional movement may also play a role in this dynamic, as high refugee-sending countries tend to be in poorer regions. Less-developed countries in these regions may, as a result, receive higher numbers of refugees.

While the relationships in the sending network emerged along fairly predictable lines, this is less true for the receiving network. As some of the most developed countries are high receivers of refugees, it stands to reason that development would be positively related to refugee-receiving centrality. This turns out not to be the case. Conversely, it makes intuitive sense that refugees would avoid moving from one negative political situation to another. Again, the findings from this analysis demonstrate that the opposite is true. Predictions about the effects of these variables on centrality proved to be incorrect. Additionally, population density and semiperipheral status demonstrate relationships that are the opposite of predictions. Collapse also presented an unexpected relationship, failing to achieve a predicted negative relationship with centrality.

While a number of relationships demonstrated the opposite of predicted effects or failed to demonstrate any significant relationships, a number of predictions were confirmed in this analysis. Peripheral status demonstrated the anticipated negative relationships with receiving centrality, while INGO participation met expectations with a significant positive relationship. A number of variables for which no significant effect was predicted also impacted centrality. The population measures, environmental measures, FDI penetration, and trade openness all reached significance in individual or full models, demonstrating an unexpected important role for these measures in understanding receiving centrality.

Analysis of the dichotomized sending network

Results of random effects models for variables from multiple perspectives with centrality in the dichotomized refugee-sending network from 1990 to 2008 are presented in Tables 5.13 through 5.18. Each table presents results for individual models, net of wave and regional variation, and ends with a full model that includes all variables from that analysis, again controlling for region and time. A base model that includes only regional variables and time is presented in Table 5.13. This table also includes economic and development variables. Political variables are presented in Table 5.14, demographic variables in Table 5.15, environmental variables in Table 5.16, and international variables in Table 5.17. Table 5.18 presents results from a final, multivariate model that includes all of the significant variables from the previous tables along with regional and wave controls.

Economic model

Results of REMs for the effects of economic and development variables on centrality in the dichotomized refugee-sending network are presented in Table 5.13. The wave measure demonstrates a consistent significant positive relationship with sending centrality across models, confirming earlier findings that the network becomes more active over time (see Table 3.2). Regional variables experience mixed results. In the base model, the Middle East, Africa, and Eastern Europe reach significance, each demonstrating a positive relationship with centrality. Across the models in this analysis, all of the regional variables move in and out of significance with the exception of the Middle East, which consistently achieves significance.

As in the economic analysis of the valued sending network (Table 5.1), all of the economic variables demonstrate significant negative relationships with dichotomized sending centrality. GDP per capita has a particularly strong effect, reaching -.571 in the individual model with only a slight weakening to -.563 in the adjusted full model (Model 6a). These results indicate that countries with greater economic development send refugees to fewer partners than less developed countries. Of the economic variables, GDP per capita, strength, and urbanization persist in the full model, while enrollment loses significance when considered with the other measures. Again, I removed urbanization and ran an adjusted full model to evaluate the effects of collinearity that it introduced into the model. The relationships of GDP per capita, state strength, and secondary enrollment were unchanged in this model, however, the effect of GDP per capita was diminished.

Table 5.13. Random Effects Models of Effects of Economic Conditions on Dichotomized Sending Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 6a
Economic Variables							
GDP per capita		-.571*** (.049)				-.687*** (.058)	-.563*** (.052)
State strength			-.070** (.022)			-.056* (.022)	-.056* (.023)
Urban population				-.234*** (.053)		.236*** (.052)	
Secondary school enrollment					-.211*** (.039)	-.044 (.040)	-.019 (.040)
Control Variables							
Middle East / North Africa	.354*** (.061)	.171*** (.046)	.264*** (.050)	.299*** (.055)	.234*** (.051)	.110** (.040)	.131* (.041)
Latin America / Caribbean	.100 (.069)	-.069 (.056)	.130* (.061)	.084 (.066)	.048 (.061)	-.103* (.049)	-.110* (.052)
Sub-Saharan Africa	.461*** (.070)	-.054 (.068)	.393*** (.060)	.323*** (.073)	.253*** (.068)	-.082 (.061)	-.109† (.064)
Asia and Pacific	.063 (.071)	-.207*** (.063)	.152* (.066)	.031 (.074)	.070 (.068)	-.147* (.058)	-.185** (.061)
Eastern Europe / Central Asia	.344*** (.064)	.068 (.052)	.283*** (.053)	.296*** (.060)	.315*** (.055)	.073 (.045)	.074 (.048)
Time period	.248*** (.011)	.342*** (.012)	.314*** (.013)	.302*** (.011)	.338*** (.014)	.353*** (.014)	.355*** (.014)
Observations	1210	924	857	1030	824	745	745
States	242	191	182	206	190	170	170
R^2 Within	.43	.56	.57	.52	.58	.62	.62
R^2 Between	.29	.57	.31	.34	.34	.62	.58
R^2 Overall	.31	.55	.38	.37	.40	.63	.60

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Table 5.14 presents the results of REMs that include political variables. Among the regional variables, the Middle East, Africa, and Eastern Europe demonstrate consistent significant relationships while Latin America and Asia remain largely non-significant across models. Significant relationships among these variables are all positive, indicating greater centrality relative to Western countries. As in the previous models, time continues to demonstrate a significant positive relationship with centrality across models.

Table 5.14. Random Effects Models of Effects of Political Conditions on Dichotomized Sending Network Centrality, 1990-2008

	Model 7	Model 8	Model 9	Model 10	Model 11
Political Variables					
Political repression	.333***				.244***
	(.032)				(.032)
Political terror		.213***			.144***
		(.023)			(.023)
Collapse			.017		.019†
			(.011)		(.010)
Conflict				.134***	.093***
				(.019)	(.017)
Control Variables					
Middle East / North Africa	.120*	.218***	.353***	.316***	.070†
	(.049)	(.043)	(.058)	(.047)	(.042)
Latin America / Caribbean	.063	.078	.100	.100†	.031
	(.055)	(.053)	(.065)	(.053)	(.049)
Sub-Saharan Africa	.207***	.295***	.458***	.422***	.135**
	(.057)	(.052)	(.066)	(.054)	(.050)
Asia and Pacific	-.047	.102†	.061	.059	-.031
	(.059)	(.057)	(.068)	(.056)	(.055)
Eastern Europe / Central Asia	.161***	.217***	.342***	.308***	.107*
	(.049)	(.046)	(.061)	(.050)	(.043)
Time period	.331***	.292***	.249***	.260***	.335***
	(.012)	(.012)	(.011)	(.011)	(.012)
Observations	955	879	1210	1210	861
States	194	177	242	242	174
R^2 Within	.57	.58	.43	.42	.62
R^2 Between	.50	.48	.30	.40	.59
R^2 Overall	.52	.49	.31	.40	.59

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Political repression, political terror, and conflict all demonstrate positive effects on dichotomized sending centrality. Countries that experience these conditions send refugees to more partners than countries that do not. Political repression demonstrates the strongest relationship of these measures; however the African and Eastern European regions show stronger relationships in some of the models. Each of the three significant variables persists in the full model (Model 11). Interestingly, collapse becomes marginally significant in this model as well, demonstrating a fairly weak relationship with sending centrality.

Demographic model

Results of REMs of the effects of demographic conditions on dichotomized refugee-sending centrality are presented in Table 5.15. Regional variation and time match the patterns demonstrated in previous models. The Middle East, Africa, and Eastern Europe maintain consistent significant positive relationships with centrality, while Latin America and Asia generally fail to reach significance. Each of the population variables also achieves significance in this analysis. Fertility, population density, and life expectancy are negatively related to sending centrality, while infant mortality demonstrates a positive relationship. These findings reflect the general pattern of the analysis, with socio-economic development reducing sending centrality. Of these relationships, only population density fails to reach significance in the full model. The effects of fertility and infant mortality become more pronounced in this model and life expectancy becomes weaker. As in previous demographic models, the presence of multicollinearity in this model calls these results into question. However, the findings with respect to individual relationships are sound.

Table 5.15. Random Effects Models of Effects of Demographic Variables on Dichotomized Sending Network Centrality, 1990-2008

	Model 12	Model 13	Model 14	Model 15	Model 16
Demographic Variables					
Fertility rate	-.113* (.051)				-.254*** (.055)
Population density		-.102* (.051)			-.015 (.050)
Infant mortality			.268*** (.054)		.287*** (.070)
Life expectancy				-.254*** (.046)	-.173*** (.054)
Control Variables					
Middle East / North Africa	.344*** (.061)	.311*** (.059)	.198*** (.053)	.272*** (.053)	.255*** (.053)
Latin America / Caribbean	.157* (.071)	.122† (.069)	.056 (.066)	.097 (.063)	.090 (.066)
Sub-Saharan Africa	.525*** (.079)	.443*** (.069)	.193* (.077)	.233** (.074)	.215** (.079)
Asia and Pacific	.180* (.077)	.127† (.073)	.010 (.073)	.077 (.069)	.069 (.073)
Eastern Europe / Central Asia	.315*** (.062)	.332*** (.062)	.246*** (.056)	.293*** (.057)	.224*** (.055)
Time period	.274*** (.015)	.288*** (.011)	.352*** (.015)	.323*** (.013)	.339*** (.016)
Observations	993	1023	959	991	900
States	203	211	192	203	187
R^2 Within	.54	.52	.54	.52	.57
R^2 Between	.20	.27	.38	.35	.40
R^2 Overall	.27	.32	.41	.38	.43

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Results of REMs evaluating the effects of environmental measures on sending centrality are presented in Table 5.16. The regional and time measures follow the established patterns in these models. CO_2 per capita demonstrates a strong significant negative relationship with sending centrality that persists in the full model at only a slightly reduced level of strength. In contrast, cropland under cultivation reaches only marginal significance in its individual model and fails to reach significance in the full model.

Table 5.16. Random Effects Models of Effects of Environmental Conditions on Dichotomized Sending Network Centrality, 1990-2008

	Model 17	Model 18	Model 19
Environmental Variables			
CO_2 per capita	-.369***		-.363***
	(.042)		(.043)
Cropland under cultivation		-.081†	-.060
		(.049)	(.043)
Control Variables			
Middle East / North Africa	.261***	.268***	.233***
	(.050)	(.060)	(.051)
Latin America / Caribbean	.018	.122	.046
	(.060)	(.074)	(.064)
Sub-Saharan Africa	.173*	.385***	.132†
	(.068)	(.071)	(.069)
Asia and Pacific	-.007	.084	-.033
	(.067)	(.078)	(.071)
Eastern Europe / Central Asia	.304***	.315***	.286***
	(.055)	(.065)	(.056)
Time period	.313***	.301***	.329***
	(.011)	(.011)	(.012)
Observations	974	952	901
States	197	194	183
R^2 Within	.55	.55	.58
R^2 Between	.42	.25	.37
R^2 Overall	.46	.31	.43

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Table 5.17. Effects of International Integration on Dichotomized Sending Network Centrality, 1990-2008

	Model 20	Model 21	Model 22	Model 23	Model 24
International Variables					
FDI penetration	.027 (.026)				-.044 (.033)
Trade openness		.098*** (.023)			.025 (.028)
Semiperiphery			.098 (.062)		.109† (.057)
Periphery			.091 (.072)		.038 (.075)
INGO membership ties				.238*** (.032)	-.001 (.070)
Control Variables					
Middle East / North Africa	.311*** (.056)	.319*** (.054)	.251*** (.056)	.373*** (.051)	.267*** (.050)
Latin America / Caribbean	.049 (.066)	.155* (.065)	.164* (.072)	.149* (.060)	.193** (.066)
Sub-Saharan Africa	.414*** (.067)	.467*** (.064)	.405*** (.075)	.522*** (.061)	.430*** (.070)
Asia and Pacific	.075 (.072)	.157* (.070)	.251** (.076)	.197** (.065)	.270*** (.071)
Eastern Europe / Central Asia	.299*** (.062)	.305*** (.057)	.406*** (.077)	.397*** (.055)	.402*** (.068)
Time period	.280*** (.015)	.292*** (.012)	.295*** (.012)	.182*** (.013)	.310*** (.022)
Observations	993	924	705	1117	645
States	202	194	141	233	134
R^2 Within	.51	.55	.57	.42	.58
R^2 Between	.28	.29	.34	.45	.38
R^2 Overall	.32	.35	.39	.45	.43

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Table 5.17 shows results of REMs examining the effects of international variables on centrality in the dichotomized refugee-sending network. While the time variable continues to show the significant positive relationship seen in previous models, the regional variables behave somewhat differently. The Middle East, Africa, and Eastern Europe maintain the significant positive relationships exhibited in previous models, and, unlike in previous models, Latin America and Asia also reach significance across most of the models in this analysis.

The international variables are largely non-significant in this model. Only trade openness and INGO ties demonstrate significant relationships in the individual analyses. Both have positive effects on sending centrality with INGO participation demonstrating a much stronger effect than openness (.238 versus .098). FDI penetration and world system position fail to reach significance. In the full model, the previously significant relationships of trade and INGOs fail to persist. However, semiperipheral status becomes marginally significant when other international measures are included in the analysis.

Final model

The random effects model presented in Table 5.18 includes all of the significant variables from prior models in this section. After reviewing VIF scores to check for the presence of collinearity, I removed infant mortality (VIF = 16.90), CO_2 per capita (10.98), secondary enrollment (8.55), life expectancy (7.82), and fertility rate (6.86). The results of the model with these variables excluded are presented in Model 26. The time measure remains positive and significant in this model, while Africa, Asia, and Eastern Europe also maintain significant relationships. Of the variables included in this model, only cropland under cultivation and trade openness fail to reach significance.

The variables that maintain significance in this final model tell a familiar story. Measures capturing positive economic or development conditions (GDP per capita, strength) are negatively related to sending centrality, while those representing instability (political repression, political terror, conflict) demonstrate positive effects on centrality. While trade openness fails to reach significance, the positive significant effects of both semiperipheral status and INGO participation persist. Greater participation in the world polity through INGOs causes countries to send refugees to more partners, while greater participation in the global trade network reduced dichotomized sending centrality.

Table 5.18. Random Effects Models of Effects of all Previously Significant Variables on Dichotomized Sending Network Centrality, 1990-2008

	Model 25	Model 26
Predictor Variables		
GDP per capita	-.604***	-.415***
	(.089)	(.045)
State strength	-.081**	-.053*
	(.027)	(.024)
Secondary school enrollment	.085†	
	(.045)	
Political repression	.191***	.171***
	(.039)	(.036)
Human rights	.150***	.142***
	(.028)	(.027)
Conflict	.048*	.041*
	(.019)	(.017)
Fertility	-.101†	
	(.057)	
Population density	.069	.099*
	(.045)	(.042)
Infant mortality	-.127	
	(.082)	
Life expectancy	-.062	
	(.052)	
CO_2 per capita	.063	
	(.072)	
Cropland under cultivation	-.014	-.032
	(.041)	(.040)

Trade openness	.005	.012
	(.025)	(.023)
Semiperiphery	.054†	.069*
	(.028)	(.029)
INGO membership ties	.121*	.143**
	(.053)	(.051)
Control Variables		
Middle East / North Africa	.058	.034
	(.039)	(.036)
Latin America / Caribbean	-.045	-.067
	(.044)	(.042)
Sub-Saharan Africa	-.043	-.103†
	(.056)	(.053)
Asia and Pacific	-.161**	-.169**
	(.048)	(.052)
Eastern Europe / Central Asia	.080	.118*
	(.049)	(.046)
Time period	.271***	.300***
	(.019)	(.016)
Observations	534	592
States	124	125
R^2 Within	.66	.65
R^2 Between	.81	.79
R^2 Overall	.77	.75

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of dichotomized sending centrality results

These analyses of the effects of domestic conditions and international integration on degree centrality in the dichotomized refugee-sending network reveal a number of important relationships with varying impacts on the number of sending ties held by countries in the global refugee network. As in earlier analyses, the wave variable holds a significant positive relationship with centrality across all of the models in the analysis, reflecting earlier findings that this network becomes more active over time (see Table

3.2). While not as consistent as the time measure, the Middle East, Africa, and Eastern Europe demonstrate significant relationships across most of the models in the analysis. Latin America and Asia move in and out of significance across models. When significant, all of the regional variables have a positive relationship with centrality, indicating that countries in these regions send refugees to more partners than countries in the West. As Western countries tend to send very few refugees, and then only to a limited number of partners typically at similar levels of development, it makes sense that this region would have low centrality relative to that of other regions.

As in the analysis of the valued refugee-sending network, centrality in the dichotomized sending network is reduced by the presence of positive economic and development outcomes. Countries with higher GDP per capita, state strength, urbanization, and secondary enrollment all send refugees to fewer countries than those that have lower scores on these measures. The presence of these positive conditions tends to preclude the development of issues that generate refugee flows and often gives individuals greater reason to stay when conditions emerge that might prompt movement in less-developed countries. Additionally, countries at higher levels of development, when they do send refugees, tend to send them to only a handful of other highly developed countries, reflecting a greater degree of autonomy held by refugees from these countries in choosing destinations. The trend of higher development leading to reductions in sending centrality is also evidenced by negative relationships held by life expectancy and environmental measures. Interestingly, higher fertility rates are associated with reduced sending centrality. It is possible that countries with high fertility are more prone to internal refugee movements, rather than cross-national movements, due to limited resources or the difficulty of transporting a lot of children across a border. This finding is the exception to the general trend about development and is an interesting area for future study.

Conditions associated with increased dichotomized centrality also reflect those revealed in the valued sending analysis. The experience of political repression, political terror, collapse, and conflict all yield greater numbers of sending ties. These conditions are associated with the initiation and propagation of refugee flows and would be expected to cause countries to send refugees to more partners. For countries in which these conditions have become chronic, ties may also be increased as host countries close their borders to new refugee flows or become less attractive as destinations due to their own instability. These restrictions and changes create a need to find new sending partners as outflows continue. In addition to these political conditions, higher infant mortality rates are also associated with greater sending centrality. This finding reflects the inverse of the development effect, as higher infant mortality typically occurs in less-developed countries.

Two areas of international integration are also associated with greater dichotomized sending centrality. Trade openness and INGO participation both demonstrate positive relationships with refugee-sending ties. Countries that are involved in global trade tend to be more connected to global communication and transportation networks, facilitating movement between countries. When refugee flows occur, individuals are better able to take advantage of these connections, creating more potential destinations for refugees to be sent. Greater participation in the INGO network also generates more potential destinations through communication networks and the role played by many INGOs in relocating refugees when crises occur. The development of these connections yields greater centrality for countries that send refugees.

The results of the final model (Table 5.18, Model 26) demonstrate the independence of these relationships as most of the significant variables from the analyses maintain significance when estimated together. The economic and political variables, as well as semiperipheral status and INGO participation, demonstrate strong relationships in the original directions. Greater development reduces centrality, while greater instability increases it. The effect of international integration depends on the channel. Greater INGO participation increases centrality, while greater participation in the trade network decreases it. Environmental conditions and trade openness fail to maintain significance when considered with variables from other models.

The general trends of this analysis follow those identified in the valued-sending analysis. Greater development is associated with reduced dichotomized refugee-sending centrality, while political instability and limited development yield greater centrality. These findings for the dichotomized network may largely reflect the number of refugees sent by these countries; however, other dynamics may also be at work. The positive relationships of participation in global systems exhibited by trade openness and INGO participation provide an alternate narrative of sending centrality for countries that send refugees at appreciable levels. Additionally, the tendency of high-sending countries to send refugees over long periods of time leads to the possibility of destination countries changing as receiving windows close, necessitating the development of new destinations.

Many of the previously predicted relationships emerged in this analysis. All of the economic and political variables demonstrated the expected relationships, as did semiperipheral status. Economic variables reduced centrality, while political conditions and semiperipheral status increased centrality. Among the population variables, infant mortality and life expectancy demonstrated the predicted effects, as did the environmental measures. Fertility rate and population density had opposite effects of those anticipated, demonstrating negative relationships rather than the predicted positive ones. Some international variables that were predicted to affect centrality (FDI penetration and peripheral status) failed to demonstrate any significant relationship, while others (trade openness and INGO participation) demonstrated relationships in the opposite direction of predictions.

Analysis of the dichotomized receiving network

Results of random effects models examining the influence of variables from multiple perspectives on centrality in the dichotomized refugee-receiving network from 1990 to 2008 are presented in Tables 5.19 through 5.24. Each table presents results for individual models, net of wave and regional variation, and ends with a full model that includes all variables from that analysis, again controlling for region and time. A base model that includes only regional variables and time is presented in Table 5.19. This table also includes economic and development variables. Political variables are presented in Table 5.20, demographic variables in Table 5.21, environmental variables in Table 5.22, and international variables in Table 5.23. Table 5.24 presents results from a final, multivariate model that includes all of the significant variables from the previous tables along with regional and wave controls.

Economic model

Table 5.19. Random Effects Models of Effects of Economic Conditions on Dichotomized Receiving Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 6a
Economic Variables							
GDP per capita		-.146* (.069)				-.227* (.092)	-.073 (.083)
State strength			-.100** (.032)			-.113** (.038)	-.115** (.038)
Urban population				.017 (.062)		.277** (.080)	
Secondary school enrollment					-.031 (.057)	.004 (.068)	.037 (.068)
Control Variables							
Middle East / North Africa	-.087 (.063)	-.202** (.065)	-.254*** (.058)	-.138* (.063)	-.257*** (.063)	-.282*** (.061)	-.254*** (.063)
Latin America / Caribbean	-.271*** (.072)	-.385*** (.079)	-.400*** (.071)	-.298*** (.075)	-.430*** (.076)	-.413*** (.075)	-.417*** (.078)
Sub-Saharan Africa	-.104 (.073)	-.336*** (.096)	-.339*** (.069)	-.149† (.083)	-.334*** (.088)	-.350*** (.094)	-.373*** (.097)
Asia and Pacific	-.442*** (.074)	-.589*** (.090)	-.597*** (.077)	-.462*** (.084)	-.614*** (.085)	-.573*** (.089)	-.611*** (.092)
Eastern Europe / Central Asia	-.081 (.067)	-.254*** (.073)	-.277*** (.062)	-.130† (.069)	-.238*** (.067)	-.275*** (.069)	-.270*** (.072)
Time period	.189*** (.014)	.253*** (.019)	.249*** (.020)	.221*** (.017)	.252*** (.023)	.259*** (.025)	.261*** (.025)
Observations	1210	924	857	1030	824	745	745
States	242	191	182	206	190	170	170
R^2 Within	.19	.24	.25	.22	.25	.26	.27
R^2 Between	.18	.19	.28	.18	.22	.32	.26
R^2 Overall	.18	.22	.26	.19	.23	.29	.25

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

The results of REMs for the effects of the regional base model and economic development variables are presented in Table 5.19. The wave variable in the base model (Model 1) has a significant positive relationship with receiving centrality, demonstrating that the network becomes more active over time (Table 3.3). Among the regional variables, only Latin America and Asia demonstrate significant relationships in the base model. However, all of the regions become significant in subsequent models as economic variables are added. Across these models, all of the significant regional variables demonstrate negative relationships with centrality, indicating that these regions hold fewer receiving ties, relative to Western countries.

GDP per capita and state strength both demonstrate significant negative relationships with centrality. The effect of GDP per capita is relatively weak in this model, compared to the previous three analyses. Both urbanization and secondary enrollment fail to reach significance in the individual models. However, urbanization becomes significant in the full model, demonstrating again the collinearity noted in previous full economic models. When this model is estimated without urban population, only state strength maintains a significant relationship with centrality. Results of this adjusted model are presented in Model 6a.

Political model

Table 5.20 presents the results of REMs examining the effects of political variables. As in the economic analysis, time demonstrates a positive relationship with centrality while the regional variables have significant negative relationships with centrality across most of the models. Most of the political variables fail to reach significance with receiving centrality. Only conflict demonstrates a significant relationship, showing a positive effect on centrality. This relationship persists in the full model. Interestingly, countries that experience conflict receive refugees from more partners than countries that do not.

Table 5.20. Random Effects Models of Effects of Political Conditions on Dichotomized Receiving Network Centrality, 1990-2008

	Model 7	Model 8	Model 9	Model 10	Model 11
Political Variables					
Political repression	.006				-.067
	(.047)				(.053)
Political terror		.037			.055
		(.035)			(.038)
Collapse			-.007		-.009
			(.014)		(.017)
Conflict				.080***	.064*
				(.024)	(.028)
Control Variables					
Middle East / North Africa	-.160*	-.200***	-.086	-.110†	-.183**
	(.068)	(.062)	(.063)	(.056)	(.065)
Latin America / Caribbean	-.280***	-.318***	-.271***	-.271***	-.287***
	(.077)	(.076)	(.071)	(.063)	(.074)
Sub-Saharan Africa	-.215**	-.281***	-.103	-.127*	-.257***
	(.080)	(.075)	(.072)	(.065)	(.077)
Asia and Pacific	-.526***	-.519***	-.442***	-.444***	-.480***
	(.083)	(.082)	(.074)	(.066)	(.084)
Eastern Europe / Central Asia	-.197**	-.230***	-.081	-.103†	-.228***
	(.069)	(.066)	(.067)	(.060)	(.066)
Time period	.231***	.243***	.188***	.196***	.241***
	(.018)	(.019)	(.014)	(.015)	(.020)
Observations	995	879	1210	1210	861
States	194	177	242	242	174
R^2 Within	.23	.23	.19	.18	.23
R^2 Between	.20	.20	.18	.24	.23
R^2 Overall	.21	.21	.18	.22	.23

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Demographic model

Table 5.21. Random Effects Models of Effects of Demographic Variables on Dichotomized Receiving Network Centrality, 1990-2008

	Model 12	Model 13	Model 14	Model 15	Model 16
Demographic Variables					
Fertility rate	-.003 (.063)				.008 (.076)
Population density		-.183*** (.055)			-.186** (.063)
Infant mortality			-.116 (.071)		-.235* (.095)
Life expectancy				-.034 (.061)	-.097 (.077)
Control Variables					
Middle East / North Africa	-.177** (.067)	-.141* (.063)	-.133* (.067)	-.168 (.063)	-.148* (.067)
Latin America / Caribbean	-.349*** (.078)	-.308*** (.074)	-.223** (.083)	-.325*** (.075)	-.242** (.082)
Sub-Saharan Africa	-.227* (.089)	-.190** (.074)	-.103 (.099)	-.235** (.090)	-.157 (.100)
Asia and Pacific	-.519*** (.085)	-.452*** (.079)	-.428*** (.091)	-.498*** (.082)	-.407*** (.092)
Eastern Europe / Central Asia	-.196** (.067)	-.142* (.067)	-.141* (.069)	-.167* (.067)	-.142* (.069)
Time period	.226*** (.020)	.225*** (.016)	.217*** (.021)	.233*** (.018)	.222*** (.023)
Observations	993	1023	959	991	900
States	203	211	192	203	187
R^2 Within	.23	.23	.24	.23	.26
R^2 Between	.18	.18	.17	.16	.20
R^2 Overall	.21	.20	.19	.21	.24

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of REMs examining relationships between demographic conditions and receiving centrality are reported in Table 5.21. The time and regional variables demonstrate essentially the same relationships noted in previous results. Africa is the exception to this pattern as it falls out of significance in models that include infant mortality (Models 14 and 16). Of the population variables, only population density reaches significance in the individual models. Countries with denser populations receive fewer refugees. This relationship persists in the full model. While non-significant in the individual model, infant mortality becomes significant in the full model, demonstrating a negative relationship with centrality. This full model again demonstrates collinearity, casting doubt on the validity of the results in this model.

Environmental model

Table 5.22 reports the results of REMs of the effects of environmental and land use variables on centrality in the dichotomized refugee-receiving network. For this analysis, all of the regional variables and the wave measure demonstrate significant relationships across models. Regional variation is consistently negative while time has a positive effect on centrality. CO_2 per capita fails to reach significance in either model. However, cropland under cultivation demonstrates a significant negative effect on centrality. Countries that utilize higher percentages of farmland receive refugees from fewer partners than less agrarian countries. As most of the countries with the highest scores for this measure are small and relatively isolated (e.g. Tuvalu), this finding is not a surprise. This relationship is robust, persisting in the full model with only a slightly weakened effect.

Table 5.22. Random Effects Models of Effects of Environmental Conditions on Dichotomized Receiving Network Centrality, 1990-2008

	Model 17	Model 18	Model 19
Environmental Variables			
CO_2 per capita	-.090		-.059
	(.058)		(.057)
Cropland under cultivation		-.167***	-.150**
		(.051)	(.053)
Control Variables			
Middle East / North Africa	-.178**	-.167***	-.243***
	(.063)	(.060)	(.060)
Latin America / Caribbean	-.363***	-.369***	-.362***
	(.076)	(.075)	(.077)
Sub-Saharan Africa	-.264**	-.323***	-.350***
	(.087)	(.072)	(.084)
Asia and Pacific	-.525***	-.594***	-.593***
	(.085)	(.080)	(.085)
Eastern Europe / Central Asia	-.168*	-.222***	-.222***
	(.069)	(.066)	(.067)
Time period	.233***	.229***	.242***
	(.017)	(.017)	(.018)
Observations	974	952	901
States	197	194	183
R^2 Within	.23	.23	.25
R^2 Between	.17	.30	.26
R^2 Overall	.19	.29	.26

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Results of REMs examining relationships between international variables and receiving centrality are presented in Table 5.23. While the time variable is once again consistently significant and positive, the regional variables move in and out of significance across models. Only Asia demonstrates a significant effect across all of the models in this analysis. World system position and INGO membership ties both cause most of the regions to fall out of significance, indicating that these measures explain the effects of regional variation, relative to the West, for these regions.

Table 5.23. Random Effects Models of Effects of International Interaction on Dichotomized Receiving Network Centrality, 1990-2008

	Model 20	Model 21	Model 22	Model 23	Model 24
International Variables					
FDI penetration	.059†				.060
	(.034)				(.047)
Trade openness		.169***			.041
		(.032)			(.040)
Semiperiphery			-.115†		-.060
			(.063)		(.057)
Periphery			-.483***		-.350***
			(.073)		(.082)
INGO membership ties				.455***	.281**
				(.034)	(.099)
Control Variables					
Middle East / North Africa	-.229***	-.162**	-.111*	-.053	-.082
	(.062)	(.061)	(.056)	(.045)	(.051)
Latin America / Caribbean	-.458***	-.311***	-.101	-.180***	-.070
	(.073)	(.074)	(.073)	(.052)	(.066)
Sub-Saharan Africa	-.289***	-.190**	.030	.010	.069
	(.073)	(.072)	(.077)	(.053)	(.070)
Asia and Pacific	-.610***	-.465***	-.323***	-.225***	-.244**
	(.078)	(.079)	(.077)	(.048)	(.072)
Eastern Europe / Central Asia	-.228***	-.213***	-.077	-.024	-.057
	(.068)	(.065)	(.078)	(.048)	(.068)
Time period	.201***	.228***	.247***	.074***	.177***
	(.021)	(.018)	(.021)	(.017)	(.034)
Observations	993	924	705	1117	645
States	202	194	141	233	134
R^2 Within	.23	.27	.23	.14	.25
R^2 Between	.24	.21	.42	.59	.48
R^2 Overall	.25	.22	.37	.52	.44

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

All of the international variables demonstrate at least marginally significant effects on centrality in the dichotomized receiving network. FDI penetration, trade openness, and INGO participation all have positive effects on centrality in individual models. Greater international interaction in these systems yields increased numbers of partners from whom refugees are received. Of these, INGO ties demonstrates the strongest relationship and this measure is the only one of the three that persists in the full model. The world system measures demonstrate significant relationships in the opposite direction, having negative effects on centrality. Countries in the semiperiphery and periphery receive refugees from fewer partners, relative to the core, indicating that greater integration in the global trade network increases the number of partners from whom refugees are received. Only peripheral status maintains significance in the full model, demonstrating that the effects of semiperipheral status are explained by the presence of other variables in the model.

Final model

Results of the final random effects model that includes all of the significant variables from previous models are presented in Table 5.24. Collinearity checks for this model indicate that only infant mortality presents a problem (VIF=11.60). The adjusted final model without this variable is presented in Model 26. In this model, the wave measure continues to demonstrate a strong, significant positive relationship with centrality. Among the regional variables, only Africa fails to reach significance, indicating that the included domestic conditions and measures of international integration explain the effect of African status on dichotomized receiving centrality. Each of the other included regions demonstrates a significant negative relationship with receiving centrality.

The variables included in this analysis are largely non-significant when considered together. GDP per capita and state strength continue to be significantly related to receiving centrality, although strength is only marginally significant in this model. Political, demographic, and environmental measures all fail to reach significance. Among the international variables, both world system position measures reach significance in this model, demonstrating negative relationships with centrality. While semiperipheral status is only marginally significant, the effect of peripheral position is again the strongest in the model (-.404). Finally, INGO participation presents the only positive significant relationship in this model. Countries with more INGO ties experience greater receiving centrality.

Table 5.24. Random Effects Models of Effects of all Previously Significant Variables on Dichotomized Receiving Network Centrality, 1990-2008

	Model 25	Model 26
Predictor Variables		
GDP per capita	-.310**	-.217***
	(.105)	(.070)
State strength	-.081†	-.073†
	(.041)	(.041)
Conflict	.026	.023
	(.032)	(.032)
Population density	-.090	-.071
	(.067)	(.065)
Infant mortality	-.141	
	(.117)	
Cropland under cultivation	.003	-.004
	(.061)	(.060)
FDI penetration	.037	.039
	(.050)	(.050)

Trade openness	.035	.045
	(.042)	(.041)
Semiperiphery	-.100†	-.096†
	(.056)	(.084)
Periphery	-.410***	-.404***
	(.084)	(.084)
INGO membership ties	.340**	.367***
	(.103)	(.100)
Control Variables		
Middle East / North Africa	-.110*	-.125*
	(.052)	(.050)
Latin America / Caribbean	-.115†	-.136*
	(.067)	(.065)
Sub-Saharan Africa	-.071	-.104
	(.085)	(.080)
Asia and Pacific	-.365***	-.369***
	(.079)	(.078)
Eastern Europe / Central Asia	-.160*	-.157*
	(.069)	(.069)
Time period	.168***	.178***
	(.037)	(.036)
Observations	611	611
States	130	130
R^2 Within	.25	.24
R^2 Between	.56	.57
R^2 Overall	.48	.48

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of dichotomized receiving network results

Examining the effects of domestic conditions and international interactions on centrality in the dichotomized refugee-receiving network reveals many interesting relationships, many unexpected. As in earlier analyses, the time variable demonstrates a consistent significant positive relationship with centrality. Once again, this result confirms the previous finding that this network becomes more active over time (see Table

3.3). Across models, the Latin America and Asia variables are consistently significant, with other regional measures moving in and out of significance based on the other variables in the model. All of the significant regional variation is negative, indicating that the included regions receive refugees from fewer partners than countries in the West. This finding also reflects previous results as the top receivers across waves are primarily developed Western countries (see Table 3.12 through 3.16).

While the analysis of the valued receiving network revealed many significant relationships between variables and centrality, far fewer significant effects are identified in the examination of the dichotomized network. GDP per capita and state strength both have significant negative relationships with dichotomized receiving centrality, demonstrating that countries with growing economies and strong governments receive refugees from fewer partners than weaker states. Part of this finding reflects results from the valued receiving analysis that these countries receive fewer total refugees, reducing the size of the pool from which potential ties might emerge. These countries tend to have tighter controls on borders and more restrictive entry policies that might favor some countries to the exclusion of others. Additionally, these countries may be less accessible for refugees due to distance. While a number of strong, growing countries are among the most central in this network (see again Tables 3.12 through 3.16), this finding demonstrates that these countries are not the norm among their peers.

In addition to these economic variables, population density and cropland under cultivation demonstrate significant negative relationships with receiving centrality. Countries with greater density and more arable land in production are less central in the network. Higher density countries might be viewed as less attractive destinations, as would those with higher infant mortality. Often these countries are in heavy refugee-sending regions. They may host large numbers of refugees, but from only a few surrounding countries (e.g., Pakistan). Countries at the highest levels of cropland under cultivation are typically smaller countries that are far removed from primary refugee-sending areas (e.g., Tuvalu). The effect demonstrated in this analysis may have little to do with actual land use and more to do with proximity and development levels. It is telling that this relationship falls out of significance in the final model (Table 5.24), when world system position and other measures are included.

The presence of conflict is positively related to dichotomized receiving centrality. Many of the countries among the top ten holders of receiving ties experienced conflict during the time period. Most of these conflicts did not occur on their native soil (e.g., the United States' conflicts in Afghanistan and Iraq). The presence of these conflicts would cause the measure to reach significance in this model, but this does not necessarily indicate that refugees move readily from one area of conflict to another. However, there is also evidence that many refugees have limited autonomy in making destination choices. These refugees may move from one area of conflict to another because they have little choice in where they go.

In addition to conflict, several of the measures of international interaction demonstrate significant positive relationships with centrality. FDI penetration, trade openness, and INGO participation are all associated with increased centrality. Interactions along these channels make countries more open to receiving migrants of any type (Zlotnik 1992), refugees included. As countries are more connected to trade and transportation networks, they become more easily accessible destinations, often increasing the number of partners from which they receive refugees. Additionally, the presence of high levels of INGO ties also indicates the potential for the transmission of world polity scripts that place a high value on the receipt of refugees as an expectation of a country for good citizenship in the global community.

The world system position measures also demonstrate the positive effects of greater integration through their significant negative relationships in this analysis. While semiperipheral status is only marginally significant in the isolated model (Table 5.23, Model 22) and non-significant in the full international model (Table 5.23, Model 24), countries in both the semiperiphery and the periphery are less central in the dichotomized refugee-receiving network than their more integrated counterparts in the core. Previous analyses have clearly demonstrated that core countries hold receiving ties at very high rates, dominating the overall network (see Table 3.17). These results confirm those findings. Both peripheral and semiperipheral countries are less attractive destinations than core countries. These countries also tend to be less connected to global communication and transportation networks, making them less easily accessible. Refugees who are able to choose destinations bypass these for more advanced countries, leaving only countries in reasonable proximity as potential receiving partners. As core countries become less open to new or ongoing refugee flows, these results may change as new destinations develop.

The results presented in the final model (Table 5.24) demonstrate the lack of strong effects found across these models. Of the included variables, GDP per capita and peripheral status maintain robust, significant negative relationships with centrality. State strength and semiperipheral status reach marginal levels of significance, but other previously significant relationships disappear in this model. Countries that experience economic growth receive from fewer partners, but those that are most integrated in global trade receive from more partners, relative to less-integrated countries. This presents an interesting dichotomy. Of the previously significant positive relationships, only INGO participation retains significance in this model, demonstrating the importance of world polity scripts and the role of civil society in driving refugee destination options.

Unlike the sending networks, there are few clear stories in this analysis of the dichotomized refugee-receiving network. Some development measures (economic growth, population density, and cropland under cultivation) have a negative relationship with centrality, but others fail to demonstrate any significant relationship (urbanization, life expectancy, etc.). The clearest negative effect is that of world system position. Countries that are less connected to the global trade network receive refugees from fewer partners than better-connected countries.

The effects of global interactions on receiving centrality are perhaps the most consistent and clear findings in this analysis. Greater interaction in global finance, trade, and civil society yields greater receiving centrality. As more pathways are opened to potential destination countries, more individuals tend to use them. The relationship with INGO participation seems particularly important as it maintains significance at a strong level when considered with all of the other variables in the final model, the only positive effect to persist in this model.

A number of predicted relationships, or lack of relationship, emerged in this analysis. Predicted positive effects of FDI penetration, trade openness, and INGO membership ties proved to be as anticipated. Additionally, the negative effect of peripheral status meets with expectations. The predicted lack of relationship for fertility, life expectancy, and CO_2 per capita also developed as expected. With these successful predictions came a number that were incorrect. While no relationship was predicted for models with GDP per capita, state strength, population density, and infant mortality, all of these indicated some level of significance in either individual or full models, while urbanization failed to produce the predicted effect. Finally, conflict and semiperipheral status demonstrated effects in the opposite of anticipated directions. Conflict increased centrality while semiperipheral status led to decreased centrality. These mixed results with respect to predicted relationships once again demonstrates the need for the development of theory that is tailored to refugee movements.

Summary of random effects analysis of centrality in refugee networks

Table 5.25 summarizes relationships demonstrated in random effects models of the effects of domestic conditions and international integration on centrality across the four permutations of the global refugee network. Results for valued sending, valued receiving, dichotomized sending, and dichotomized receiving are reported. Significance in either individual models or full models is indicated by a + (positive relationship) or – (negative relationship). Models in which no significant relationship occurred are left blank. Generally, this table demonstrates a high level of efficacy for variables in the analysis in explaining centrality in the different networks. While variation occurs across variables and networks, a number of trends also emerge.

Table 5.25. Summary of Relationships in Random Effects Models

	Valued Sending	Valued Receiving	Dichotomized Sending	Dichotomized Receiving
Economic Variables				
GDP per capita	-	-	-	-
State strength	-	-	-	-
Urban population	-	-	-	
Secondary school enrollment	-	-	-	
Political Variables				
Political repression	+	+	+	
Political terror	+	+	+	
Collapse	+		+	
Conflict	+	+	+	+
Demographic Variables				
Fertility rate		+	-	
Population density	-	-	-	-
Infant mortality	+		+	
Life expectancy	-	-	-	
Environmental Variables				
CO_2 per capita	-	-	-	
Cropland under cultivation	-	-	-	-
International Variables				
FDI penetration		+		+
Trade openness		+	+	+
Semiperiphery		-		-
Periphery		-		-
INGOs	+	+	+	+
Control Variables				
Middle East / North Africa	+		+	
Latin America / Caribbean	+	-		-
Sub-Saharan Africa	+	+	+	
Asia and Pacific	+	-		-
Eastern Europe / Central Asia	+		+	
Time period	+	+	+	+

Note: Time and regional relationships reflect findings from the base model of each analysis (Model 1).

The time measure consistently demonstrates a positive relationship with centrality in every network. This indicates a general increase in centrality across the networks over time. The regional variables show different levels of robustness across the networks. Generally, when significant, countries in the included regions are more central in refugee sending, and less central in refugee receiving. Africa is the exception to these trends, demonstrating a significant positive relationship with valued receiving. It is the only region that receives refugees at a higher rate than Western countries.

Economic and development variables consistently demonstrate significant negative relationships with network centrality. These effects occur in both sending and receiving analyses. The only exception across any of the analyses is a lack of effect demonstrated by secondary enrollment in the dichotomized receiving analysis. Growing economies, strong governments, urbanization, and education are associated with reduced sending and receiving centrality. Countries with these conditions tend to not experience conditions that generate refugee flows, thus limiting sending centrality. When conflict or other issues arise that might prompt refugee movements, the presence of economic development and education might be enough to keep potential refugees from leaving the country, choosing instead to ride out difficult conditions to keep what they have. Additionally, refugees that do choose to leave these countries typically have resources available that allow them to be discriminating in destination choices. This ability to choose eliminates the potential for high centrality in the dichotomized sending network as less attractive potential destinations are rejected. As for receiving centrality, countries with greater growth and development may be better able to control their borders and limit the number of refugees that are allowed to enter. They may also be able to prevent flows from some destinations, effectively reducing their dichotomized centrality. It is also possible that many of these countries are far enough removed geographically from high-sending regions that refugees are unable move to them or choose to find host countries closer to home.

Measures of political instability demonstrate the opposite effect of development measures. The presence of political repression, political terror, state collapse, and conflict all yield increased centrality in the valued and dichotomized sending networks. These findings are expected and confirm previous research in the area of refugee studies (Davenport et al. 2003; Neumayer 2005). As the UN definition of refugee is predicated on threats presented through political means, it stands to reason that these elements would be important predictors of sending centrality. What this definition and these measures fail to capture are those forced migrants who move for reasons other than political violence. The need for data on this population and further study into the scope and reasons for their movements is an important next step in refugee studies.

While the positive relationships with sending centrality for these measures are intuitive, the positive relationships evidenced with receiving centrality are less so. Political repression, political terror, and conflict are positively associated with valued receiving centrality, while conflict yields greater dichotomized receiving centrality. Several elements are at play in these results. The valued findings may reflect the lack of autonomy experienced by many refugees who simply cross a border in order to avoid conditions in their native country with little regard to conditions in the new host country. As many countries experiencing these conditions are in relative close proximity to one another, those refugees who move to cross the nearest border may find themselves in very similar situations to those they left. The conflict finding may also be driven by a number of high-receiving countries that were engaged in conflicts in parts of the world other than their native soil. These would represent safe havens for refugees in spite of the experience of conflict.

The effects of demographic variables beyond individual relationships are hard to identify, due to the high degree of collinearity introduced into models where these are considered together. Generally, these measures demonstrated a much more active role in affecting centrality than anticipated. In the analyses of both sending networks, almost all of the variables had significant relationships with centrality. Only fertility in the valued-sending analysis failed to reach significance. When significant, fertility, density, and life expectancy reduced sending centrality, while infant mortality was related to greater outflows and sending ties. These findings largely reflect the development trends identified in the economic variables: better health and demographic outcomes yield reduced refugee sending. The exception to this trend is the effect of fertility. Based on the development hypothesis, increased fertility rates should be associated with increased sending centrality, as fertility tends to go down with development. However, the reverse of this relationship emerges in the analysis. This effect is unexpected and the dynamics behind it provide an interesting area for further study.

The demographic variables are somewhat less important in the receiving networks. While fertility, population density, and life expectancy are significant in the valued-receiving analysis, only density remains significant in the dichotomized-receiving analysis. Density is negative and significant in both networks, and life expectancy has a negative relationship with valued receiving centrality. The only positive relationship among these is that of fertility with the valued receiving network. The fertility and life expectancy findings reflect the development results previously discussed. The population density effect is less readily explained. Greater density may be associated with development, but it may also be connected to small countries with large populations (e.g., Japan). These could exist at any level of development. This is an unexpected relationship and an interesting avenue of future study.

While no clear theoretical tie exists between environmental and land use measures and sending or receiving centrality, the variables included in this study demonstrate consistent relationships across most of the analyses. CO_2 per capita and cropland under cultivation both have significant negative effects on sending and receiving centrality across seven of eight potential relationships in the analysis. These findings closely reflect the results of economic and development variables, indicating again that these environmental measures may be acting as proxies for development. It is also possible that the cropland finding reflects a human ecology niche phenomenon, particularly in relationships with receiving centrality. Countries with greater levels of land under agricultural development by native populations may be considered less attractive destinations by refugees planning to farm to survive in their host country. As that economic niche becomes filled, fewer refugees may be attracted.

The effects of international integration on centrality in these networks present another set of clear relationships that are easily interpreted and provide important insights for potential refugee theory development. In the analyses of sending networks, the international variables are largely not significant. Only trade openness in the dichotomized sending network and INGO participation in both networks demonstrate significant effects. Greater participation in these global systems yields increased sending centrality. Trade openness may lead to increased options for refugees when outflows occur, creating the potential for greater dichotomized centrality. However, states that are more active in global trade may not experience refugee-generating conditions as readily as less active countries, reducing the total refugees sent by the countries and making this measure non-significant in the valued sending model. INGO participation could increase centrality through a variety of means. Like openness, greater participation in civil society through INGOs may open channels of communication and transportation that facilitate refugee movements to a wider number of partners. It may also be that specific INGOs that deal with refugee-related conditions gravitate to countries in which conditions are present for the initiation of refugee flows. This creates a temporal order argument that may be better adjudicated by fixed effects models. However, results of this panel study seem to indicate that the correct order is presented in these models, although there may be earlier connections in the other direction that cannot be evaluated in this study. Finally, many INGOs work to place refugees in host countries when outflows occur (e.g., the International Red Cross). As these organizations are tied to a large number of countries, it stands to reason that they would place refugees with a large number of partners. This INGO connection is an interesting one and an important avenue for future examination, as it seems to run contrary to world polity expectations.

While the international measures show few effects on the sending networks, a clear pattern emerges in analyses of the receiving networks. In both the valued and dichotomized receiving analyses, greater integration is positively related to centrality, while both measures of world system position are negatively related to centrality. The world system measures demonstrate that core countries are central in receiving networks, particularly the dichotomized network. High centrality for the core produces the negative relationships observed in these analyses as semiperipheral and peripheral countries receive fewer refugees and ties, relative to the core. All of these measures of global connection demonstrate channels through which information, scripts, resources, goods, and labor travel. It makes intuitive sense that refugees may utilize these channels when searching for potential hosts. This finding represents a particularly important and promising area for further analysis with potential for the development of refugee-specific theory.

In these analyses of centrality in the global refugee network, four key stories emerge. The first involves the role of regional variation in both sending and receiving centrality. Regional variables demonstrate significant relationships with centrality across most models in each of the analyses. In sending analyses, they are positively related to centrality, while they have negative effects on centrality in receiving analyses. Non-Western countries are more central in the valued and dichotomized sending networks and less central in the valued and dichotomized receiving networks. These results reflect earlier findings in Chapter Three that demonstrate the primary role of core countries in receiving networks (see Tables 3.12 through 3.16) and the limited role these countries play in refugee sending (See Tables 3.6 through 3.10). More developed countries do not face conditions that generate refugee outflows, but are attractive destinations for refugees who are able to get to them.

The importance of development in sending and receiving centrality is the second important finding from these analyses. Measures of economic growth and development are almost universally associated with reduced sending and receiving centrality in both valued and dichotomized networks. Countries that experience positive development outcomes are generally less active in the global refugee network. The importance of these relationships is demonstrated by the persistence of several of these measures – most notably GDP per capita – in the final models of the analyses.

On the sending side, these countries are less likely to experience conditions that lead to refugee flows. Additionally, the presence of positive development and welfare outcomes in these countries might make potential refugees more likely to stay when political instability does occur. The sending of fewer refugees is directly related to being less central in the dichotomized sending network as the contribution of fewer actors to the network means less opportunity for those actors to create ties with large numbers of hosts. Refugees from more developed countries also have more resources and greater efficacy in choosing destinations. This ability to choose reduces potential sending ties as many potential hosts are considered unattractive destinations and are rejected, when possible.

As for reducing receiving centrality, more developed countries may be better able to dictate origin countries from which refugees will be accepted and limit the number of refugees that are allowed to enter. This ability to control borders is an important factor in reducing centrality. Additionally, many developed countries are located a considerable distance from primary refugee-sending regions. Refugees may not have the resources to travel to these countries or may find other suitable destinations that are closer to home or more easily accessible. This relationship between development and centrality is a key finding and presents important potential theoretical connections for future study.

A third finding from this analysis is the importance of political instability in refugee-sending centrality. This study confirms observations from previous studies that find repression, human rights violations, collapse, and conflict to be important indicators of refugee outflows (Apodaca 1998; Davenport et al. 2003). While these results are not surprising, they are important. Connecting specific types of political instability to refugee outflows is an important step in understanding the mechanisms at play in causing refugee flows to take place in some circumstances, but not others. Additionally, examining the interplay of these conditions in models with development and other measures provides some understanding of ways in which the potential refugee-sending effects of political instability can be tempered by other domestic and global conditions. The interaction of these factors represents another key area for further investigation.

Finally, the role of global connections in refugee-receiving centrality is a finding with important implications for future analysis and theory building. The positive effects of foreign investment, trade openness, and INGO participation demonstrate that greater connectivity in global systems generates openness to refugee receipt in both valued and dichotomized networks. The effects of INGO participation are particularly strong, persisting in the final models of not only the receiving networks, but the dichotomized sending network as well. Additionally, the negative effects demonstrated by semiperipheral and peripheral status indicate that greater centrality in the global trade network is associated with greater receiving centrality. It may be that participating in these systems generates channels through which refugees more easily flow or it is possible that greater connections in these global systems lead countries to feel more like global citizens, with the acceptance of refugees seen as an expectation of good citizenship. Interestingly, these relationships and channels seem to primarily affect refugee receiving. The effects of global connectedness on refugee-sending centrality are less robust, although strong effects of INGO participation exist in these networks as well.

These relationships are a final key area for future study. Other vectors of global connection should be examined to determine their effects and the mechanisms through which these relationships take place evaluated to better understand how these connections facilitate refugee movement.

FIXED EFFECTS ANALYSIS OF REFUGEE NETWORK CENTRALITY

Fixed effects models (FEMs) allow for the examination of changes that occur in panel data over time. While capturing longitudinal variation, they do not have the cross-sectional component present in random effects models. Significant relationships in these models indicate effects that occur over time within countries. This allows for the identification of relationships that exist over time, regardless of starting point, providing an important contrast to the random effects findings that capture variation both over time and across countries. Because FEMs cannot accommodate the presence of time-invariant measures, regional variation and world system position are not examined in these models.

Analysis of the valued sending network

Results of FEMs examining the effects of domestic conditions and international integration on centrality in the valued refugee-sending network are presented in Tables 5.26 through 5.31. Variables from a number of different perspectives are considered to identify their effects on centrality. Each table progresses in the same way as in previous analyses. Results of economic and development variables are reported in Table 5.26, political variables in Table 5.27, demographic variables in Table 5.28, environmental variables in Table 5.29, and international variables in Table 5.30. A final model is presented in Table 5.31 that includes all of the significant variables from previous models and the wave measure.

Economic model

Table 5.26. Fixed Effects Models of the Effects of Economic Conditions on Valued Sending Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 5a
Economic Variables						
GDP per capita	-.726*** (.163)				-1.27*** (.189)	-1.28*** (.189)
State strength		.016 (.031)			.030 (.032)	.031 (.032)
Urban population			.261 (.263)		.074 (.245)	
Secondary school enrollment				.045 (.057)	.084 (.059)	.086 (.058)
Control Variables						
Time period	.058* (.027)	-.023 (.020)	-.020 (.026)	-.050* (.024)	.086* (.036)	.089** (.034)
Observations	733	675	824	634	575	575
States	190	177	206	187	165	165
R^2 Within	.04	.00	.00	.01	.12	.12
R^2 Between	.37	.12	.13	.19	.39	.38
R^2 Overall	.35	.06	.12	.13	.36	.35

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of FEMs for economic and development variables are reported in Table 5.26. Of the included measures, only GDP per capita demonstrates a significant relationship with centrality. Countries that experience economic growth send fewer refugees over time. This effect is the strongest identified in any of the models, with a coefficient in the full model of -1.27. Clearly, this is an important element for limiting refugee outflows and a key area for policy and intervention efforts. While the collinearity noted in the economic full models random effects section is not present, the high degree of correlation between urban population and GDP per capita justifies the examination of a model without the urbanization measure. The results of this adjusted model are reported in Model 5a and demonstrate almost no change in the relationships or strength of effects among the remaining variables.

Political model

Table 5.27. Fixed Effects Models of the Effects of Political Conditions on Valued Sending Network Centrality, 1990-2008

	Model 6	Model 7	Model 8	Model 9	Model 10
Political Variables					
Political repression	.083				.067
	(.054)				(.052)
Political terror		.022			.007
		(.028)			(.029)
Collapse			.010		.027**
			(.011)		(.010)
Conflict				.039†	.034†
				(.021)	(.020)
Control Variables					
Time period	.009	.036†	.004	.003	.008
	(.020)	(.019)	(.017)	(.017)	(.020)
Observations	761	702	968	968	687
States	192	177	242	242	174
R^2 Within	.00	.01	.00	.01	.03
R^2 Between	.43	.46	.14	.40	.49
R^2 Overall	.39	.12	.04	.31	.40

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Table 5.27 reports results of FEMs examining relationships between domestic political conditions and sending centrality. Among the individual models, only conflict has a significant effect, demonstrating a marginally significant positive relationship with centrality. This relationship persists in the full model. Additionally, collapse becomes significant in the full model, again demonstrating a positive relationship. The experience of conflict and/or state collapse causes refugee sending to increase. Interestingly, political repression and political terror are not significantly related to a country's experience of sending refugees over time.

Demographic model

Table 5.28. Fixed Effects Models of the Effects of Demographic Variables on Valued Sending Network Centrality, 1990-2008

	Model 11	Model 12	Model 13	Model 14	Model 15
Demographic Variables					
Fertility rate	-.053				.066
	(.103)				(.119)
Population density		.131			.080
		(.413)			(.545)
Infant mortality			.170		.117
			(.136)		(.165)
Life expectancy				-.288**	-.249*
				(.100)	(.112)
Control Variables					
Time period	.015	.003	.028	.028	.033
	(.024)	(.028)	(.031)	(.023)	(.044)
Observations	790	812	767	788	713
States	203	208	192	200	183
R^2 Within	.00	.00	.00	.01	.02
R^2 Between	.07	.03	.23	.18	.18
R^2 Overall	.06	.02	.21	.17	.16

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of FEMs for demographic conditions are presented in Table 5.28. Of these measures, only life expectancy demonstrates a significant relationship. Increases in life expectancy yield decreased refugee sending in countries over time. This finding reflects the development hypothesis discussed in the random effects section. Increases in life expectancy are typically associated with development and countries that experience development tend to be less likely to experience refugee flows. The result is robust, persisting in the full model with only a slightly diminished effect. Other population dynamics fail to reach significance in this analysis. Collinearity checks for this and subsequent full models do not indicate the level of collinearity noted in the random effects models for these variables (Mean VIF=2.80), but the possibility remains that the results of these models may be influenced by the level of correlation present.

Environmental model

FEMs results for the effects of environmental conditions are presented in Table 5.29. No significant relationships are identified in either the individual or full models. These measures do not impact refugee sending by countries over time.

Table 5.29. Fixed Effects Models of the Effects of Environmental Conditions on Valued Sending Network Centrality, 1990-2008

	Model 16	Model 17	Model 18
Environmental Variables			
CO_2 per capita	-.100		-.113
	(.091)		(.097)
Cropland under cultivation		-.042	-.065
		(.182)	(.176)
Control Variables			
Time period	-.004	-.007	-.000
	(.020)	(.020)	(.021)
Observations	777	758	718
States	197	192	183
R^2 Within	.00	.00	.00
R^2 Between	.22	.01	.15
R^2 Overall	.19	.01	.13

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Table 5.30 presents findings from FEMs examining relationships between measures of international integration and valued refugee-sending centrality. Like the environmental model, none of the international variables demonstrate significant effects in either individual models or the full model. Participation in these global systems does not impact rates of refugee sending.

Table 5.30. Fixed Effects Models of the Effects of International Integration on Valued Sending Network Centrality, 1990-2008

	Model 19	Model 20	Model 21	Model 22
International Variables				
FDI penetration	-.026			.001
	(.040)			(.052)
Trade openness		-.013		-.019
		(.032)		(.036)
INGO membership ties			.066	.098
			(.049)	(.081)
Control Variables				
Time period	.001	-.013	-.000	-.011
	(.022)	(.020)	(.022)	(.035)
Observations	791	730	884	511
States	202	193	232	133
R^2 Within	.00	.00	.00	.01
R^2 Between	.05	.00	.11	.04
R^2 Overall	.03	.00	.11	.02

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Final model

In Table 5.31, each of the significant variables from the previous models is included in a final fixed effects model to examine how these variables affect each other with respect to their relationships with centrality in the valued refugee-sending network. Checks for collinearity in this model failed to indicate any problems among these measures (Mean VIF=1.75). Three of the four included variables maintain significance in this model, with only collapse becoming non-significant. GDP growth and increases in life expectancy reduce centrality while the experience of conflict yields greater centrality. These findings reflect the development and stability findings from earlier REMs and their persistence in this model indicates the presence of independent competing effects experienced by countries in these areas.

Table 5.31. Fixed Effects Models of the Effects of all Previously Significant Variables with Valued Sending Network Centrality, 1990-2008

	Model 23
Predictor Variables	
GDP per capita (logged)	-.657***
	(.164)
Collapse	-.000
	(.012)
Conflict	.047*
	(.022)
Life expectancy	-.261**
	(.099)
Control Variables	
Time period	.093**
	(.029)
Observations	714
States	186
R^2 Within	.05
R^2 Between	.36
R^2 Overall	.33

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of valued sending network results

The fixed effects analysis of the valued refugee-sending network confirms several findings previously discovered in random effects analyses. The time measure in these models moves in and out of significance, depending on the other included variables. Both GDP per capita and life expectancy demonstrate significant negative effects on valued sending centrality. Increases in these areas are associated with reduced centrality. The relationship between GDP per capita and sending centrality in the full economic model is the strongest effect discovered in any of the analyses in this project (-1.27), demonstrating the central importance of economic development in limiting refugee outflows. Economic growth clearly impacts refugee movements and should be a key area of focus for policymakers and other working to limit refugee outflows. Life expectancy is another development outcome that affects refugee movements. Countries with higher life expectancies also have other qualities that make them less likely to experience significant refugee outflows and give potential refugees greater incentive to stay. These findings clearly reflect the development trends noted in the REMs section of this chapter.

The role of instability in encouraging refugee flows observed in random effects models is also portrayed in these results. Both conflict and collapse demonstrate positive relationships with sending centrality. The experience of these conditions is associated with increases in sending centrality. As these factors are significant in creating situations of persecution and the potential for political violence, it stands to reason that they would be key initiators of refugee outflows.

The persistence of most of these relationships in the final model (Table 5.31) indicates the importance of each in influencing refugee movements. The effects of development and instability are clearly independent of each other. This model may represent the clearest presentation of the robustness of these opposing relationships. Interestingly, both development measures demonstrate far stronger effects in this full model than the conflict measure. It is also noteworthy that the effect of life expectancy persists in spite of the presence of GDP per capita in this model, indicating that this measure as an independent effect beyond simply reflecting the effects of economic growth.

In comparing this analysis with the REMs, it is clear that the general trends are the same. Greater development leads to reductions in sending centrality while greater instability leads to increased sending centrality. There are, however, a number of significant relationships that emerge in the REMs that fail to appear in the FEMs. It may be that the broad categories of development and stability (e.g., GDP per capita and conflict) capture the longitudinal changes in centrality, while more nuanced measures (e.g., urbanization and political terror) explain cross-national differences in centrality. These findings provide different pictures of the same phenomenon, with REMs giving a tighter understanding of some of the mechanisms through which these general trends emerge in different contexts.

While the majority of predicted relationships fail to emerge in these analyses, key predictions are verified. The negative effects of GDP per capita and life expectancy follow expectations, as do the positive effects of collapse and conflict. Predicted relationships that failed to reach significance may be the product of the differences between random and fixed effects modeling, discussed previously.

Analysis of the valued receiving network

Results of FEMs examining the effects of domestic conditions and international integration on centrality in the valued refugee-receiving network are presented in Tables 5.32 through 5.37. Each table progresses in the same way as in previous analyses. Results of economic and development variables are reported in Table 5.32, political variables in Table 5.33, demographic variables in Table 5.34, environmental variables in Table 5.35, and international variables in Table 5.36. A final model is presented in Table 5.37 that includes all of the significant variables from previous models and the wave measure.

Economic model

Results of FEMs estimating relationships between economic conditions and valued receiving centrality are presented in Table 5.32. While the time measure demonstrates a consistent negative relationship with centrality, none of the economic or development variables reach significance in these models. The time measure indicates that countries receive fewer refugees over time, a finding that reflects the general downward trend of refugee receipt presented in Table 3.1. Centrality differences in this network are not driven by change over time in economic status.

Table 5.32. Fixed Effects Models of the Effects of Economic Conditions on Valued Receiving Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 5a
Economic Variables						
GDP per capita	.054				-.093	-.087
	(.173)				(.236)	(.235)
State strength		-.033			-.057	-.055
		(.037)			(.041)	(.041)
Urban population			-.042		.110	
			(.284)		(.300)	
Secondary school enrollment				.098	.108	.112
				(.070)	(.074)	(.073)
Control Variables						
Time period	-.083**	-.080**	-.061*	-.093**	-.090*	-.085*
	(.029)	(.024)	(.028)	(.029)	(.044)	(.041)
Observations	733	675	824	634	575	575
States	190	177	206	187	165	165
R^2 Within	.02	.02	.02	.02	.03	.03
R^2 Between	.05	.03	.01	.01	.01	.01
R^2 Overall	.02	.01	.01	.00	.00	.01

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Political model

Table 5.32 presents FEMs for the effects of political conditions. The significant effect of time persists across these models. Among the political variables, only political repression demonstrates a significant relationship, and then only in the full model. Increased repression is associated with decreased receiving centrality. As regimes become more restrictive with respect to individual rights, they become less attractive as destinations for refugees. Political terror, collapse, and conflict all fail to reach significance in individual models or the full model.

Table 5.33. Fixed Effects Models of the Effects of Political Variables on Valued Receiving Network Centrality, 1990-2008

	Model 6	Model 7	Model 8	Model 9	Model 10
Political Variables					
Political repression	-.091 (.059)				-.119† (.064)
Political terror		.013 (.034)			.033 (.036)
Collapse			.004 (.011)		.002 (.012)
Conflict				.019 (.021)	.016 (.023)
Control Variables					
Time period	-.088*** (.022)	-.083*** (.023)	-.052** (.018)	-.049** (.018)	-.096*** (.024)
Observations	761	702	968	968	687
States	192	177	242	242	174
R^2 Within	.03	.03	.01	.01	.03
R^2 Between	.05	.11	.05	.36	.00
R^2 Overall	.03	.01	.00	.06	.00

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Demographic model

Table 5.34. Fixed Effects Models of the Effects of Demographic Variables on Valued Receiving Network Centrality, 1990-2008

	Model 11	Model 12	Model 13	Model 14	Model 15
Demographic Variables					
Fertility rate	-.181†				-.163
	(.107)				(.122)
Population density		.124			.099
		(.429)			(.566)
Infant mortality			-.016		-.005
			(.145)		(.170)
Life expectancy				-.175	-.143
				(.108)	(.116)
Control Variables					
Time period	-.089***	-.073*	-.069*	-.048†	-.084†
	(.025)	(.029)	(.033)	(.025)	(.046)
Observations	790	812	767	788	713
States	203	208	192	200	183
R^2 Within	.02	.02	.02	.02	.03
R^2 Between	.01	.05	.02	.05	.00
R^2 Overall	.01	.03	.00	.04	.00

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of FEMs examining the relationships between demographic conditions and valued refugee-receiving centrality are presented in Table 5.34. While the effect of time becomes only marginally significant in models with life expectancy, it continues to demonstrate a significant negative effect across models in this analysis. Fertility is the only demographic variable that achieves significance, demonstrating a marginally significant negative relationship with receiving centrality, an effect that fails to persist in the full model. In isolation, increased fertility reduces receiving centrality. As increases in fertility are primarily taking place in only the poorest countries, it stands to reason that these countries would be less attractive to refugees. Other demographic measures –

population density, infant mortality, and life expectancy – do not demonstrate significant effects on receiving centrality.

Environmental model

Table 5.35 presents FEMs for examinations of the effects of environmental measures. As in previous tables, the time measure is negative and significant across models. CO_2 per capita demonstrates a marginally significant positive relationship with centrality, while cropland under cultivation fails to reach significance. Countries that experience increased CO_2 production become more central in the receiving network. As in earlier analyses, this finding may be acting as a proxy for development as increased industrialization would generate higher levels of CO_2 per capita. This effect is not particularly robust, but is persistent, continuing in the full model.

Table 5.35. Fixed Effects Models of the Effects of Environmental Variables on Valued Receiving Network Centrality, 1990-2008

	Model 16	Model 17	Model 18
Environmental Variables			
CO_2 per capita	.186†		.193†
	(.098)		(.104)
Cropland under cultivation		.068	.076
		(.187)	(.191)
Control Variables			
Time period	-.086***	-.072**	-.086***
	(.022)	(.021)	(.023)
Observations	777	758	718
States	197	192	183
R^2 Within	.03	.02	.03
R^2 Between	.03	.08	.03
R^2 Overall	.02	.04	.03

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Results of FEMs examining the effects of international integration are presented in Table 5.36. The time measure is again negative and significant across models, although reaching only marginal significance in the full model. Both trade openness and INGO participation demonstrate significant relationships with centrality in this model, with the effect of openness persisting and becoming more robust in the full model. Countries that become more active in global trade experience reduced centrality in the refugee-receiving network. By contrast, countries that increase INGO membership ties become more central receivers over time. Changes in FDI penetration do not affect refugee-receiving centrality.

Table 5.36. Fixed Effects Models of the Effects of International Integration on Valued Receiving Network Centrality, 1990-2008

	Model 19	Model 20	Model 21	Model 22
International Variables				
FDI penetration	-.019 (.039)			-.031 (.048)
Trade openness		-.061† (.034)		-.067* (.033)
INGO membership ties			.094† (.048)	-.044 (.068)
Control Variables				
Time period	-.068** (.022)	-.074** (.022)	-.075** (.023)	-.058† (.030)
Observations	791	730	884	672
States	202	193	232	182
R^2 Within	.02	.03	.02	.03
R^2 Between	.03	.02	.39	.05
R^2 Overall	.00	.01	.31	.03

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Final model

Table 5.37. Fixed Effects Models of the Effects of all Previously Significant Variables with Valued Receiving Network Centrality, 1990-2008

	Model 23
Predictor Variables	
Political repression	-.124†
	(.064)
Fertility rate	-.233†
	(.120)
CO_2 per capita	.303*
	(.127)
Trade openness	-.070*
	(.033)
INGO membership ties	-.072
	(.073)
Control Variables	
Time period	-.111**
	(.033)
Observations	642
States	174
R^2 Within	.06
R^2 Between	.05
R^2 Overall	.04

† *p* < .1   * *p* < .05   ** *p* < .01   *** *p* < .001 (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

The results of a final fixed effects model that includes all of the significant variables indentified in previous analyses in this section are presented in Table 5.37. These results demonstrate that the effects from earlier models are generally robust as four of the five included variables continue to reach significance in the presence of other measures. Political repression, fertility, and trade openness have consistent negative effects on centrality, while CO_2 per capita has a persistent positive relationship with centrality. Only the effect of INGO participation fails to reach significance in this model. Evaluations for collinearity again revealed no problems in this model (Mean VIF = 1.80).

Discussion of valued receiving network results

FEMs for the valued refugee-receiving network reveal a number of important relationships and effects that influence the levels at which countries receive refugees. The time measure is significant and negative across models throughout the analysis. This reflects the results presented in Table 3.1 that show that the total number of refugees in the network in 2008 is less than the total in 1990.

Three key variables demonstrate significant negative relationships with valued receiving centrality in this analysis, each telling a slightly different story. Political repression reduces receiving centrality as countries that restrict individual rights at increasing levels become less attractive as potential destination choices. While not all refugees are able to choose destinations, many do, and those that are able seem to avoid moving from one negative political situation to another.

Fertility rates are also negatively related to receiving centrality. Countries with growing fertility levels become less central in the receiving network. With the global emphasis on fertility reduction among poor countries, only those at the lowest levels of development are still experiencing increasing fertility. These countries would not be considered viable destinations for refugees, given the choice. This demonstrates the inverse of the development effect: countries with negative development outcomes become less central in the receiving networks.

The final negative relationship is with trade openness. There are multiple possible explanations for this finding. Dependency scholars would argue that greater openness leads to negative development outcomes (Kentor and Boswell 2003), making these countries less attractive as potential destinations. However, the inclusion of highly developed countries in this analysis, many of which are heavily involved in global trade, indicates that this result may be the product of more highly developed countries choosing to limit refugee inflows. The combination of these limitations and participation in trade by these countries would yield the observed result. The difference in direction of effect between REMs and FEMs is telling. The experience of openness across countries is positive, indicating that more open countries receive more refugees. However, longitudinally, openness reduces receiving centrality. Over time, increased openness reduces rates of refugee receipt. This finding may reflect the ability of more advanced economies to limit refugee inflows, or it may simply reflect the reduced number of refugees in the network over time.

Positive effects on centrality exist for CO_2 per capita and INGO participation. The CO_2 finding may be capturing increases in development and industrialization. Countries with emerging economic opportunities would be attractive destinations. Additionally, these newly developing countries may serve as “second choice” destinations for refugees who are not able to enter the most developed countries due to restrictions or limited resources. The INGO finding is consistent across most of the analyses in this study. Greater participation in the world polity through INGOs yields greater centrality in both sending and receiving networks. As countries increase their participation in civil society, they may become more inclined to receiving refugees as part of the expectations of good global citizenship. Greater ties may also open new communication and information pathways through which refugees can more easily move. This effect of INGOs on centrality is clear and robust, and represents both an important finding for this study and a key area for further analysis.

The importance of these negative and positive relationships to valued receiving centrality is evidenced by their ability to persist in the presence of other significant variables. Of the five variables included in the final model, only INGO participation fails to reach significance. Political repression, fertility rates, trade openness, and CO_2 per capita demonstrate a significant effect in the previously identified direction. CO_2 has the strongest effect in this model. Interestingly, all of the significant effects demonstrate stronger relationships in this model than they did in earlier individual and full models. The persistence of these measures again demonstrates the multitude of forces at play in determining centrality in refugee networks. The low R^2 in this model (.04) indicates that these measures account for only a small part of the variation in centrality across participants in the network.

The comparison of the REMs and FEMs for the valued refugee-receiving network is marked by contrast. The first clear difference is the much greater importance demonstrated by economic and political variables in the random effects analysis. While few of these measures reach significance in the fixed effects models, most of them demonstrate significant effects in the random effects models. This indicates that only a handful of relationships – those identified in the FEMs – explain variation across time, while a number of conditions influence differences in centrality cross-sectionally. In another critical area of difference, of the five significant variables in the FEMs, only INGO ties demonstrates the same relationship observed in the REMs analysis. Repression, fertility, CO_2 levels, and trade openness all have significant relationships in the opposite direction in REMs analyses of this network. This finding represents an interesting nuance that is only possible with these kinds of comparisons. Repression, fertility, and trade openness reduce receiving centrality over time; however, the experience of these measures across countries yields the opposite effect. While individual countries experience decreased receiving centrality when repression increases, repression is associated with greater centrality when all of the actors in the network are considered together. This reality that different countries have very different experiences of these variables with respect to centrality is an important element to be disaggregated in future analyses.

While many of the variables in the fixed effects analysis of the valued receiving network demonstrate opposite relationships from the random effects analysis, they fall in line with hypothesized relationships. Political repression, trade openness, and INGO participation all demonstrate significant relationships in expected directions. The economic variables, most of the political variables, and FDI penetration fail to achieve significant relationships, contrary to expectations. While it was expected that none of the demographic or environmental measures would have significant relationships, fertility and CO_2 per capita demonstrated significant effects in this analysis. The other population measures and cropland under cultivation fail to reach significance, as predicted.

Analysis of the dichotomized sending network

Results of FEMs examining the effects of domestic conditions and international integration on centrality in the dichotomized refugee-sending network are presented in Tables 5.38 through 5.43. Each table progresses in the same way as in previous analyses. Results of economic and development variables are reported in Table 5.38, political variables in Table 5.39, demographic variables in Table 5.40, environmental variables in Table 5.41, and international variables in Table 5.42. A final model is presented in Table

5.43 that includes all of the significant variables from previous models and the wave measure.

Economic model

Table 5.38. Fixed Effects Models of the Effects of Economic Conditions on Dichotomized Sending Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 5a
Economic Variables						
GDP per capita	-.360**				-.818***	-.810***
	(.118)				(.119)	(.120)
State strength		.013			-.012	-.009
		(.019)			(.021)	(.021)
Urban population			.295		.248	
			(.192)		(.152)	
Secondary school enrollment				-.017	-.000	.010
				(.038)	(.037)	(.037)
Control Variables						
Time period	.099***	.061***	.039*	.050**	.110***	.118***
	(.020)	(.012)	(.019)	(.015)	(.022)	(.021)
Observations	733	675	824	634	575	575
States	190	177	206	187	165	165
R^2 Within	.05	.05	.03	.03	.11	.11
R^2 Between	.39	.06	.11	.13	.52	.45
R^2 Overall	.39	.01	.09	.10	.49	.43

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Table 5.38 presents the results of FEMs examining relationships between economic variables and centrality in the dichotomized refugee-sending network. The time measure demonstrates a significant positive relationship with centrality across models, indicating that countries increase sending ties over time. This result reflects trends identified in Table 3.1. Of the economic variables, only GDP per capita reaches significance in this analysis, demonstrating a strong negative effect on centrality that becomes stronger in the full model. Countries that experience economic growth reduce dichotomized sending centrality. These countries increase the number of partners from whom they receive refugees at a slower rate than countries that fail to grow economically. State strength, urbanization, and enrollment fail to demonstrate significant relationships with centrality across this model.

Political model

Table 5.39. Fixed Effects Models of the Effects of Political Conditions on Dichotomized Sending Network Centrality, 1990-2008

	Model 6	Model 7	Model 8	Model 9	Model 10
Political Variables					
Political repression	.086*				.073*
	(.039)				(.032)
Political terror		.046**			.028
		(.017)			(.018)
Collapse			.005		.018**
			(.009)		(.006)
Conflict				.009	.008
				(.016)	(.011)
Control Variables					
Time period	.090***	.026*	.038**	.039**	.059***
	(.014)	(.012)	(.014)	(.014)	(.012)
Observations	761	702	968	968	687
States	192	177	242	242	174
R^2 Within	.07	.03	.01	.01	.08
R^2 Between	.46	.49	.13	.46	.55
R^2 Overall	.39	.43	.02	.08	.52

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of FEMs examining the relationships between measures of political instability and dichotomized sending centrality are presented in Table 5.39. The time measure continues to have a significant positive effect on centrality in these models. Political repression and political terror demonstrate significant positive relationships with sending centrality. The effect of repression persists into the full model, while that of political terror falls out of significance. While not significant in isolation, collapse becomes positively significant in the full model. Increases in repression and human right abuses, as well as the presence of state collapse, all increase dichotomized refugee-sending centrality. Countries that experience these conditions send refugees to increasing numbers of partners over time. Interestingly, the presence of conflict does not have a significant effect on centrality. This may be due to a number of low-sending countries that are involved in conflicts in countries other than their own (e.g., the United States).

Demographic model

Results of FEMs examining demographic conditions are presented in Table 5.40. The effect of these variables on the time measure is interesting, as time becomes non-significant in models including population density. Across other models, the previously observed trend of positive significance continues. Of the population measures, only fertility demonstrates a significant relationship with centrality. As fertility rates increase, countries become less central in the dichotomized sending network. This may again reflect the low level of development evidenced by countries that experience increased fertility. Refugees from poor countries may have fewer options for potential destinations due to a lack of resources. These countries may continue to send refugees at stable levels – a dynamic that seems to be confirmed by the lack of effect of fertility in the valued sending analysis (Table 5.28) – but do not add new destinations. This effect is not particularly robust, becoming non-significant in the full model. Other population variables fail to reach significance in either individual or full models.

Table 5.40. Fixed Effects Models of the Effects of Demographic Variables on Dichotomized Sending Network Centrality, 1990-2008

	Model 11	Model 12	Model 13	Model 14	Model 15
Demographic Variables					
Fertility rate	-.143†				-.075
	(.074)				(.080)
Population density		.469			.489
		(.296)			(.368)
Infant mortality			-.019		-.114
			(.094)		(.111)
Life expectancy				-.082	-.115
				(.072)	(.075)
Control Variables					
Time period	.038*	.032	.071**	.074***	.031
	(.017)	(.020)	(.021)	(.017)	(.030)
Observations	790	812	767	788	713
States	203	208	192	200	183
R^2 Within	.03	.03	.05	.04	.05
R^2 Between	.07	.03	.26	.22	.01
R^2 Overall	.04	.02	.00	.22	.01

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Table 5.41 reports fixed effects results for relationships between environmental conditions and dichotomized sending centrality. The significant positive relationship of the time measure persists in these models. While both environmental variables fail to reach significance in individual models, CO_2 per capita moves from being almost significant (p=.104) to marginally significant (p=.089) with centrality in the full model. Although not particularly robust, increased CO_2 production leads to reductions in sending centrality. As countries industrialize, potential refugees have greater incentive to stay, thereby reducing the possibility for the development of new destination partners for these countries.

Table 5.41. Fixed Effects Models of the Effects of Environmental Conditions on Dichotomized Sending Network Centrality, 1990-2008

	Model 16	Model 17	Model 18
Environmental Variables			
CO_2 per capita	-.094		-.113†
	(.067)		(.067)
Cropland under cultivation		.010	-.010
		(.124)	(.121)
Control Variables			
Time period	.071***	.065***	.087***
	(.014)	(.014)	(.014)
Observations	777	758	718
States	197	192	183
R^2 Within	.042	.04	.07
R^2 Between	.22	.06	.17
R^2 Overall	.22	.01	.19

† *p* < .1 * *p* < .05 ** *p* < .01 *** *p* < .001 (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Table 5.42. Fixed Effects Models of the Effects of International Integration on Dichotomized Sending Network Centrality, 1990-2008

	Model 19	Model 20	Model 21	Model 22
International Variables				
FDI penetration	-.027			.000
	(.031)			(.033)
Trade openness		.019		.019
		(.023)		(.023)
INGO membership ties			.088*	.033
			(.040)	(.050)
Control Variables				
Time period	.077***	.068***	.041*	.086***
	(.017)	(.015)	(.018)	(.020)
Observations	791	730	884	672
States	202	193	232	182
R^2 Within	.04	.04	.04	.08
R^2 Between	.06	.01	.19	.02
R^2 Overall	.06	.04	.18	.05

† *p* < .1 * *p* < .05 ** *p* < .01 *** *p* < .001 (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Results of FEMs examining the effects of international integration are reported in Table 5.42. Only INGO participation demonstrates a significant relationship in this analysis. Increased participation in civil society through INGOs results in greater dichotomized sending centrality. Countries that increase INGO ties increase connections through which potential refugee movements can take place. As these connections are realized, increased sending ties result. FDI penetration and trade openness do not demonstrate relationships with sending centrality. As in earlier analyses, the time measure is significant and positive across models. Its level of significance decreases in the model with INGO participation (Model 21), but regains the highest level of significance in the full model.

Final model

A fixed effects model that includes all previously significant variables with dichotomized refugee-sending centrality is presented in Table 5.43. Unlike previous final models in the FEMs section, collinearity is present in this model, introduced by the presence of CO_2 per capita (Mean VIF=3.26, CO_2 per capita=6.22). I excluded this measure and re-ran the final model. Results of this adjusted model are presented in Model 24. As in the previous models for this network, the time variable demonstrates a significant positive effect on centrality. Of the previously significant variables, GDP per capita, repression, and collapse maintain significant relationships in this model. While economic growth is associated with less centrality in the dichotomized sending network, increases in political repression and the experience of state collapse both increase centrality. Countries that experience instability increase sending ties at faster rates than those that do not. As these are important initiating factors for refugee flows, this finding makes sense. The persistence of these relationships net of each other and the presence of INGO participation indicate the independent effects exerted by development and instability on centrality in this network.

Table 5.43. Fixed Effects Models of the Effects of all Previously Significant Variables on Dichotomized Sending Network Centrality, 1990-2008

	Model 23	Model 24
Predictor Variables		
GDP per capita	-.189	-.260*
	(.126)	(.109)
Political repression	.095**	.090**
	(.034)	(.034)
Human rights	.023	.019
	(.019)	(.019)
Collapse	.015*	.013*
	(.007)	(.007)
Fertility	-.020	-.016
	(.065)	(.065)
CO_2 per capita	-.094	
	(.082)	
INGO membership ties	.029	.036
	(.038)	(.038)
Control Variables		
Time period	.077***	.079***
	(.021)	(.021)
Observations	612	617
States	163	164
R^2 Within	.11	.10
R^2 Between	.52	.55
R^2 Overall	.52	.54

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Discussion of dichotomized sending network results

The FEMs for the dichotomized refugee-sending network demonstrate elements of each of the key relationships identified in the summary of the random effects section. First, development plays in important role in centrality. GDP per capita, fertility, and CO_2

per capita all demonstrate significant negative relationships with dichotomized sending centrality. Economic growth and increased CO_2 levels are key development markers that reduce sending partners over time. Countries experiencing these positive outcomes send fewer refugees and have populations that are often more able to choose destinations. Increased fertility, while having the same effect, operates from the opposite direction. Most countries that experience increased fertility are among the poorest in the world (e.g., Afghanistan). When refugees leave these countries, they tend to be limited in destination options, often moving to countries in the immediate proximity, effectively eliminating the possibility of increasing sending ties. Additionally, potential refugees may lack the resources to cross an international border, becoming IDPs within their home country instead.

The second key story identified in this analysis is the role of instability in generating increased sending centrality. Political repression, political terror, and collapse are all associated with higher dichotomized sending centrality. These measures of political instability are important to the generation of sending ties both across time and across countries.

Finally, the positive relationship between INGO participation and sending centrality touches on the importance of global connectedness in centrality. Countries that increase INGO ties also increase refugee-sending ties. As has been previously mentioned, it may be that these countries create ties to INGOs that help relocate refugees or that the generation of increased INGO ties creates pathways through which refugees are able to move to new destinations. This relationship between connectedness and centrality continues to emerge across different networks and types of analyses, confirming its importance in considerations of refugee movements.

In addition to these stories, the time measure demonstrates a positive significant relationship with sending centrality across most models in this analysis. Countries in the network increase sending ties over time. This confirms the descriptive results presented in Table 3.1.

In the final model of this analysis (Table 5.43), GDP per capita, political repression, and collapse maintain significant relationships. The international variables lose significance when included together with these other measures. The strength of GDP per capita and the political measures in influencing sending centrality is clearly demonstrated by the persistence of these effects in this model, net of each other.

While results of the FEMs generally mirror those of the REMs for this network, far more of the variables in these models reached significance in the REMs. Only GDP per capita and fertility are significant in the FEMs, but all of the economic and demographic variables demonstrate significant effects on centrality in REMs. This again marks a clear difference between the identification of measures that impact changes in centrality over time and the identification of more nuanced differences that occur between countries in their experience of sending centrality. Development in general (as evidenced by GDP per capita) reduces centrality over time, but the experience of higher life expectancies in many countries – a result of development – specifically impacts the experience of sending centrality across countries.

Another difference between these analyses is the persistence of variables in the final models. While only GDP per capita and the instability variables maintain significance in the final FEMs table (Table 5.43), most of the included measures, including state strength and INGO ties, reach significance in the final REMs table for this network (Table 5.16). This distinction marks another example of differences between effects identified as important over time and those that are significant both over time and across countries in the network.

While many of the predicted relationships failed to emerge in this analysis, the observed effects of GDP per capita, political repression, political terror, and collapse are as anticipated. These relationships follow expected effects for development and stability variables. However, fertility, CO_2 per capita, and INGO participation demonstrated significant relationships that run counter to expectations. The effects of CO_2 per capita closely mirror development measures and it is highly probable that this relationship is a product of development level, an assumption that seems to be confirmed by the high degree of correlation between these measures (pairwise correlation = .852). While world polity theory would predict that the presence of INGO ties leads to the dispersion of scripts that might results in a reduction in sending centrality, the opposite effect is observed. Rather than dispersing these scripts, it seems that INGO participation creates opportunities for refugees to move to new destinations, increasing sending ties over time.

Analysis of the dichotomized receiving network

Results of FEMs examining the effects of domestic conditions and international integration on centrality in the dichotomized refugee-receiving network are presented in Tables 5.44 through 5.49. Each table progresses in the same way as in previous analyses. Results of economic and development variables are reported in Table 5.44, political variables in Table 5.45, demographic variables in Table 5.46, environmental variables in

Table 5.47, and international variables in Table 5.48. A final model is presented in Table 5.49 that includes all of the significant variables from previous models and the wave measure.

Economic model

Table 5.44. Fixed Effects Models of the Effects of Economic Conditions on Dichotomized Receiving Network Centrality, 1990-2008

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 5a
Economic Variables						
GDP per capita	.104				.099	.088
	(.204)				(.276)	(.275)
State strength		-.108*			-.137**	-.138**
		(.042)			(.048)	(.048)
Urban population			-.488		-.029	
			(.333)		(.350)	
Secondary school enrollment				.029	.046	.048
				(.080)	(.087)	(.086)
Control Variables						
Time period	-.029	-.024	.023	-.029	-.045	-.049
	(.036)	(.029)	(.032)	(.034)	(.051)	(.048)
Observations	733	675	824	634	575	575
States	190	177	206	187	165	165
R^2 Within	.00	.01	.00	.00	.02	.03
R^2 Between	.01	.01	.02	.07	.05	.07
R^2 Overall	.01	.01	.02	.02	.04	.05

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Table 5.44 reports results of FEMs for relationships between economic variables and centrality in the dichotomized refugee-receiving network. The time measure fails to reach significance in any of the models in this or any of the subsequent models in the analysis of this network. Of the economic variables, only state strength indicates a significant relationship with receiving centrality. As countries spend more on internal needs, receiving centrality decreases. The economic development of these states may correspond with a greater ability or desire to control borders, limiting the potential for new receiving partners. However, other measures of economic development (GDP per capita, urbanization, and enrollment) fail to reach significance in these models.

Political model

Table 5.45. Fixed Effects Models of the Effects of Political Conditions on Dichotomized Receiving Network Centrality, 1990-2008

	Model 6	Model 7	Model 8	Model 9	Model 10
Political Variables					
Political repression	-.139* (.067)				-.134† (.075)
Political terror		-.032 (.040)			-.008 (.042)
Collapse			-.003 (.012)		-.001 (.014)
Conflict				-.029 (.023)	-.025 (.027)
Control Variables					
Time period	-.029 (.027)	-.017 (.028)	-.106 (.022)	-.019 (.022)	-.035 (.030)
Observations	761	702	968	968	687
States	192	177	242	242	174
R^2 Within	.01	.00	.00	.00	.01
R^2 Between	.01	.00	.00	.20	.02
R^2 Overall	.01	.01	.01	.14	.02

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

In the political analysis of the dichotomized receiving network, only political repression demonstrates a significant relationship. This mirrors results from the fixed effects analysis of the valued receiving network (Table 5.20). Increases in political repression yield decreased dichotomized receiving centrality, indicating that more repressive states become less attractive destinations for refugees. While existing refugee networks into these countries may continue to operate, inflows from new partners do not take place as these new refugees attempt to seek less repressive conditions. The presence of political terror, collapse, and conflict do not influence receiving centrality in this analysis.

Demographic model

Table 5.46 reports the results of FEMs examining the effects of demographic conditions. Across all individual models and the full model, these variables fail to reach significance with centrality. Demographic variables do not have significant effects on dichotomized receiving centrality.

Table 5.46. Fixed Effects Models of the Effects of Demographic Variables on Dichotomized Receiving Network Centrality, 1990-2008

	Model 11	Model 12	Model 13	Model 14	Model 15
Demographic Variables					
Fertility rate	.064				.059
	(.122)				(.140)
Population density		-.535			-.734
		(.499)			(.645)
Infant mortality			-.116		-.095
			(.164)		(.194)
Life expectancy				.050	.112
				(.126)	(.132)
Control Variables					
Time period	-.009	.021	-.022	-.016	.019
	(.029)	(.034)	(.037)	(.029)	(.052)
Observations	790	812	767	788	713
States	203	208	192	200	183
R^2 Within	.00	.00	.00	.00	.01
R^2 Between	.03	.04	.04	.00	.04
R^2 Overall	.03	.04	.03	.00	.03

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Environmental model

Like the population model, the environmental model fails to demonstrate any significant relationships with receiving centrality. FEMs for this analysis are presented in

Table 5.47. No significant effects are identified in either individual models or the full model.

Table 5.47. Fixed Effects Models of the Effects of Environmental Conditions on Dichotomized Receiving Network Centrality, 1990-2008

	Model 16	Model 17	Model 18
Environmental Variables			
CO_2 per capita	.162		.160
	(.112)		(.119)
Cropland under cultivation		-.195	-.190
		(.219)	(.222)
Control Variables			
Time period	-.027	-.002	-.008
	(.026)	(.026)	(.027)
Observations	777	758	718
States	197	192	183
R^2 Within	.01	.00	.01
R^2 Between	.01	.08	.08
R^2 Overall	.00	.08	.07

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

International model

Table 5.48 presents results of FEMs examining the effects of international integration. Like the population and environmental analyses, this set of models fails to identify any significant relationships between international variables and centrality. Increased activity in these networks does not yield any change in centrality over time.

Table 5.48. Fixed Effects Models of the Effects of International Integration on Dichotomized Receiving Network Centrality, 1990-2008

	Model 19	Model 20	Model 21	Model 22
International Variables				
FDI penetration	-.016 (.045)			-.010 (.057)
Trade openness		.026 (.039)		.016 (.039)
INGO membership ties			.053 (.053)	-.024 (.081)
Control Variables				
Time period	-.009 (.027)	.001 (.026)	-.030 (.026)	.007 (.036)
Observations	791	730	884	672
States	202	193	232	182
R^2 Within	.00	.00	.00	.00
R^2 Between	.01	.06	.60	.23
R^2 Overall	.00	.06	.49	.18

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

Final model

Table 5.49. Fixed Effects Models of the Effects of all Previously Significant Variables on Dichotomized Receiving Network Centrality, 1990-2008

	Model 23
Predictor Variables	
State strength	-.103* (.043)
Political repression	-.135† (.077)
Control Variables	
Time period	-.037 (.031)
Observations	652
States	170
R^2 Within	.02
R^2 Between	.08
R^2 Overall	.06

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)
Notes: All models include a first-order autocorrelation correction. Each cell reports the standardized coefficient with the standard error in parentheses.

A fixed effects model that includes state strength and political repression – the only significant variables in any of the dichotomized receiving centrality models – is presented in Table 5.49. Collinearity checks for this model find no problems among these variables (Mean VIF = 1.04). Both of the variables demonstrate robust relationships with receiving centrality by maintaining significance in this model. Both state strength and repression cause countries to be less central in this network over time.

Discussion of dichotomized receiving network results

The fixed effects models for centrality in the dichotomized refugee-receiving network reveals very little in the way of significant effects. The time measure is non-significant across all models, indicating that centrality does not change appreciably over time. Among the domestic conditions and international variables, only state strength and political repression demonstrate significant relationships with receiving centrality. Governments that are able to increase public expenditures and those that reduce individual rights both experience less receiving centrality over time. Strong states may be better able to control refugee inflows and limit the development of new ties or may be at such a high level of receiving centrality that they lose centrality relative to other countries that become more central over time.

As for the repression finding, this reflects the results in the valued receiving analysis that show that repressive regimes are less attractive targets for refugees who are able to make choices about destinations. As flows emerge from new potential receiving partners, these ties are not fully realized as refugees from these countries avoid moving to more repressive countries. When considered together in the final model (Table 5.49), these variables demonstrate almost identical strengths of effect to those observed in their original models, indicating the presence of independent effects for these measures.

Interestingly, there are no significant positive relationships identified in the FEMs for this network. This marks one of the key differences in comparisons of analyses of this network. The REMs identify a number of relationships, both positive and negative, that influence receiving centrality, while the FEMs reveal only two. While repression is significant in the fixed effects model, it fails to reach significance in the random effects model. This measure is the only one that affects dichotomized receiving centrality over time, but not across countries.

As few significant relationships are identified in this FEMs analysis, most of the predictions fail to emerge. However, a number of predictions about lack of effects do prove to be accurate. The failure of GDP per capita and the demographic variables to reach significance meets with expectations. While state strength was not predicted to have an effect on centrality, this relationship emerged in the analysis. On the other hand, repression acted as anticipated, reducing refugee-receiving centrality over time.

Summary of fixed effects analysis of centrality in refugee networks

Table 5.50 summarizes relationships demonstrated across the four sets of FEMs examining the effects of domestic conditions and international integration on centrality in the global refugee sending and receiving networks. Results for valued sending, valued receiving, dichotomized sending, and dichotomized receiving are reported. Significance in either individual models or full models is indicated by a + (positive relationship) or – (negative relationship). Models in which no significant relationship occurs are left blank. The value recorded for the time measure is an identification of the trend observed for this variable across models. Generally, this table demonstrates a surprising lack of significant effects across analyses of the different networks. Of the seventeen possible relationships for each network, the most that are realized in any analysis is seven in the dichotomized sending. The dichotomized receiving network presents only two significant relationships. While this lack of significant effects is a key feature of these analyses, the relationships that do emerge identify some clear trends in changes to centrality over time.

Table 5.50. Summary of Relationships in Fixed Effects Models

	Valued Sending	Valued Receiving	Dichotomized Sending	Dichotomized Receiving
Economic Variables				
GDP per capita	-		-	
State strength				-
Urban population				
Secondary school enrollment				
Political Variables				
Political repression		-	+	-
Political terror			+	
Collapse	+		+	
Conflict	+			
Demographic Variables				
Fertility rate		-	-	
Population density				
Infant mortality				
Life expectancy	-			
Environmental Variables				
CO_2 per capita		+	-	
Cropland under cultivation				
International Variables				
FDI penetration				
Trade openness		-		
INGO membership ties		+	+	
Control Variable				
Time		-	+	

Note: The effects presented for the time measure reflect general trends observed across models for each network.

Both GDP per capita and state strength demonstrate significant relationships with centrality in at least one of the networks, while urbanization and secondary enrollment fail to reach significance in any of the network analyses. Increased state strength is associated with reduced dichotomized receiving centrality. This effect could be the result of newly imposed limitations on refugee entrance or it could be the product of the large numbers of ties already held by many countries with high spending levels. Either of these would reduce centrality over time as fewer new ties are realized. The GDP per capita finding is particularly important in understanding refugee movements. The negative effect demonstrated by this measure with both sending networks is one of the strongest relationships observed between any variable and one of the networks. Economic growth clearly reduces refugee outflows and sending ties. As FEMs capture only variation over time, this finding indicates that it is not just wealthy countries that are less central in the refugee-sending networks, but rather that any country that experiences growth reaps this benefit. This may be through the development of greater economic opportunities that create greater incentive for potential refugees to stay or it may be that economic growth precludes the development of conditions that would lead to the generation of new refugee movements. This relationship is an important one and provides a key area of focus for further study and for the development of policy and intervention strategies designed to limit future refugee outflows.

The political variables demonstrate strong and consistent relationships across these analyses, especially with the sending networks. Experiencing collapse and / or conflict is associated with greater sending centrality in the valued network while political repression, political terror, and collapse yield increased centrality in the dichotomized sending network. The effects of these variables are as expected, given the political nature of the refugee status recognized by the United Nations and used for this analysis.

Difficult political conditions lead to greater outflows of individuals fearing persecution and political violence.

Only political repression demonstrates a significant effect on receiving centrality. Greater political repression results in reduced refugee-receiving centrality in both the valued and dichotomized networks. While some refugees have little choice about destinations, many do, and those that are able to choose tend to avoid countries with repressive regimes. This finding marks an interesting difference between the REMs and FEMs as repression demonstrates a significant positive relationship with valued receiving centrality. The effect found in the REMs is almost certainly the product of a handful of high-receiving countries with repressive regimes that are in close proximity to high-sending countries with refugees that have less autonomy in choosing destinations (e.g., Iran).

Variables in the demographic models are largely non-significant across analyses of the networks. Infant mortality and population density fail to reach significance in any of the models. Life expectancy has a significant negative relationship with valued sending centrality. As life expectancy increases, countries become less central in refugee sending. Again, this does not just reflect the influence of countries with high life expectancies, but also the changes experienced by poorer countries that raise life expectancy over time.

A second finding among the demographic variables is the effect of fertility on centrality in the valued receiving and dichotomized sending networks. Fertility demonstrates a negative relationship in both of these analyses. Countries that increase fertility receive fewer refugees and send refugees to fewer partners over time. Both of these findings are related to the low level of development represented by countries that have higher fertility rates. With the emphasis currently placed on reducing fertility in the developing world by the Millennium Development Goals (United Nations 2010**)**, only countries at the lowest levels of development (e.g., Afghanistan) experienced increases in fertility over the course of the study. These countries represent decidedly unattractive destinations for refugees, limiting receiving centrality. Additionally, refugees from poor countries tend to move to fewer destinations (see Tables 3.6 through 3.10), limiting growth in sending ties.

Among the environmental and land use variables, only CO_2 per capita reaches significance. Increases in CO_2 are positively related to valued receiving centrality and negatively related to dichotomized sending centrality. Cropland under cultivation is not a significant variable in any of the FEMs. The CO_2 finding may reflect developing countries that increase in industrialization over the period of the study. These countries experience increases in CO_2 production and have begun to emerge as “second choice” destinations for refugees who cannot reach the most advanced countries or are not allowed entry into these countries. As countries industrialize they become less likely to send new waves of refugees, thus limiting the likelihood of increasing dichotomized sending centrality. While this measure seems to track along development lines, it is somewhat nuanced by the emergence of relationships based on increases in CO_2 production and not just high production in general.

While international variables are important to the REMs, they are somewhat less central in the FEMs. Part of this is due to the exclusion of world system position as fixed effects models cannot incorporate time-invariant measures. Beyond the loss of these measures, however, the included variables demonstrate limited effects on centrality. FDI penetration fails to achieve significance in any of the models in this analysis. While somewhat important in understanding centrality across counties, it has no bearing on change in centrality over time. Trade openness performs only a little better, reaching significance with the valued receiving network. Increased trade openness yields reduced receiving centrality as more active countries are better able to control refugee flows or are already at high levels of refugee receipt, making increases in centrality difficult.

INGO participation continues to have a counter-intuitive relationship with sending centrality in these analyses, particularly in the dichotomized sending analysis. While world polity theory would predict that increased INGO participation results in reductions in sending centrality, the opposite effect is demonstrated. Increases in INGO membership ties lead to increased centrality in the dichotomized network. While some of this increase may be due to the presence of INGOs that work to place refugees in destination countries across the world, it is more likely that much of this relationship is driven by new connections that are formed via these associations with INGOs. These connections create relationships and networks of communication and, occasionally, transportation that facilitate movements of refugees to new destinations.

INGO participation is also connected to increased centrality in the valued receiving network. This finding falls more in line with the expectations of world polity theory as countries that increase connections to civil society through INGOs are likely to receive scripts that identify the receiving of refugees as the kind of thing that “good citizen” countries do. As these scripts are received, centrality in the receiving network is increased and more refugees are hosted.

While the FEMs reveal fewer relationships than the REMs, three important stories emerge. The first involves the relationship of the wave variable with centrality. While time does not have a significant effect on centrality in the valued sending and dichotomized receiving networks, it does demonstrate a significant relationship with the other two. For the valued receiving network, time has a consistent negative relationship across models, indicating that, over time, centrality scores in this network decrease. This reflects the trends identified in Chapter Three that the overall scope of the valued refugee network is shrinking over time (Table 3.1) and that the most central actors in the network are hosting fewer refugees across waves. Iran, the top receiving country in Wave 1, played host to over 3.8 million refugees during this wave. By Wave 5, Iran is again the top receiving country, but hosts less than a million refugees. This pattern holds true across the top ten recipients of refugees in the study (see Tables 3.12 through 3.16).

By contrast, time demonstrates a significant positive effect on centrality in the dichotomized refugee-sending network. Over time, centrality scores in this network increase as actors gain more partners by sending refugees to new destinations. This result again reflects trends noted in Chapter Three. Total sending ties increased 230 percent from Wave 1 to Wave 5, indicating a clear positive trend in centrality (see Table 3.2). The most central actor in this network in Waves 1 and 5 (Somalia in both cases) almost doubled its partners from 1990 to 2008, increasing from 54 to 104. Each of the top actors in this network demonstrated similar results over this period (see Tables 3.6 to 3.10).

The second story observed in the FEMs is the confirmation of key patterns demonstrated in the REMs. While fewer significant variables are present in these models, the key roles of development, stability, and – to a lesser extent – global connectedness are evidenced across FEMs examining centrality in the refugee network. GDP per capita is the most important of the development variables in fixed effects models, demonstrating a significant negative effect on sending centrality in the valued and dichotomized sending networks. Life expectancy and CO_2 per capita also show the importance of development in reducing sending centrality. While there are fewer significant relationships to discuss in these analyses, two observations emerge that add to the already identified importance of development in limiting refugee outflows. As FEMs are only able to capture variation across time with no regard to variation across countries, the development findings in these analyses indicate that economic growth limits future refugee movements regardless of the level at which a country starts. It is not just that wealthy countries send fewer refugees, but rather that countries that experience economic growth (GDP per capita) and reap the benefits of that growth (increased life expectancy, greater industrialization) send fewer total refugees and connect to fewer new destination partners over time. The second observation from these analyses is the strength of relationship indicated by GDP per capita, particularly in the analysis of the valued network. Economic growth seems to be a vital part of any efforts to limit refugee outflows.

In these FEMs, the political instability variables also operate in ways that reflect findings from the REMs. Again, these variables are not significant as frequently in FEMs, but when significant, demonstrate expected effects on centrality. This is especially true in the analyses of the sending networks. Political repression, Political terror, collapse, and conflict all contribute to increased sending centrality in one or both of the sending networks. Countries that experience these conditions send more refugees to more partners over time.

The third key perspective identified in the REMs – that global connectedness through investment, trade, and INGOs – receives less support in the FEMs. FDI penetration does not demonstrate any significant relationships and trade openness is only significant in the valued receiving model. However, INGO participation has a significant positive effect in both the valued receiving and dichotomized sending analyses, indicating that increases in INGO ties cause countries to receive more refugees over time and send refugees to more destinations. These findings reflect those observed in the REMs, where INGO participation had a positive significant relationship with centrality in every network. Again, finding these relationships in the FEMs indicates that greater participation in civil society through INGOs yields these effects for countries at every level of development and pattern of sending and / or receiving. While less robust than earlier evidence for the relationship between connectedness and centrality, this finding adds a layer to the conversation that further supports the importance of participation on the global stage.

The third key story that emerges from the FEMs is the identification of key differences in the effects of variables over time and across countries. Relationships identified in the FEMs are fewer, but demonstrate clear effects that occur over time across the period of study. By contrast, REMs identify effects that occur both over time and across countries. The efficacy of these variables to affect centrality is reflected in differences both across countries and over time. These differences between the types of analyses mean that the FEMs capture changes that occur over time as conditions change in countries, regardless of level of development, while REMs portray conditions as they currently exist and as they change with time. The observation of more significant relationships in REMs means that these measures explain differences in centrality experienced by countries based on their differential experience of these conditions (e.g., population density). However, the lack of significance evidenced by many of these measures in the FEMs analysis indicates that changes over time in these conditions do not yield centrality changes or that there is insufficient change over time for countries in these areas to register significant effects.

ALTERNATIVE ANALYSES OF CENTRALITY IN THE REFUGEE NETWORK

A number of additional analyses were conducted to test the robustness of the REMs and FEMs results under different conditions. These analyses generally examine the extent to which findings persist with different permutations of the sample. Results of analyses using a standardized sample, as well as a sample that excluded all countries that contributed only one observation are included. Additionally, results from analyses in which outliers identified by the Hadi procedure are excluded are presented. Finally, several optional full models were run with the demographic variables to observe the effects when one of the several highly correlated variables is excluded.

Standardized sample results

The REMs and FEMs reported in this chapter use a floating sample. The full data set is included in each model and all countries and waves that have data for all variables in that model are included. This results in changes in the number of observations and countries contributing data for each model. The sample size ranges from 1210 to 645 across the REMs and 968 to 672 in the FEMs. The use of this kind of sample allows for the retention of all possible observations for each model. While the use of a floating sample presents some problems of comparability and raises the issue of bias toward countries that are able to contribute data for all measures and waves, it proved to be the best option for this study. The use of a standardized sample eliminates many less-developed countries and skews the sample toward those countries that typically send few refugees. The loss of a number of high-sending (e.g., Afghanistan) and high-receiving (e.g. Sudan) countries for all models in the analysis proved to be more problematic than losing these across some models, but retaining them in others.

The potential exists that some of the results are influenced by the countries and observations included in the model. I created an unbalanced standardized sample to test for these effects by examining changes in results that occur when each model includes the same number of observations across the analysis. However, it should be noted that the standardized samples exclude a number of countries and observations due to missing data, making these findings the product of a limited sample as well. A full list of countries and observations included in the standardized samples is presented in Appendix C (Table C.3). To develop this sample, I ran a model that included all of the variables from the analysis with one of the networks and saved the sample for this model as a new sample, with the observations and countries included becoming the sample for the study. While standardized, this sample remained unbalanced as some of the countries did not have data for all five waves. Each network contains the same number of countries and observations; therefore, it was only necessary to do this procedure once for the REMs and once for the FEMs. The standardized REMs sample contains 530 observations contributed by 124 countries and the standardized FEMs sample contains 491 observations from 150 countries. The loss of over half of the countries and observations in the creation of these samples presents a clear problem with using this sample and is one of the key reasons why it was ultimately rejected in favor of the floating sample.

The REMs for the valued sending network using the standardized sample revealed several differences from the floating results. A number of significant relationships from the floating sample fail to emerge in the standardized analysis, including: urbanization in the full economic model, collapse in the full political model, population density, and fertility in the full demographic model, cropland under cultivation in individual and the full environmental model, and INGO participation. The collapse measure proved particularly problematic across analyses with standardized samples. Data for many of the measures examined in this study are often not available from states that do not have central governments. However, these countries tend contribute refugees at high rates. Eliminating countries with missing data for some measures eliminates most of the collapsed states, reducing variation on this measure to almost none. This lack of inclusion of collapsed states accounts for the loss of significance for this measure across analyses.

With the variables that lose significance across these models, there are also several relationships that become significant when the standardized sample is employed. State strength in the full economic model, fertility, and trade openness in both individual and the full international models demonstrate significant effects in these analyses. Strength reduces sending centrality while higher fertility and trade openness increase centrality in this network.

Standardized analysis of the valued receiving network follows the same pattern as that of the sending network. Ten previously significant relationships fail to reach significance in these models, including: state strength, urbanization, secondary enrollment, GDP per capita and strength in the full economic model, population density in individual and the full population model, cropland in both models, FDI penetration, and trade openness. Previously non-significant relationships with infant mortality, fertility in the full population model, and INGO participation in the full international model became significant when the standardized sample was used. Each of these measures is associated with increased receiving centrality in these analyses.

Standardized analyses of the dichotomized networks demonstrate fewer differences. Collapse loses significance in the full political model as do fertility, population density, and trade openness. Interestingly, collapse becomes significant in its individual model, when it was not in the floating analysis of this network. Additionally, population density in the full demographic model, cropland under cultivation in the full environmental model, semiperipheral status, and FDI in the full international model all become significant in the standardized analysis. FDI penetration decreases dichotomized sending centrality in this analysis, while the other newly significant variables all demonstrate positive relationships.

In the dichotomized receiving network, conflict and population density lose significance in both individual and full models. Additionally, cropland under cultivation fails to reach significance in the full environmental model, as does FDI penetration. The individual urbanization model and Political terror in the full political model are the only variables that become newly significant in this network, both demonstrating positive relationships with dichotomized receiving centrality.

While a number of differences emerge between REMs analyses of these networks using floating and standardized samples, the general trends identified in the floating analyses do not change. Development, stability, and global connectedness influence sending and receiving centrality across both valued and dichotomized networks. The elimination of countries with missing data limits the contributions of less developed countries to the models, a problem that seems to be particularly telling in effects on collapse and demographic variables. Additionally, many previously marginally significant relationships fail to emerge as significant when countries and observations are standardized.

As the fixed effects analyses identify fewer significant relationships using the floating sample, fewer differences emerge in comparisons of these results with those using a standardized sample. In analyses of the valued sending network, only conflict and life expectancy lose significance, while collapse, trade openness, and INGO participation become significant. Trade openness and INGO ties reach significance in both individual models and the full international model, demonstrating particular robustness in this analysis. Collapse and INGO participation increase sending centrality over time, while greater trade openness yields a reduction in sending centrality.

In the standardized FEMs for the valued receiving network, repression in the full political model, CO_2 per capita in both models, and INGO participation in its individual model fail to maintain previously significant relationships. Population density in its individual model and fertility in the full model are the only newly significant relationships to emerge in this network. Density is positively related to receiving centrality while fertility demonstrates a negative effect.

The dichotomized sending network only loses one relationship when analyzed with the standardized sample: fertility fails to reach significance in either model.

However, a number of relationships become significant across models with this network. Collapse, population density, life expectancy in both individual and full models, both environmental variables in individual models, FDI penetration in its individual model, and FDI and INGO participation in the full international model. Of these, collapse, population density, cropland under cultivation, and INGO participation have positive effects on dichotomized sending centrality, while life expectancy, CO_2 per capita, and FDI penetration reduce sending centrality.

Of the eight standardized analyses, only the FEMs for the dichotomized receiving network have identical results to those of the floating analysis. State strength and political repression demonstrate significance with centrality in this network, both leading to decreased centrality. All other measures fail to achieve any level of significance in this analysis.

The FEMs using standardized samples demonstrate a higher degree of similarity to the floating analyses than do comparisons of the floating and standardized REMs. However, this may be largely due to the more limited significance demonstrated by variables in the floating FEMs, relative to that evidenced in the floating REMs. Whatever differences emerge between analyses using the floating and standardized samples, the main trends are the same. The primary differences seem to involve the effects of demographic and international variables, measures that were not significant when all possible relationships were included, but become significant with this more limited sample. This seems to indicate the presence of a selection effect that favors these conditions when poorer countries are excluded.

Removal of countries with only one observation

To further test the robustness of results, countries that contributed only one observation to the standardized sample were identified and removed from the sample. As the goal of the analysis is to examine effects of variables both over time and across countries, the inclusion of a number of countries that have only one observation limit the extent to which changes over time can be observed. Countries in the standardized sample were listed, with the number of observations for each identified. Of the 124 countries included in the standardized sample, two contributed only one observation: Barbados and Qatar. These countries were removed from the sample and each individual and full model was re-run for all four networks using this new sample. Results for these analyses were identical to those using the standardized sample that included these countries. The elimination of countries with single observations from the sample had no effect on the observed results.

Identification and removal of outliers

The presence of outliers in models creates the possibility that a few cases can influence the results, presenting an inaccurate representation of general relationships. To test for the presence and possible influence of outliers, HADIMVO procedures were conducted for all of the REMs and FEMs for each of the networks, using the floating samples. This procedure tests for the presence of outliers in multivariate models. Through this procedure, I identified countries that registered as outliers at the .05 level in each model and removed these from the sample. I then re-ran all models to determine if differences emerged.

Few outliers were identified in either the REMs or the FEMs for individual and full models across each network. In fact, most of the individual and full models across networks had no outliers. Those that did emerge were unique for each model. While the same cases were identified as outliers in similar models across networks, no case served as an outlier in multiple models within the same network. For example, the observation for Rwanda in the first wave was identified as an outlier in the individual life expectancy model and the full demographic model of the valued sending network. Upon continued examination, this observation was an outlier in these models of all four networks. However, the first wave Rwanda observation was not identified as an outlier in any of the other individual or full models in the valued sending or any other network.

Evaluations of the final models of each network provided more evidence of the presence of outliers. In the final models of the REMs analyses, several observations consistently emerged as outliers, including: all observations from Eritrea and Trinidad and Tobago, the Wave 5 observation from Solomon Islands, the Wave 4 observation from Equatorial Guinea, and the Wave 1 observation from Rwanda. Other outliers were also identified in each of these models, but were different from model to model. The removal of these outliers from sample used to estimate the adjusted final models produced no changes in effect or level of significance for any of the variables in these models. The findings across models and analyses are not influenced by the presence of outliers.

The final models in the FEMs for each network had fewer outliers and evidenced no changes. Of the four final models, only the dichotomized receiving model had more than two outliers and none of the outliers for any of the models were similar. The valued receiving network final model had no outliers, while the valued sending had one and the dichotomized sending had two. Once removed, none of these outliers demonstrated any influence on findings in these models. Results of final models run with new samples that excluded outliers were unchanged from those previously reported.

Collinearity check in demographic models

Results of tests for collinearity indicated a high degree of correlation between life expectancy and infant mortality, introducing collinearity into the demographic models. To test for possible effects, full demographic models were run that excluded infant mortality and kept life expectancy and then excluded life expectancy, while retaining infant mortality. Results of these models in both the REMs and FEMs showed no difference in the direction or significance of the relationships of these variables. The effects of all of the variables in the population model were identical in the full model and each of the models that excluded one or the other variable. While the possibility of collinearity between these measures exists, it does not appear that the observed effects on centrality are influenced by this condition.

CONCLUSION

The goal of this chapter was to examine the effects of variables from a variety of perspectives in influencing centrality in the valued and dichotomized refugee sending and receiving networks across five waves from 1990 to 2008. Measures representing domestic conditions (economic, political, demographic, and environmental), as well as international interactions were included in random effects and fixed effects models of the four networks to determine relationships with centrality in these networks across countries and over time. Two primary analyses and a number of alternative analyses were conducted to study relationships and determine the robustness of the effects that were identified.

To examine these relationships, I performed a series of random effects and fixed effects models. The analysis of each network included five distinct models: economic, political, demographic, environmental, and international. For each of these, individual models were conducted that included a single predictor variable with the given network, net of regional and time control variables (or only time in the case of the FEMs) and all of the predictors from that model together with the network and controls in a full model. The analysis of each network also included a final model that brought together all of the significant variables from previous models, net of controls. To examine the robustness of the identified relationships, additional analyses were conducted that included the use of an unbalanced standardized sample, a sample that excluded countries that only contributed one observation to the analyses, and tests to identify outliers that were subsequently removed to determine their effects.

The results of these analyses present two important stories about influences on centrality in these networks. The first is the identification of three clear trends about the determination of centrality across countries and over time. Economic development, political instability, and global connectedness each have clear effects on sending and / or receiving centrality in these networks. These relationships demonstrate a high level of robustness, persisting across models that include multiple variables from different perspectives, across both REMs and FEMs, and across analyses that employ different permutations of the sample.

Measures of economic growth and development demonstrate a consistent negative effect on sending centrality in both the valued and dichotomized networks in the REMs. GDP per capita, state strength, urbanization, school enrollment, life expectancy, and CO_2 per capita all demonstrate negative relationships with centrality. Countries with higher scores for these measures of economic growth and development send fewer refugees overall and to fewer partners than less developed countries. Additionally, infant mortality – typically connected to a lack of development – has a positive relationship with centrality in both networks. While most of these variables fail to reach significance in the FEMs, the relationship demonstrated by GDP per capita with sending centrality in fixed effects models is the strongest of any observed in the study. This indicates that it is not just highly developed countries that experience reduced sending centrality, but also that economic growth negatively influences sending centrality regardless of the development level of the country that experiences it. Negative effects of life expectancy in the valued sending network and CO_2 per capita in the dichotomized sending network that emerge in the FEMs further validate the importance of this connection between development and reduced centrality. Increases in these areas – typically connected with increased economic well-being and industrialization, respectively – are also associated with reduced sending centrality. Clearly, the pursuit of economic growth and the accompanying benefits associated with development are key components of a strategy designed to limit refugee outflows.

The effects of political instability on refugee-sending centrality emerged as expected. REMs and FEMs confirm that countries with higher levels of political repression, Political terror, and the experience of collapse and conflict are more central in the valued and dichotomized refugee-sending networks. The definition of refugees used to develop networks for this analysis is predicated on the experience or fear of persecution or political violence, so it stands to reason that the presence of conditions that generate greater potential for these issues would encourage refugee movement. The persistence of these effects in fixed effects models demonstrates again that it is not just repressive regimes that are high in sending centrality, but also countries that experience increases in levels of repression and human rights violations experience commensurate increases in refugee outflows. These findings reflect those discovered in previous research, but the use of REMs and FEMs in examining these effects, as well as the inclusion of high numbers of countries and territories in the study, add nuance to the results identified in earlier work.

While economic development and instability demonstrate clear relationships with sending centrality, measures capturing participation in global systems showed consistent and strong relationships with centrality in the valued and dichotomized receiving networks. Countries with greater foreign investment, trade openness, and INGO participation receive greater levels of refugees and receive refugees from more partners than those less involved in these networks. Additionally, the negative relationships with centrality evidenced by world system measures indicate that countries that are less connected to global trade networks are less central in receiving refugees and hold ties to fewer countries. Greater levels of global connectedness through participation in systems like finance and trade create communication and transportation pathways that may facilitate moves for refugees when the necessity arises. The more connected a country is, the more potential receiving partners they have. As these potential ties are realized, centrality increases. Lack of connectedness, as demonstrated by semiperipheral and peripheral world system position, results in fewer pathways and, consequently, reduced centrality.

The mechanisms through which INGO participation yields greater receiving centrality may be slightly different than those of the other global measures. While greater connectedness to other countries through ties to INGOs certainly creates the aforementioned pathways through which refugees may travel, additional factors contribute to this relationship. The world polity thesis that INGOs are the vehicles through which scripts are passed regarding human rights violations and appropriate state responses to them (Peterson and Hughes 2008) would indicate that countries with high numbers of INGO ties or that increase ties over time may receive scripts about the responsibility of countries to receive refugees as part of good global citizenship. As these scripts are adopted, countries may become more open to receiving refugees, increasing centrality in the receiving networks. Additionally, many INGOs work in the area of relocating refugees (e.g., the International Rescue Committee). Ties with these kinds of organizations might result in greater inflows of refugees as potential hosts are found within the connected country.

Interestingly, INGO membership ties is the only global variable that consistently demonstrates a significant relationship with centrality in the sending networks, particularly in the REMs. Countries with greater levels of INGO participation are more central in the sending networks. The significant relationship evidenced in the dichotomized sending FEMs indicates that increases in INGO participation are associated with increases in sending ties. This relationship runs contrary to the expectation of world polity theory. Given the role of INGOs to disperse scripts about good governance and how countries ought to act in the global system and with respect to the rights of their citizens, it would logically follow that greater INGO participation would lead to reduced sending centrality as scripts are adopted and conditions that tend to generate refugee outflows tempered. This, however, does not seem to be the case. The positive relationships evidenced across sending network models seem to reinforce the idea of greater connectedness generates channels through which refugees can move, increasing sending centrality, particularly in the dichotomized network.

The lack of relationships demonstrated by FDI, trade, and world system position with the sending networks seems to run contrary to expectations of both dependency and neoclassical arguments. Dependency scholars view trade and FDI penetration as negative for developing countries as more advanced countries are able to take advantage of them, creating negative welfare outcomes. Refugee outflows or the domestic conditions that encourage these movements would seem to be among the possible negative outcomes experienced. However, trade and FDI are generally not associated with greater sending centrality. By contrast, neoclassical economic theory would predict that greater participation in these networks would lead to reduced sending centrality as greater trade and investment create domestic conditions that eliminate the conditions that lead to refugee movements. This relationship fails to emerge as well. Foreign investment and trade do not seem to be connected to development that impacts sending centrality.

The independence and strength of the economic, instability, and connectedness effects are tested in the final adjusted models of many of these analyses, as variables reflecting each of these trends are included together in a single model. In the sending

REMs, the effects of economic measures, instability measures, and INGO participation persist in spite of each other, indicating the independent effects produced by these different sets of conditions. The final models of the receiving networks also demonstrate independent effects, primarily of development and global variables. INGO participation and world system position are significant in both valued and dichotomized receiving models, as is GDP per capita.

Examination of the final FEMs indicate that global connectedness is not an important element over time, when considered with development and instability measures. Economic growth and increased instability demonstrate more significant relationships in the individual and full models than does connectedness, and the few international measures that do emerge tend to be absorbed by the presence of these other measures in the final models. The effect of trade openness in the valued receiving network is the only international relationship to persist. This difference between REMs and FEMs seems to indicate that, while important to centrality, the effects of global connectedness are more a product of the different levels at which countries are connected, and less the result of changes in connectedness over time.

Differences like these between relationships identified across REMs and FEMs mark the second major story developed from this study. Random effects models capture both longitudinal and cross-sectional variation. In this case, these models make comparisons between countries and within a single country over time. By contrast, fixed effects models only evaluate change over time. Using both methods in evaluating the effects of domestic conditions and international participation on centrality in these networks produced a number of similarities and differences that identify key influences on these networks and how they change over time.

Generally, the primary stories from these analyses are the same across procedures. Economic development and instability consistently affect sending centrality in both REMs and FEMs, while global connectedness influences receiving centrality – although to a lesser degree in the FEMs than the REMs. This is an important discovery as it demonstrates that variation in centrality in the networks is not solely due to differences between countries, but is also the product of changes that occur over time. Increases in GDP per capita are associated with reductions in refugee-sending centrality for all countries, not just those that start at a high level of development. The identification of these temporal relationships allows for the evaluation of the efficacy of policy measures taken to limit refugee outflows and for the development of new measures that take into account the influences of things like economic growth, instability, and global participation over time.

Within these similar stories, there are a number of differences in the effects of individual variables that emerge between the REMs and FEMs. Generally, variables in the FEMs beyond the primary measures of instability and economic growth fail to reach significance across most models. For example, in the REMs of the valued sending network, there are fifteen significant relationships identified. In the FEMs for the same network, there are only four. While key indicators of growth and stability (e.g., GDP per capita and conflict) reach significance in FEMs, variables that capture outcomes related to growth or stability (e.g., urbanization and infant mortality), fail to demonstrate significant effects. Economic growth is associated with change over time, but different experiences of infant mortality affect only cross-sectional variation of centrality. It may be that the key indicators identified in the FEMs drive centrality through the outcomes they generate, creating cross-sectional differences that impact centrality beyond the effect of the primary condition. For instance, economic growth reduces sending centrality over time, a relationship identified in the FEMs for this network. Additionally, economic growth generates positive welfare outcomes like life expectancy, infant mortality, and education. While changes in these welfare outcomes do not demonstrate significant effects over time (in FEMs), the differential experience of these outcomes across countries does affect a particular country's experience of centrality (as identified in the REMs).

The general lack of significance across measures of global interaction in FEMs presents another puzzle. The difference in significance between the REMs and FEMs seems to indicate that, in general, changes in global participation matter less for centrality in sending and receiving networks than the current level of global connectedness experienced by countries. Influences found in the REMs are more cross-sectional than longitudinal in effect. The exception to this pattern is the role of trade openness in the valued receiving network and INGO participation in the valued receiving and dichotomized sending networks. As countries increase the level of INGO participation, they become more central receivers of refugees and increase the numbers of countries to which they send refugees. Interestingly, the effect demonstrated by trade openness in the FEMs is in the opposite direction of that identified in the REMs. Over time, greater trade openness decreases valued receiving centrality, while across countries greater openness is associated with greater receiving centrality.

This change in direction from the REMs to the FEMs occurs for four variables in the study. In evaluations of the receiving networks, political repression, fertility rate, and trade openness switch from positive to negative, while CO_2 per capita changes from negative to positive. These differences indicate that changes in these conditions over time generate different effects than the cross-sectional experience of them at any given point in time. For example, over time, countries that experience increases in political repression become less central in the valued and dichotomized receiving networks. They become less attractive as destinations over time. However, at any given point in time, countries with higher levels of political repression are more central as receivers in these same networks. This may be due to refugees that are already present in these countries or to the proximity of these countries to other high-sending countries. The experience of repression has a different effect on centrality than changes in the level of repression over time.

Implications for theory and policy

Three implications for theory and policy emerge from these key stories about the influence of domestic conditions and international integration on sending and receiving centrality in the global refugee networks. First, it is clear from the REMs and FEMs that sending centrality is not solely the product of political instability. While political unrest and repression are key elements in driving refuge outflows (as would be expected for the movement of political refugees), other domestic conditions shape these flows as well. Particularly important to this discussion is the relationship identified between economic development and sending centrality. That this effect exists regardless of starting point provides direction for policy measures and interventions designed to limit future refuge outflows.

The second implication flows from the first. Efforts designed to reduce or end refugee outflows must address conditions beyond political repression and conflict. Affecting refugee movements is not just a matter of ending negative political conditions, but also helping countries develop positive economic momentum. In many cases, these initiatives may go hand in hand, but both should be addressed. The focus on economic growth and attendant increases in welfare and development outcomes may initiate changes in the political realm without specific interventions or measures levied in this direction.

Finally, these findings make it clear that proximity is not the only factor present in determinations of refugee destinations. While some refugees do not have the resources to be choosy about destinations, many do. Those who are able to choose tend to move along pathways established through previous interactions (e.g., INGO ties), rather than simply cross the nearest available border. This is not to negate the obvious importance of proximity in determining countries that are vulnerable to refugee inflows when new movements occur, but rather to note that there are other factors in play as well (e.g., language spoken, colonial or historical links).

A number of directions for future study are generated by these findings. The relationship between international integration and receiving centrality is an important area for further examination. Future studies should examine other avenues of connectedness (communications, transportation, etc.) to see how these systems influence centrality and the relationships identified in this study. Additionally, the findings in this study are admittedly limited to relationships at the nation-state level. Refugee movements have both macro and micro components, and need to be studied from both angles. The relationships identified in this analysis provide a framework through which case studies of specific refugee movements could be studied. The analysis of how these relationships impact or fail to impact sending and receiving in specific contexts will further expand on the foundation developed in this study. While this project demonstrates again the efficacy of examining refugee movements at the macro level, the rich tradition of qualitative work in refugee studies is vital and must be continued.

Finally, the data used to develop the networks for this study are clearly limited and need to be expanded if the full scope of forced migration is to be examined and understood. While they represent the best data available, the UNHCR data only capture political refugees that cross international borders, excluding internally displaced persons, environmental refugees, and a host of other groups and individuals. There is a need in the field of migration and refugee studies to gather data on all forcibly displaced populations to better understand the scope of initiating factors and elements that go into destination choices. The collection and development of this kind of data will greatly expand the scope of the discipline and facilitate growth in the development of cross-national studies and other areas and methods of examination that will ultimately lead to better understanding of these movements and better policy in sending and receiving countries to deal with those who move.

Chapter Six

CONCLUSION

The purpose of this project was to examine the structure and degree centrality of the global refugee sending and receiving networks over five waves for the years 1990 to 2008. I used 242 countries and territories to develop these networks and identify valued and dichotomized degree centrality scores. Once developed, I analyzed these networks using a variety of statistical procedures and means of data presentation. These examinations have revealed several important patterns that address the three central questions of this analysis, outlined below.

What does the structure of the global refugee network look like?

The descriptive examination of the valued and dichotomized refugee sending and receiving networks, presented in Chapter Three, provides multiple images of the structure of these networks, key actors in each network, and how these changed from 1990 to 2008. These pictures of the scope and shape of the network reveal four clear trends.

First, there is a high level of stability among the most central actors in each network. Tables 3.6 through 3.10 show that 90 percent of the top ten countries in the dichotomized sending network remain the same from Wave 1 to Wave 5. Top ten actors in the receiving networks, presented in Tables 3.12 through 3.16 also demonstrate stability in top actors as both networks experience retention rates of around 80 percent. The valued sending network represents an exception to this trend, as only 50 percent were the same due to the extent to which conditions that generate refugee outflows vary over time.

The tendency toward stability reflects two important patterns in these networks. First, conditions that generate high levels of refugee flows often become chronic, causing countries to continually experience new outflows or, at the least, limit repatriation. Second, once a country establishes itself as a refugee destination, whether intentionally or otherwise, it maintains prominence. This may be due to more open receiving policies, the establishment of networks that facilitate movement to these particular destinations, or proximity to an ongoing refugee movement.

The second major trend identified in descriptive analyses is the diffusion of the network from Wave 1 to Wave 5. The number of total refugees in the network shrank over this time period, while the total sending and receiving ties held by countries in the network more than doubled. The number of refugees present in the network may be shrinking due to an alleviation of conditions that create new outflows. It is also possible that the drop in refugees is due to renewed efforts toward repatriation or the dying off of an earlier generation of refugee stock. The trends of fewer individuals choosing to be identified as refugees (Zetter 1991) and many who would formerly have been refugees choosing to stay within the borders of their own countries as IDPs may also be contributing to this decline. The expansion of refugee ties may reflect new areas of refugee-generating conflict that have emerged, creating new receiving ties as refugees move to previously low-receiving countries within the region (UNHCR 2009). It is also possible that new refugee destinations have developed among countries at middle levels of development as developed countries have become less open to high volumes of refugee receiving (UNDP 2009). Understanding the reasons for these shifts is an important area for further study.

The increased refugee-receiving burden experienced by countries at middle and low levels of development is the third trend identified in this chapter. This finding confirms trends identified by the UNHCR (2009). Eight of the top ten countries in increased valued receiving from 1990 to 2008 (presented in Table 3.18) are at these levels of development. As these countries experience increased refugee inflows, strains on economic resources and population burdens result (Betts 2008). Refugee populations are often concentrated within small areas, creating enclaves that may become sources of political unrest for the host country (Salehyan and Gleditsch 2006). Poor countries that receive refugees at high levels must receive aid and support from the international community to help deal with the social, political, and economic strains created by these inflows.

The final, and perhaps most telling, trend identified in these analyses is the clear difference between top actors in the dichotomized receiving network and those in the other three networks. Of the four networks, only the top tens of the dichotomized receiving network consist exclusively of countries at the highest levels of development (see Tables 3.12 through 3.16). The central position of these countries in other types of global networks (e.g., trade, transportation) make them easy and attractive targets for refugees who have the resources and ability to choose their destination. While these countries receive refugees from more countries than others, few of them are included among the most central receivers in the valued network. Figure 3.17 demonstrates that only three of the top ten receiving actors from the dichotomized list are on the valued list in the wave in which they are most similar. This disparity further highlights the refugee burden placed on less-developed countries.

Overall, the picture of the refugee network developed in Chapter Three is of a network that is expanding in scope, but declining in overall number. In spite of this diffusion, central actors are becoming more prominent in the valued networks as they account for higher percentages of the refugees sent and received in Wave 5 than they did in Wave 1. Countries that are least able to absorb the cost of refugee inflows or that can least afford the loss of population through outflows continue to experience the brunt of these movements.

Are the global migrant and refugee networks different?

Addressing the question of similarity between the migrant and refugee sending and receiving networks prompted the examination of the two networks from a number of perspectives. After developing centrality scores for the migrant network, I compared descriptive statistics, regional variation, correlations, and relationships between the centrality scores and a number of domestic and international variables. Additionally, I examined the relationships of these variables with residual scores to understand the extent to which these domestic and international elements explain differences in the networks. These investigations produced answers to two questions related to similarity between the migrant and refuge networks. First, are the networks different? Also, can domestic conditions and international interactions explain the differences that exist?

Chapter Four presents clear evidence of differences between the multiple permutations of the migrant and refugee networks. Comparisons of descriptive statistics demonstrate that the migrant network is more active than the refugee network in terms of both individual movers and ties held. The migrant network involves 17.5 times more actors than the refugee network (see Table 4.1) and 10 times the number of ties (see

Table 4.3). These different levels of activity result in very different structures. The migrant networks are the far denser of the two, while the refugee networks are generally more centralized. The most central actors in refugee networks send and receive refugees at high rates, relative to the rest of the actors in the network, causing these networks to have higher centralization than their migrant counterparts. The exception to this is the valued receiving networks, where the migrant network is actually far more centralized, due to the high volume of migrants present in a few key countries (e.g., the United States).

Differences in regional variation between the networks are also highlighted in these descriptive comparisons (see Figures 4.9 through 4.12). While most of the migrant networks demonstrate a degree of equality in regional distribution, with roughly equal percentages of individuals and ties sent and received by each region, the refugee networks are quite varied. The migrant valued receiving network is again the exception to this trend as it is skewed heavily toward advanced countries in Europe and the West (Figure 4.10). Among the refugee networks, Western countries receive higher percentages of ties and total refugees, while Eastern Europe sends relatively more refugees than other regions and Africa contributes more sending ties than the others.

In addition to differences identified by descriptive comparisons, correlations identify clear statistical differences between the networks. Pearson's bivariate correlations of centrality scores of the matched pairs (Table 4.5) show that three of the four networks are significantly correlated (the valued sending networks are the exception), but with low coefficients (.422 is the highest). QAP correlations of the valued and dichotomized networks also demonstrate high levels of difference between the two.

Hamming Distance scores for both valued (37,441.00) and dichotomized (33,759.00) networks show that most of the cells in the refugee network would have to change to match those of the migrant network. While not surprising when dealing with valued data, the fact that the Hamming Distance is high between the dichotomized networks indicates extensive differences in the partner relationships in these networks.

Once difference between the networks was established, the next task was to understand what factors caused centrality to differ these networks. To explore differences, I first compared the effects of domestic conditions and levels of international integration on centrality scores for the different networks. I performed a series of OLS regressions using variables from a number of theoretical perspectives and models. I then compared the results of these analyses for each migrant and refugee network pair to identify similarities and differences in relationships with the measures included in the models.

In evaluating the results of these comparisons, it is clear that there is a high degree of similarity between centrality in the migrant and refugee networks in their relationships with many of the variables included in these analyses. Often, these similarities manifested in relationships that failed to reach significance with centrality scores for either network (e.g., variables in the demographic model). However, important similarities between networks and their relationships with variables also emerged. Among the valued networks, state strength reduced both sending and receiving centrality for both networks. Conflict demonstrated a significant positive effect on centrality across all eight networks, representing one of the most persistent relationships in the analysis. Finally, among the international variables, the effects of INGO participation, trade openness, and foreign aid are consistent across most networks.

A number of differences between the networks also emerged that highlight ways in which centrality is affected differently by domestic conditions and international integration. Modernization measures (i.e., urbanization and secondary school enrollment) and environmental variables demonstrate significant relationships with the refugee centrality scores, but fail to do so in analyses of the migrant network. These relationships influence centrality in various permutations of the refugee network, but have little effect on migrant network centrality. This pattern also holds true for the political terror measure that has a significant positive relationship with valued migrant-sending centrality, but fails to reach significance in the other three migrant analyses. By contrast, this measure is significantly related to centrality in three of the four refugee networks, reflecting expectations based on previous research (Apodaca 1998; Gibney et al. 1996; Neumayer 2005). That the dichotomized receiving network is the only refugee network to fail to achieve a significant relationship with political terror scores again demonstrates the distinctiveness of this network.

Among the identified differences in effects, the most telling are those associated with world system position. Semiperipheral status demonstrates a significant relationship with refugee centrality but not migrant centrality in three of the four networks, while in comparisons of the fourth network (the valued receiving), the opposite holds true. Peripheral status reaches significance with centrality scores for all eight networks, but the direction of these relationships varies based on the network under consideration. In analyses of receiving centrality, peripheral status is consistently associated with lower centrality scores across both migrant and refugee networks. However, analyses of sending centrality show that peripheral status is negatively related to centrality in the migrant networks, but positively related to centrality in the refugee networks. Countries in the periphery of the global trade network receive migrants and refugees and send migrants at low levels, relative to core countries, but send refugees at a higher rate. These differential experiences demonstrate a significant distinction between how these networks are developed. Understanding the mechanisms behind these differences is an important area for further examination.

In the final section of Chapter Four, OLS regressions were performed on residual scores generated by the regression of each migrant network on its refugee counterpart. The goal of this analysis was to identify variables that caused a country's centrality in the refugee network to be different than would be expected, given its centrality in its counterpart migrant network. The emergence of significant effects provides insight into what conditions and factors generate differences between these networks. The results of these analyses provide the first clear articulation of three key stories that emerge in the REMs and FEMs presented in Chapter Five.

Variables capturing economic development or associated welfare outcomes (i.e., CO_2 per capita, life expectancy, secondary enrollment, and state strength) each demonstrate significant negative relationships in at least one of the residual analyses. Greater levels of development in these areas cause countries to experience significantly less refugee sending and / or receiving centrality than would be expected, given their level of centrality in migrant networks. The opposite effect was observed in models that included the collapse and political terror measures. The presence of these vectors of political instability causes countries to be more active in the refugee networks, particularly the sending networks, than would be expected, based on their level of activity in the migrant networks. These findings make clear intuitive sense as more developed countries are less prone to experience conditions that lead to refugee movements. These countries also tend to have populations with better educations and more resources that may be more inclined to emigrate when opportunities arise. By contrast, countries that violate human rights or experience state collapse are prime candidates for high refugee sending (Neumayer 2005), but may have few citizens who are able to move as migrants.

The third trend identified in these analyses involves differences generated by the relationships between international variables and residual scores. Trade openness demonstrates a similar pattern of relationships to those of the development variables: greater openness leads to lower refugee sending centrality than would be expected. Among the world system measures, lower world system position (semiperipheral or peripheral status) yields higher than expected refugee-sending centrality and lower than expected refugee-receiving centrality. These findings reflect the neoclassical argument (Sachs and Warner 1995) that greater openness yields positive welfare outcomes and greater stability through integration in global markets.

The analyses conducted in Chapter Four present a clear picture of difference between the migrant and refugee networks. The consistent theme of every comparison in this chapter is the identification of important distinctions in structure and centrality between the networks. These networks are different in scope, in structure, in regional sending and receiving experiences, and in activity levels. Additionally, centrality in these networks is shaped differently by domestic and global factors, particularly those reflecting economic development, political instability, and integration in the global trade network. The identification of these differences creates a compelling argument for the need to develop refugee theory that is distinct from migrant theory. While some overlap occurs between these populations, there are nuances to refugee movements that cannot be understood in a migration framework. Countries that characterize and treat refugees as illegal immigrants should reevaluate these policies in light of the different forces at play in refugee movements. These populations and networks are not the same, and the academic and policymaking communities must acknowledge and understand these differences in order to adequately structure work in the area of refugees accordingly.

How do domestic conditions and global interactions affect centrality in the refugee network over time?

Chapter Five presents findings from the investigation of the effects of domestic conditions and international integration on sending and receiving centrality in the global refugee network. I used a series of random effects and fixed effects models that include these elements with centrality scores for each permutation of the refugee network. These analyses investigate relationships both longitudinally and cross-sectionally for 242 countries and territories over five waves from 1990 to 2008. As noted in the previous section, three clear trends emerge in this analysis that provide insight into key contributors that impact position in these networks.

The first clear trend identified in the random effects models is the importance of economic development in reducing refugee-sending centrality. A number of measures capturing economic growth and development demonstrate negative relationships with both valued and dichotomized refugee-sending centrality. In the fixed effects models, economic growth continues to demonstrate a strong and robust negative relationship across individual, full economic, and final models. This result indicates that growth is negatively related to sending centrality for all countries over time, regardless of level of development. Growth and the development and welfare outcomes that accompany it temper many of the conditions in a country that cause people to move as refugees. Additionally, the presence of greater economic opportunity may cause those who might otherwise move to be less inclined to do so, given the losses that might be incurred. These findings confirm and update those in previous cross-national work in refugee studies (Neumayer 2005; Schmeidl 1997; Vogler and Rotte 2000), using more recent data and a larger sample of countries.

The second clear trend is the effect of political instability on sending centrality. Countries with higher levels of political repression and political terror, as well as the experience of collapse or conflict, are more central in the valued and dichotomized refugee-sending networks. These results are not surprising and reflect previous work in this area (Gibney et al. 1996; Schmeidl 1997). The influence of political conditions makes clear intuitive sense, given the political nature of the definition of refugee used to identify those in the network (UNHCR 1951). The persistence of these effects in FEMs indicates that *changes* in these conditions, not just their presence, affect refugee outflows. Even if a country's political repression score rises from a low to a moderate level, that country may experience increased refugee movement.

The final important trend identified in these analyses is the key role played by participation in global systems in influencing receiving centrality. Countries with greater foreign investment, trade openness, and INGO participation receive greater levels of refugees and receive refugees from more partners than those less involved in these networks, while countries that are less connected to global trade networks (i.e., have lower world system positions) are less central in receiving refugees and hold ties to fewer countries. These results reflect a world polity model by demonstrating the importance of global connections in influencing destination choices. With investment, trade, and INGO participation come expanded connections to information, communication, and transportation networks that may facilitate the movement of refugees, causing countries that participate in these systems to become more easily accessible targets.

In addition to these trends, a number of differences in effects between random and fixed effects models emerged in this chapter. Both procedures were included in the study to identify differences between relationships that occur over time and those that are present due to cross-sectional variation. Comparisons of the two analyses show far fewer significant relationships in the fixed effects models, demonstrating that much of the significance achieved in the random effects models is due to variation across countries, rather than over time. However, key indicators of growth and instability (i.e., GDP per capita and conflict), do reach significance in FEMs. It may be that these key indicators drive centrality through the outcomes they generate, creating cross-sectional differences that impact centrality beyond the effect of the primary condition. The identification of these key longitudinal relationships provides important direction for policy development as they point to factors that can impact centrality, regardless of a country's level of development.

Another difference noted between REMs and FEMs is a change in the direction of significant relationships noted for four variables from the REMs to the FEMs. In evaluations of the receiving networks, political repression, fertility rate, and trade openness switch from positive to negative, while CO_2 per capita changes from negative to positive. These changes indicate that the effects of these conditions over time are different than the effects of the cross-sectional experience of them at any given point in time. This discovery is important as it further highlights the need to examine the relationships identified in these analyses to understand which elements might best be addressed in efforts to influence refugee centrality across countries and which are dependent on level of development or other endogenous factors.

This chapter highlights key relationships that impact sending and receiving centrality. REMs and FEMs demonstrate that centrality in the refugee network is a product of a number of domestic and international factors operating, at times, together and, at other times, independent of each other. Understanding how these elements impact sending and receiving centrality in countries at different levels of development may provide important direction for policymaking and the development of interventions designed to influence refugee movements.

Limitations of the data used for this study

A key problem faced by this study is the nature of the data available for the development of the refugee networks. While the refugee data provided by the UNHCR are the best available for studies of this kind, a number of limitations must be acknowledged. First, refugees are a notoriously difficult population to identify and count (Bloch 2007). Movements tend to take place *en masse* over short periods of time, frustrating attempts to develop an accurate census of those that move. Additionally, many who fit the UNHCR definition of refugee choose to avoid the label due to the stigma that may be attached or issues faced in potential destinations that limit refugee entry (Zetter 1991). The possibility of step migration among refugees further complicates attempts to enumerate this population. Some refugees move from one host country to another, without returning home, clouding efforts to accurately identify countries of origin and destination and creating the possibility of some refugees being counted twice, while others are never counted.

In addition to difficulties in counting the population, these data are limited by the definition employed. The use of the 1951 Convention definition excludes individuals fleeing for reasons other than political persecution (e.g., environmental degradation, natural disasters, gendered violence, etc.), as well as those who leave their homes, but do not cross an international border (i.e., IDPs). While it may be politically expedient for potential receiving countries to operate with a limited definition of refugees, it is important that data on all forced migrants be available, in order to better study the entire population and examine differences in sending and receiving dynamics presented by different populations of forced migrants.

In spite of the difficulties presented by the nature of refugee data, cross-national research is needed to expand our understanding of the global framework within which more nuanced movements occur. While flawed, the UNHCR data are the best available and, as such, are the best option for cross-national examinations of refugee movements. Whatever the limitations inherent in these data, the results of the current analysis present a compelling picture of the worth of the data that do exist and highlight the need for further and more detailed data collection on this population.

Implications

A number of implications emerge from this analysis of the global refugee network. Chief among these is the discovery that centrality in sending and receiving networks is more nuanced than simply connecting conflict with sending and development with receiving. Multiple forces are at play in the development of these networks and all of these must be acknowledged and addressed in efforts to understand and reduce the strain on sending and receiving countries produced by refugee movements.

A second important implication is the ongoing need for efforts to help less-developed countries cope with refugee movements. As many of the most central actors in the valued receiving networks are poor countries with few resources available to address the needs of refugee populations and respond to the resource and political strain generated by these inflows, the international community must continue to find ways to assist these destination countries. This assistance must move beyond simply helping to meet the immediate physical needs of refugee communities, but also to help with efforts toward repatriation, assimilation in host countries, and / or further diffusion of refugee populations to better spread the burden that these movements place on receiving communities. Addressing the most central sending countries should involve both conflict mediation and efforts at political stabilization, as well as help in developing economic growth and self-sufficiency.

Evaluating the efficacy of Clark's (1989) root causes approach is a final implication of this study. The application of this approach to the cross-national examination of refugee movements provided both benefits and shortcomings. The key benefit is the identification of effects from both domestic (internal) and international (external) factors on sending and receiving centrality. The persistence of domestic and global relationships when considered together in final models indicates the independence of these effects and the necessity of considering both in evaluations of causes of refugee movement and destination decisions. These results call into question the adoption of a strict internalist or externalist view of refugee movements. The application of the roots causes approach as a *via media* between these perspectives in this project is somewhat successful. However, the taxonomy of root causes and intervening factors proved to be less successful for this analysis. The degree of interaction present in many of these conditions creates difficulties in determining the appropriate category to which variables belong. While international integration can act as an intervening factor through the facilitation of movement via the networks it creates, the presence of integration in global economic and civil networks over time may also be considered a “root cause”. The efficacy of this approach for future work in refugee studies hinges on the clear delineation of these categories in general and in the specific projects undertaken.

Future directions

A number of important directions for future research in refugee studies and beyond have been noted throughout this study. First, the need for more expansive data on forced migrant populations beyond the 1951 Convention definition is clear. The number of individuals moving as political refugees is shrinking, while that of those moving as a result of displacement from a number of other factors is on the rise. These populations have the potential to impact destination countries in the same ways as refugee populations and, therefore, need to be counted so that the international community has a picture of the scope of the potential need. As has been noted, collecting data on these populations is difficult, perhaps to the point of near impossibility, but efforts to better the quality of data on refugees and other forced migrant populations must continue in spite of the challenges

While this study advances cross-national quantitative work in the area of refugee studies, it also develops a framework for future case studies and qualitative work in this area. The relationships identified in these analyses operate at different levels in different contexts, nuances that often cannot be parsed at the macro level. The study of these effects on refugee movements in specific countries is necessary to elaborate on the trends observed in this cross-national work. The issue in refugee studies of qualitative versus quantitative or cross-national versus case studies is not an either / or proposition. As has been demonstrated by this study, qualitative work has the ability to inform larger quantitative analyses, while large studies identify relationships and patterns that inform and direct examinations at the local level. Collaboration between researchers and research agendas and the recognition of the efficacy of both ends of the research spectrum are important keys for the future development of work in this field.

A number of specific relationships or effects observed in this study also call for further investigation. The important role played by economic growth and development on sending centrality is one such area. While growth is clearly related to reduced centrality, future study is needed to determine if different means of obtaining growth have differential effects on sending centrality or the conditions that promote sending centrality. Dependency scholars might argue that the growth derived through foreign investment will ultimately prove to be harmful, possibly resulting in economic and political conditions that encourage greater refugee flows. It is also possible that growth in certain sectors may prove more valuable with respect to reducing centrality compared to growth in other areas. Further investigation toward understanding these nuances will better help policymakers develop strategies to reduce refugee outflows through economic development, rather than border control or repatriation.

The importance of international integration provides another area of future study. While participation in finance, trade, and INGO systems demonstrated various levels of impact on sending and receiving centrality, other areas of global interaction have yet to be investigated. Global information, communication, and transportation networks should be examined to determine how participation in these networks affects refugee-receiving centrality. Additionally, relationships with these networks should be examined net of the previously studied international variables to understand the extent to which the effects of integration in these networks occur through increased communication and transportation.

While this study demonstrates that refugee sending and receiving centrality are affected by more than proximity to highly active countries, proximity remains an important factor in refugee movements. Future cross-national and case study research should build on previous work in this area to more fully understand the importance of proximity in determining refugee destinations and how knowledge about the potential host's experience of conditions analyzed in this study affects refugee decisions about which border to cross, when options are presented. While some refugees may simply flee for the nearest border, others are involved in a more explicit decision-making process that incorporates many of the factors identified as important in this study.

Finally, there is a clear need for the development of refugee-specific theory in the social sciences. Borrowing from other theoretical traditions has some merit in refugee studies; however, as this study has shown, refugees are a unique population. As such, the needs, motivations, autonomy, and decision-making processes of this group need to be understood on their own terms. The relationships identified in this study, as well as those observed in earlier work, provide a starting point for the development of such theory.

Contributions

This analysis of structure and centrality in the global refugee network contributes to the refugee studies literature and multiple other disciplines in a variety of ways. The use of data from 242 countries and territories and the 1990 to 2008 time frame make this project one of the largest and most recent cross-national investigations of refugee movement to date. Additionally, the development of valued and dichotomized sending and receiving networks for five waves over this time period contributes a set of variables that can be used in future work in refugee studies and other areas of cross-national analysis.

The trends and relationships identified across the different levels of this study provide a second body of contributions. The demonstrations of the effects of economic development on sending centrality and participation in global systems on receiving centrality are of particular significance, as these represent relationships that have received little study in cross-national examinations of refugee movements. The presentation of clear differences between the migrant and refugee networks and the identification of domestic and international elements that contribute to those differences is another key contribution. Additionally, the descriptive analyses of regional variation and activity levels in the refugee networks provide clear pictures of how these networks have evolved since 1990.

Finally, the analyses in this study contribute to the literature of a number of theoretical traditions, particularly in areas of cross-national study. Refugee movements mark a previously unexamined dependent variable in dependency, world systems, and world polity studies. The identification of relationships with variables from these traditions (i.e., FDI penetration, trade openness, INGO participation, and world system position), demonstrate the applicability of these traditions to the examination of refugee movements. The unexpected nature of some of these relationships calls into question some of the key assumptions of these theoretical positions and generates several possibilities for further study in these areas.

In addition to contributions made by this study to the literature of other theoretical traditions, the analyses presented here demonstrate the need for scholars in the field of refugee studies to pursue the development of refugee-specific theory. While theory borrowed from other disciplines has demonstrated a degree of efficacy in work done in refugee studies, refugees represent a distinct population with unique dynamics that cannot be fully understood using "borrowed" theory. The varied nature of refugee movements and destination choices creates challenges for the development of theory in this area, but the identification of general trends and patterns identified by this study and previous cross-national research in refugee studies provide the beginnings of a framework from which theory can derive.

The goal of this project was to examine the global refugee sending and receiving networks from a variety of angles to better understand the scope and structure of the network, identify differences between refugee and migrant networks, and examine relationships between centrality in the refugee networks and a variety of domestic and international factors. Through the identification and analysis of trends in refugee movements and destinations in the global network, a number of patterns and relationships have been identified. The application of descriptive, comparative, and statistical analysis to questions related to the structure and centrality in these networks confirmed previously observed patterns and revealed new effects and trends that expand the scope of refugee studies and other areas. Additionally, this work generates a number of questions for future study to better understand the mechanisms through which these relationships take place and implications of these effects for the development of policy and strategy for limiting the impact of current and future refugee movements.

Refugee movements are as old as human history. In the current age, the movements of populations across international borders to avoid political violence or persecution create a number of issues and opportunities for refugees and hosts alike. The identification of relationships and trends affecting refugee movements and destination decisions and the scope of the network they create serves to better inform the academic community, civil society, and policymakers. While the process of examining refugee movements is rife with challenges, understanding these movements, as well as their causes and effects, is necessary to help ease the difficulties faced by both those that move and those that receive them.

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Appendix A

Variables and Sources

Table A.1. Variables Used in the Analysis with Source and Operationalization

Variable	**Source**	**Operationalization**
Refugees	UN Office of the High Commissioner for Refugees (UNHCR)	Counts of refugees in a country from each sending country
Migrants	World Bank World Development Indicators (WDI)	Counts of foreign born persons present in a country from each sending country
Time Period		Period average for the given observation: 1990-1993, 1994-1997, 1998-2001, 2002-2005, 2006-2008
Region	World Bank	
Economic		
Gross Domestic Product per capita	WDI	GDP per capita in constant 2000 US dollars
State Strength	United Nations Statistics Division (UN Data) WDI	Government Consumption / GDP
Economic Growth	WDI	Annual percent change in GDP
Urbanization	UN Data	Percent of total population living in urban areas
Enrollment	WDI	Percent of secondary-school age children enrolled in school
Political		
Political Freedom	Freedom House Project	Average political rights and civil liberties scores for 25 indicators as calculated by Freedom House analysts
Political Terror	Purdue University Political Terror Scale	Human rights ratings based on Amnesty International and US State Department
Collapse	Political Instability Task Force, George Mason University	Presence of political revolution, secession, or loss of central authority
Conflict	Uppsala Conflict Database	Intrastate or interstate conflict in which at least one actor is a state and at least 25 battle-related deaths occur

Variable	**Source**	**Operationalization**
Demography		
Fertility Rate	WDI	Average births per female
Population Density	UN Data	Population per square km
Infant Mortality	UN Data	Deaths to children under 1 year of age per 1000 children born
Life Expectancy	UN Data	Average expected life span of an individual born in the particular year
Environmental		
CO_2 per capita	UN Data	Metric tons of CO_2 emissions per capita
Cropland under cultivation	WDI	Percentage of available land under cultivation
International Integration		
Trade Openness	United Nations Human Development Reports	Total imports plus total exports divided by GDP
Foreign direct investment penetration	UN Conference on Trade and Development	FDI Stock / GDP
Official development assistance	WDI	Net foreign aid received per capita
International Non-Governmental Organizations	*Yearbook of International Organizations*	Count of INGO membership ties
World System Position	Clark and Beckfield (2009)	Trichotomous hierarchy based on partners in the global trade network

Appendix B

Correlations

Table B.1. Pairwise Correlations for Variables of Interest

	Valued Sending	Valued Receiving	Dichotomized Sending	Dichotomized Receiving	GDP per capita	State strength	Economic growth
Valued Sending	1.000						
Valued Receiving	0.576	1.000					
Dichotomized Sending	0.915	0.652	1.000				
Dichotomized Receiving	0.434	0.809	0.550	1.000			
GDP per capita	-0.566	-0.227	-0.545	0.083	1.000		
State strength	-0.268	-0.174	-0.304	-0.124	0.252	1.000	
Economic growth	-0.122	-0.013	-0.089	0.073	0.303	0.075	1.000
Urban population	-0.339	-0.114	-0.290	0.125	0.726	0.171	0.171
Secondary enrollment	-0.387	-0.158	-0.378	0.166	0.782	0.263	0.213
Political repression	0.588	0.225	0.581	-0.079	-0.647	-0.192	-0.206
Political terror	0.617	0.280	0.629	0.066	-0.554	-0.346	-0.136
Collapse	0.255	0.140	0.228	0.025	-0.227	-0.034	-0.047
Conflict	0.545	0.535	0.556	0.360	-0.390	-0.133	-0.097
Fertility rate	0.236	0.127	0.212	-0.144	-0.717	-0.100	-0.204
Population density	-0.150	-0.194	-0.149	-0.171	0.181	-0.138	0.086
Infant mortality	0.409	0.151	0.389	-0.175	-0.894	-0.276	-0.301
Life expectancy	-0.411	-0.235	-0.401	0.036	0.787	0.153	0.195
CO2 per capita	-0.438	-0.180	-0.423	0.046	0.852	0.277	0.221
Cropland under cultivation	-0.111	-0.267	-0.138	-0.252	-0.030	-0.199	-0.073
FDI penetration	-0.124	-0.107	-0.085	0.028	0.136	0.024	0.098
Trade openness	0.002	0.122	0.057	0.222	0.120	0.021	0.000
Official development assistance	-0.285	-0.366	-0.312	-0.393	-0.059	0.233	-0.013
Semiperiphery	0.022	-0.028	0.075	0.068	0.048	-0.035	-0.015
Periphery	0.200	-0.192	0.198	-0.427	-0.571	-0.125	-0.165
INGO membership ties	0.297	0.557	0.423	0.701	0.391	-0.066	0.150
Middle East / North Africa	0.141	0.128	0.219	0.058	0.070	0.116	0.017
Latin America	-0.135	-0.190	-0.153	-0.103	0.138	-0.042	0.000
Sub-Saharan Africa	0.245	0.243	0.295	0.120	-0.525	-0.069	-0.100
Asia and Pacific	-0.157	-0.277	-0.239	-0.312	-0.066	-0.134	-0.037
Eastern Europe / Central Asia	0.215	0.111	0.186	0.105	-0.036	0.025	-0.048
Time period	0.121	0.033	0.241	0.180	0.074	-0.083	0.152

	Urban population	Secondary enrollment	Political repression	Political terror	Collapse	Conflict	Fertility rate	Population Density	Infant Mortality
Urban population	1.000								
Secondary enrollment	0.658	1.000							
Political repression	-0.369	-0.599	1.000						
Political terror	-0.286	-0.472	0.616	1.000					
Collapse	-0.168	-0.204	0.230	0.232	1.000				
Conflict	-0.216	-0.345	0.475	0.364	0.162	1.000			
Fertility rate	-0.575	-0.802	0.512	0.371	0.178	0.255	1.000		
Population density	0.131	0.156	-0.142	-0.003	-0.057	-0.278	-0.300	1.000	
Infant mortality	-0.666	-0.845	0.650	0.537	0.248	0.376	0.807	-0.275	1.000
Life expectancy	0.647	0.815	-0.522	-0.462	-0.289	-0.335	-0.761	0.274	-0.856
CO2 per capita	0.713	0.824	-0.408	-0.432	-0.259	-0.248	-0.737	0.118	-0.784
Cropland under cultivation	-0.080	0.010	-0.067	0.096	-0.034	-0.274	-0.084	0.674	-0.051
FDI penetration	0.070	0.159	-0.191	-0.160	-0.104	-0.191	-0.125	0.043	-0.178
Trade openness	0.132	0.197	-0.079	-0.186	-0.088	-0.013	-0.283	0.049	-0.189
Official development assistance	-0.190	-0.067	-0.323	-0.332	-0.031	-0.317	0.163	-0.009	0.046
Semiperiphery	0.136	0.053	0.069	0.162	-0.036	0.060	-0.009	-0.001	-0.032
Periphery	-0.483	-0.578	0.387	0.166	0.156	0.048	0.578	-0.145	0.580
INGO membership ties	0.279	0.472	-0.281	-0.106	-0.035	0.214	-0.457	0.022	-0.512
Middle East / North Africa	0.184	0.031	0.312	0.139	0.039	0.201	0.138	-0.039	-0.009
Latin America	0.144	0.081	-0.143	-0.004	-0.080	-0.176	-0.082	0.027	-0.036
Sub-Saharan Africa	-0.428	-0.621	0.291	0.209	0.131	0.189	0.556	-0.182	0.577
Asia and Pacific	-0.146	-0.070	0.012	-0.018	-0.021	-0.168	0.039	0.176	0.059
Eastern Europe / Central Asia	0.050	0.268	0.038	0.003	0.028	0.176	-0.364	-0.007	-0.173
Time period	0.067	0.212	-0.099	0.068	-0.062	-0.096	-0.180	0.067	-0.183

	Life expectancy	CO2 per capita	Cropland under cultivation	FDI penetration	Trade openness	Official development assistance	Semiperiphery	Periphery	INGO membership ties
Life expectancy	1.000								
CO2 per capita	0.781	1.000							
Cropland under cultivation	0.173	-0.038	1.000						
FDI penetration	0.101	0.110	0.035	1.000					
Trade openness	0.224	0.217	-0.062	0.194	1.000				
Official development assistance	-0.075	-0.188	0.175	0.144	-0.116	1.000			
Semiperiphery	0.097	0.079	0.090	-0.041	0.025	-0.197	1.000		
Periphery	-0.543	-0.555	-0.009	-0.001	-0.202	0.537	-0.446	1	
INGO membership ties	0.342	0.320	-0.171	0.086	0.247	-0.483	0.054	-0.6816	1
Middle East / North Africa	0.107	0.170	-0.044	-0.060	-0.029	-0.127	0.198	-0.0671	0.0625
Latin America / Caribbean	0.208	0.104	0.093	0.197	-0.039	-0.025	0.058	0.0795	-0.0597
Sub-Saharan Africa	-0.711	-0.591	-0.162	-0.012	-0.030	0.120	-0.081	0.453	-0.1022
Asia and Pacific	0.047	-0.103	0.214	-0.097	-0.113	0.093	0.023	-0.0668	-0.2682
Eastern Europe / Central Asia	0.153	0.219	0.000	-0.080	0.206	-0.101	-0.109	-0.2202	0.1467
Time period	0.112	0.042	0.022	0.349	0.087	0.081	0.000	0	0.2023

	Middle East / North Africa	Latin America / Caribbean	Sub-Saharan Africa	Asia and Pacific	Eastern Europe / Central Asia	Time period
Middle East / North Africa	1					
Latin America / Caribbean	-0.1493	1				
Sub-Saharan Africa	-0.1573	-0.2472	1			
Asia and Pacific	-0.175	-0.2751	-0.2898	1		
Eastern Europe / Central Asia	-0.1182	-0.1857	-0.1956	-0.2176	1	
Time period	0	0	0	0	0	1

Appendix C

Countries Included in the Analyses

Table C.1. Countries Included in Refugee Network Analyses with Region and World System Position

Country	Region	World System Position
Afghanistan	Eastern Europe / Central Asia	Periphery
Albania	Eastern Europe / Central Asia	Periphery
Algeria	Middle East / North Africa	Semiperiphery
American Samoa	Asia and Pacific	
Andorra	Eastern Europe / Central Asia	
Angola	Sub-Saharan Africa	Periphery
Anguilla	Latin America	
Antigua and Barbuda	Latin America	
Argentina	Latin America	Core
Armenia	Eastern Europe / Central Asia	
Aruba	Latin America	
Australia	Europe and the West	Core
Austria	Europe and the West	Core
Azerbaijan	Eastern Europe / Central Asia	
Bahamas	Latin America	Periphery
Bahrain	Middle East / North Africa	Periphery
Bangladesh	Asia and Pacific	Semiperiphery
Barbados	Latin America	Periphery
Belarus	Eastern Europe / Central Asia	
Belgium	Europe and the West	Core
Belize	Latin America	
Benin	Sub-Saharan Africa	Periphery
Bermuda	Latin America	
Bhutan	Asia and Pacific	
Bolivia	Latin America	Periphery
Bosnia and Herzegovina	Eastern Europe / Central Asia	
Botswana	Sub-Saharan Africa	
Bouvet Island	Europe and the West	
Brazil	Latin America	Core
British Virgin Islands	Latin America	
Brunei Darussalam	Asia and Pacific	Periphery
Bulgaria	Eastern Europe / Central Asia	Core
Burkina Faso	Sub-Saharan Africa	Periphery
Burundi	Sub-Saharan Africa	Periphery
Cambodia	Asia and Pacific	Periphery
Cameroon	Europe and the West	Periphery
Canada	Europe and the West	Core
Cape Verde	Sub-Saharan Africa	Periphery
Cayman Islands	Latin America	
Central African Republic	Sub-Saharan Africa	Periphery
Chad	Sub-Saharan Africa	Periphery
Chile	Latin America	Semiperiphery
China	Asia and Pacific	Core
China (Taiwan)	Asia and Pacific	
China (Hong Kong)	Asia and Pacific	

Country	Region	World System Position
China (Macao)	Asia and Pacific	
Christmas Island	Asia and Pacific	
Cocos Islands	Asia and Pacific	
Columbia	Latin America	Semiperiphery
Comoros	Sub-Saharan Africa	Periphery
Congo	Sub-Saharan Africa	Periphery
Cook Islands	Asia and Pacific	
Costa Rica	Latin America	Periphery
Cote d'Ivoire	Sub-Saharan Africa	Semiperiphery
Croatia	Eastern Europe / Central Asia	
Cuba	Latin America	Periphery
Cyprus	Europe and the West	Semiperiphery
Czech Republic	Eastern Europe / Central Asia	Core
DPR Korea	Europe and the West	Periphery
DR Congo	Middle East / North Africa	Periphery
Denmark	Latin America	Core
Djibouti	Latin America	Periphery
Dominica	Asia and Pacific	
Dominican Republic	Sub-Saharan Africa	Periphery
Ecuador	Latin America	Periphery
Egypt	Middle East / North Africa	Core
El Salvador	Latin America	Periphery
Equatorial Guinea	Sub-Saharan Africa	Periphery
Eritrea	Sub-Saharan Africa	
Estonia	Eastern Europe / Central Asia	
Ethiopia	Sub-Saharan Africa	Periphery
Falkland Islands	Latin America	
Faroe Islands	Europe and the West	
Fiji	Asia and Pacific	Periphery
Finland	Europe and the West	Core
France	Europe and the West	Core
French Guiana	Latin America	
French Polynesia	Asia and Pacific	
Gabon	Sub-Saharan Africa	Periphery
Gambia	Sub-Saharan Africa	Periphery
Georgia	Eastern Europe / Central Asia	
Germany	Europe and the West	Core
Ghana	Sub-Saharan Africa	Periphery
Gibraltar	Europe and the West	
Greece	Europe and the West	Core
Greenland	Europe and the West	
Grenada	Latin America	
Guadeloupe	Latin America	
Guam	Asia and Pacific	
Guatemala	Latin America	Periphery
Guinea	Sub-Saharan Africa	Periphery
Guinea-Bissau	Sub-Saharan Africa	Periphery
Guyana	Latin America	Periphery
Haiti	Latin America	Periphery
Heard Island and McDonald Islands	Asia and Pacific	
Honduras	Latin America	Periphery
Hungary	Eastern Europe / Central Asia	Core

Country	Region	World System Position
Iceland	Europe and the West	Periphery
India	Asia and Pacific	Core
Indonesia	Asia and Pacific	Core
Iran	Middle East / North Africa	Core
Iraq	Middle East / North Africa	Semiperiphery
Ireland	Europe and the West	Core
Israel	Middle East / North Africa	Semiperiphery
Italy	Europe and the West	Core
Jamaica	Latin America	Periphery
Japan	Asia and Pacific	Core
Johnson Atoll	Asia and Pacific	
Jordan	Middle East / North Africa	Periphery
Kazakhstan	Eastern Europe / Central Asia	
Kenya	Sub-Saharan Africa	Semiperiphery
Kiribati	Asia and Pacific	
Kosovo	Eastern Europe / Central Asia	
Kuwait	Middle East / North Africa	Semiperiphery
Kyrgyzstan	Eastern Europe / Central Asia	
Lao PDR	Asia and Pacific	Periphery
Latvia	Eastern Europe / Central Asia	
Lebanon	Middle East / North Africa	Periphery
Lesotho	Sub-Saharan Africa	
Liberia	Sub-Saharan Africa	Periphery
Libya	Middle East / North Africa	Semiperiphery
Liechtenstein	Europe and the West	
Lithuania	Eastern Europe / Central Asia	
Luxembourg	Europe and the West	Core
Madagascar	Sub-Saharan Africa	Periphery
Malawi	Sub-Saharan Africa	Periphery
Malaysia	Asia and Pacific	Core
Maldives	Asia and Pacific	Periphery
Mali	Sub-Saharan Africa	Periphery
Malta	Europe and the West	Periphery
Marshall Islands	Asia and Pacific	
Martinique	Latin America	
Mauritania	Sub-Saharan Africa	Periphery
Mauritius	Sub-Saharan Africa	Periphery
Mayotte	Sub-Saharan Africa	
Mexico	Latin America	Core
Micronesia	Asia and Pacific	
Midway Islands	Asia and Pacific	
Monaco	Europe and the West	
Mongolia	Asia and Pacific	Periphery
Montenegro	Eastern Europe / Central Asia	
Montserrat	Latin America	
Morocco	Middle East / North Africa	Core
Mozambique	Sub-Saharan Africa	Periphery
Myanmar	Asia and Pacific	Periphery
Namibia	Sub-Saharan Africa	
Nauru	Asia and Pacific	
Nepal	Asia and Pacific	Periphery
Netherlands	Europe and the West	Core

Country	Region	World System Position
Netherlands Antilles	Latin America	
New Caledonia	Asia and Pacific	
New Zealand	Asia and Pacific	Core
Nicaragua	Latin America	Periphery
Niger	Sub-Saharan Africa	Periphery
Nigeria	Sub-Saharan Africa	Semiperiphery
Niue	Asia and Pacific	
Norfolk Island	Asia and Pacific	
Northern Mariana Islands	Asia and Pacific	
Norway	Europe and the West	Core
Occupied Palestinian Territory	Middle East / North Africa	
Oman	Middle East / North Africa	Periphery
Pakistan	Asia and Pacific	Core
Palau	Asia and Pacific	
Panama	Latin America	Semiperiphery
Papua New Guinea	Asia and Pacific	Periphery
Paraguay	Latin America	Periphery
Peru	Latin America	Semiperiphery
Philippines	Asia and Pacific	Semiperiphery
Pitcairn Island	Asia and Pacific	
Poland	Eastern Europe / Central Asia	Core
Portugal	Europe and the West	Core
Puerto Rico	Latin America	
Qatar	Middle East / North Africa	Periphery
Rep Korea	Asia and Pacific	Core
Rep Moldova	Eastern Europe / Central Asia	
Reunion	Sub-Saharan Africa	
Romania	Eastern Europe / Central Asia	Core
Russian Federation	Eastern Europe / Central Asia	Core
Rwanda	Sub-Saharan Africa	Periphery
Saint Helena	Sub-Saharan Africa	
Saint Kitts and Nevis	Latin America	
Saint Lucia	Latin America	
Saint Vincent and the Grenadines	Latin America	
Samoa	Asia and Pacific	
San Marino	Europe and the West	
Sao Tome	Sub-Saharan Africa	
Saudi Arabia	Middle East / North Africa	Core
Senegal	Sub-Saharan Africa	Periphery
Serbia	Eastern Europe / Central Asia	
Serbia and Montenegro	Eastern Europe / Central Asia	
Seychelles	Sub-Saharan Africa	
Sierra Leone	Sub-Saharan Africa	Periphery
Singapore	Asia and Pacific	Core
Slovakia	Eastern Europe / Central Asia	
Slovenia	Eastern Europe / Central Asia	
Solomon Islands	Asia and Pacific	Periphery
Somalia	Sub-Saharan Africa	Periphery
South Africa	Sub-Saharan Africa	Periphery
Spain	Europe and the West	Core
Sri Lanka	Asia and Pacific	Semiperiphery
Stateless		

Country	Region	World System Position
Sudan	Sub-Saharan Africa	Periphery
Suriname	Latin America	Periphery
Svalbard and Jan Mayen Islands	Europe and the West	
Swaziland	Sub-Saharan Africa	
Sweden	Europe and the West	Core
Switzerland	Europe and the West	Core
Syria	Middle East / North Africa	Periphery
Tajikistan	Asia and Pacific	
Thailand	Eastern Europe / Central Asia	Core
TFYR Macedonia	Asia and Pacific	
Tibet	Asia and Pacific	
Timor-Leste	Asia and Pacific	
Togo	Sub-Saharan Africa	Periphery
Tokelau	Asia and Pacific	
Tonga	Asia and Pacific	
Trinidad and Tobago	Latin America	Periphery
Tunisia	Middle East / North Africa	Semiperiphery
Turkey	Eastern Europe / Central Asia	Core
Turkmenistan	Eastern Europe / Central Asia	
Turks and Caicos Islands	Latin America	
Tuvalu	Asia and Pacific	
Uganda	Sub-Saharan Africa	Periphery
Ukraine	Eastern Europe / Central Asia	
United Arab Emirates	Middle East / North Africa	Semiperiphery
United Kingdom	Europe and the West	Core
United Rep Tanzania	Sub-Saharan Africa	Periphery
USA	Europe and the West	Core
US Virgin Islands	Latin America	
Uruguay	Europe and the West	Semiperiphery
Uzbekistan	Eastern Europe / Central Asia	
Vanuatu	Asia and Pacific	
Various		
Venezuela	Latin America	Semiperiphery
Vietnam	Asia and Pacific	Periphery
Wake Island	Asia and Pacific	
Wallis and Futuna Islands	Asia and Pacific	
West Bank and Gaza	Middle East / North Africa	
Western Sahara	Sub-Saharan Africa	
Yemen	Middle East / North Africa	Periphery
Zambia	Sub-Saharan Africa	Periphery
Zimbabwe	Sub-Saharan Africa	Semiperiphery

Table C.2. Countries Included in Migrant and Refugee Comparative Analyses

Country	Country	Country
Afghanistan	Croatia	Kenya
Albania	Cuba	Kiribati
Algeria	Cyprus	Kuwait
American Samoa	Czech Republic	Kyrgyzstan
Andorra	DPR Korea	Lao PDR
Angola	DR Congo	Latvia
Anguilla	Denmark	Lebanon
Antigua & Barbuda	Djibouti	Lesotho
Argentina	Dominica	Liberia
Armenia	Dominican Republic	Libya
Aruba	Ecuador	Liechtenstein
Australia	Egypt	Lithuania
Austria	El Salvador	Luxembourg
Azerbaijan	Equatorial Guinea	Madagascar
Bahamas	Eritrea	Malawi
Bahrain	Estonia	Malaysia
Bangladesh	Ethiopia	Maldives
Barbados	Falkland Islands	Mali
Belarus	Faroe Islands	Malta
Belgium	Fiji	Marshall Islands
Belize	Finland	Martinique
Benin	France	Mauritania
Bermuda	French Guiana	Mauritius
Bhutan	French Polynesia	Mayotte
Bolivia	Gabon	Mexico
Bosnia and Herzegovina	Gambia	Micronesia, Federated States of
Botswana	Georgia	Monaco
Brazil	Germany	Mongolia
Virgin Islands, British	Ghana	Montserrat
Brunei Darussalam	Gibraltar	Morocco
Bulgaria	Greece	Mozambique
Burkina Faso	Greenland	Myanmar
Burundi	Grenada	Namibia
Cambodia	Guadeloupe	Nauru
Cameroon	Guam	Nepal
Canada	Guatemala	Netherlands
Cape Verde	Guinea	Netherlands Antilles
Cayman Islands	Guinea-Bissau	New Caledonia
Central African Republic	Guyana	New Zealand
Chad	Haiti	Nicaragua
Chile	Honduras	Niger
China	Hungary	Nigeria
Taiwan	Iceland	Niue
Hong Kong	India	Norfolk Island
Macau	Indonesia	Northern Mariana Islands
Columbia	Iran	Norway
Comoros	Iraq	Palestinian Territory, Occupied
Congo	Ireland	Oman
Cook Islands	Israel	Pakistan
Costa Rica	Italy	Palau
Cote d'Ivoire	Jamaica	Panama

Country	Country
Philippines	United Arab Emirates
Poland	United Kingdom
Portugal	Tanzania, United Republic of
Puerto Rico	United States of America
Qatar	Virgin Islands, U.S.
Korea, Republic of	Uruguay
Moldova, Republic of	Uzbekistan
Reunion	Vanuatu
Romania	Venezuela
Russian Federation	Viet Nam
Rwanda	Wallis and Futuna
Saint Helena	Yemen
Saint Kitts and Nevis	Zambia
Saint Lucia	Zimbabwe
Saint Vincent and the Grenadines	
Samoa	
San Marino	
Sao Tome and Principe	
Saudi Arabia	
Senegal	
Serbia and Montenegro	
Seychelles	
Sierra Leone	
Singapore	
Slovakia	
Slovenia	
Solomon Islands	
Somalia	
South Africa	
Spain	
Sri Lanka	
Sudan	
Suriname	
Swaziland	
Sweden	
Switzerland	
Syria	
Tajikistan	
Thailand	
TFYR Macedonia	
Timor Leste	
Togo	
Tokelau	
Tonga	
Trinidad and Tobago	
Tunisia	
Turkey	
Turkmenistan	
Turks and Caicos	
Tuvalu	
Uganda	
Ukraine	

Table C.3. Countries Included in Standardized Sample with Wave

Country	1	2	3	4	5
Afghanistan					
Albania	√	√	√	√	
Algeria	√	√		√	
American Samoa					
Andorra					
Angola					
Anguilla					
Antigua and Barbuda					
Argentina	√	√	√	√	√
Armenia					
Aruba					
Australia	√	√	√	√	√
Austria	√	√	√	√	√
Azerbaijan					
Bahamas	√	√	√	√	
Bahrain	√	√	√	√	√
Bangladesh	√		√	√	√
Barbados	√				
Belarus					
Belgium				√	√
Belize					
Benin	√	√	√	√	
Bermuda					
Bhutan					
Bolivia	√		√	√	√
Bosnia and Herzegovina					
Botswana					
Bouvet Island					
Brazil	√	√	√	√	√
British Virgin Islands					
Brunei Darussalam					
Bulgaria	√	√	√	√	√
Burkina Faso	√	√	√	√	√
Burundi	√	√		√	√
Cambodia		√	√	√	√
Cameroon	√	√	√	√	√
Canada	√	√	√	√	√
Cape Verde	√	√	√	√	
Cayman Islands					
Central African Republic	√		√	√	
Chad	√	√	√	√	√
Chile	√	√	√	√	√
China	√	√	√	√	√
China (Taiwan)					
China (Hong Kong)					
China (Macao)					
Christmas Island					
Cocos Islands					
Columbia	√	√	√	√	√
Comoros		√	√	√	
Congo	√	√	√	√	

Country	**1**	**2**	**3**	**4**	**5**
Cook Islands					
Costa Rica					
Cote d'Ivoire	√	√	√	√	
Croatia					
Cuba					
Cyprus		√	√	√	√
Czech Republic	√	√	√	√	√
DPR Korea					
DR Congo	√	√	√	√	√
Denmark	√	√	√	√	√
Djibouti					
Dominica					
Dominican Republic			√	√	√
Ecuador	√	√	√	√	√
Egypt	√	√	√	√	
El Salvador	√	√	√	√	√
Equatorial Guinea		√	√	√	
Eritrea					
Estonia					
Ethiopia	√	√	√	√	√
Falkland Islands					
Faroe Islands					
Fiji	√		√	√	√
Finland	√	√	√	√	√
France	√	√	√	√	√
French Guiana					
French Polynesia					
Gabon		√	√	√	
Gambia	√	√	√	√	√
Georgia					
Germany	√	√	√	√	√
Ghana	√	√	√	√	√
Gibraltar					
Greece	√	√	√	√	√
Greenland					
Grenada					
Guadeloupe					
Guam					
Guatemala	√	√	√	√	√
Guinea	√	√	√	√	√
Guinea-Bissau			√	√	√
Guyana	√	√	√	√	√
Haiti					
Heard Island and McDonald Islands					
Honduras	√				√
Hungary	√	√	√	√	√
Iceland					
India	√	√	√	√	√
Indonesia	√	√	√	√	√
Iran	√	√	√	√	√
Iraq					
Ireland	√	√	√	√	√

Country	**1**	**2**	**3**	**4**	**5**
Israel	√	√	√	√	√
Italy	√	√	√	√	√
Jamaica	√		√	√	√
Japan	√	√	√	√	√
Johnson Atoll					
Jordan	√	√	√	√	√
Kazakhstan					
Kenya	√	√	√	√	√
Kiribati					
Kosovo					
Kuwait		√	√	√	
Kyrgyzstan					
Lao PDR			√	√	√
Latvia					
Lebanon	√	√			√
Lesotho					
Liberia			√		√
Libya				√	√
Liechtenstein					
Lithuania					
Luxembourg				√	√
Madagascar	√	√		√	√
Malawi	√	√	√	√	√
Malaysia	√	√	√	√	
Maldives			√	√	
Mali	√	√	√	√	√
Malta	√	√	√	√	
Marshall Islands					
Martinique					
Mauritania					
Mauritius	√	√	√	√	√
Mayotte					
Mexico	√	√	√	√	√
Micronesia					
Midway Islands					
Monaco					
Mongolia	√	√	√	√	√
Montenegro					
Montserrat					
Morocco	√	√	√	√	√
Mozambique	√	√	√	√	√
Myanmar					
Namibia					
Nauru					
Nepal	√	√	√	√	√
Netherlands					
Netherlands Antilles					
New Caledonia					
New Zealand	√	√	√	√	√
Nicaragua	√	√	√	√	√
Niger	√	√	√	√	

Country	1	2	3	4	5
Nigeria					
Niue					
Norfolk Island					
Northern Mariana Islands					
Norway	√	√	√	√	√
Occupied Palestinian Territory					
Oman	√	√	√	√	√
Pakistan	√	√		√	√
Palau					
Panama	√	√	√	√	√
Papua New Guinea	√	√			
Paraguay	√	√	√	√	√
Peru	√	√	√	√	√
Philippines	√	√	√	√	√
Pitcairn Island					
Poland					
Portugal	√	√	√	√	√
Puerto Rico					
Qatar				√	
Rep Korea		√	√	√	√
Rep Moldova					
Reunion					
Romania	√	√	√	√	√
Russian Federation	√	√		√	√
Rwanda	√		√	√	√
Saint Helena					
Saint Kitts and Nevis					
Saint Lucia					
Saint Vincent and the Grenadines					
Samoa					
San Marino					
Sao Tome					
Saudi Arabia	√	√		√	√
Senegal	√	√	√	√	√
Serbia					
Serbia and Montenegro					
Seychelles					
Sierra Leone	√		√	√	√
Singapore					
Slovakia					
Slovenia					
Solomon Islands		√	√	√	√
Somalia					
South Africa	√	√	√	√	√
Spain	√	√	√	√	√
Sri Lanka	√	√		√	
Stateless					
Sudan	√	√	√	√	√
Suriname	√	√	√	√	
Svalbard and Jan Mayen Islands					
Swaziland					
Sweden	√	√	√	√	√

Country	1	2	3	4	5
Switzerland	√	√	√	√	√
Syria	√	√	√	√	√
Tajikistan					
Thailand	√	√			
TFYR Macedonia					
Tibet					
Timor-Leste					
Togo	√	√	√	√	√
Tokelau					
Tonga					
Trinidad and Tobago	√	√	√	√	√
Tunisia	√	√	√	√	√
Turkey	√	√	√	√	√
Turkmenistan					
Turks and Caicos Islands					
Tuvalu					
Uganda	√	√	√	√	√
Ukraine					
United Arab Emirates	√	√	√	√	√
United Kingdom	√	√	√	√	√
United Rep Tanzania	√	√	√		
USA					
US Virgin Islands					
Uruguay	√	√	√	√	√
Uzbekistan					
Vanuatu					
Various					
Venezuela	√		√	√	√
Vietnam	√	√	√		
Wake Island					
Wallis and Futuna Islands					
West Bank and Gaza					
Western Sahara					
Yemen			√	√	
Zambia	√	√	√	√	√
Zimbabwe	√	√	√	√	

Appendix D

Descriptive Statistics

Table D.1. Descriptive Statistics for All Included Variables

	Observations	Mean	Std. Dev.	Min	Max
Valued Refugee Sending	1210	5.01	4.28	0	14.97
Valued Refugee Receiving	1210	5.12	4.70	0	15.15
Dichotomized Refugee Sending	1210	1.85	1.41	0	4.64
Dichotomized Refugee Receiving	1210	1.60	1.52	0	5.18
Valued Migrant Sending	225	12.06	2.22	5.15	16.31
Valued Migrant Receiving	225	1.45	2.45	0	17.36
Dichotomized Migrant Sending	225	5.05	0.44	3.09	5.39
Dichotomized Migrant Receiving	225	5.01	0.66	0	5.42
Valued Sending Residual	225	.00	2.30	-143155.60	3105699
Valued Receiving Residual	225	.00	1.76	-245388.40	1815008
Dichotomized Sending Residual	225	.00	20.50	-21.62	78.11
Dichotomized Receiving Residual	225	.00	27.85	-22.07	154.11
GDP per capita	924	7.70	1.63	4.38	11.25
State strength	857	16.31	6.43	2.50	58.96
Economic growth	996	340.87	1520.63	-.33.33	24108.56
Urban population	1030	54.70	24.48	6.27	100.00
Secondary school enrollment	824	67.91	32.48	5.13	157.42
Political repression	955	1.06	0.67	0	1.95
Political terror	879	0.79	0.51	0	1.61
Collapse	1210	0.05	0.22	0	1
Conflict	1210	0.40	0.49	0	1
Fertility rate	993	1.06	0.52	-0.15	2.08
Population density	1023	4.18	1.61	-1.99	9.81
Infant mortality	959	3.22	1.08	0.38	5.13
Life expectancy	991	4.19	0.17	3.37	4.41
CO_2 per capita	874	0.57	1.74	-6.39	4.10
Cropland under cultivation	952	0.16	2.03	-7.35	4.20
FDI penetration	993	2.92	1.33	0	8.59
Trade openness	924	0.45	0.32	0	1.52
Official development assistance	756	3.48	1.63	-6.10	8.78
Semiperiphery	705	0.15	0.36	0	1
Periphery	705	0.53	0.50	0	1
INGO membership ties	1117	5.91	1.47	0	8.73
Middle East / North Africa	1210	0.09	0.28	0	1
Latin America / Caribbean	1210	0.19	0.39	0	1
Sub-Saharan Africa	1210	0.21	0.41	0	1
Asia and Pacific	1210	0.24	0.43	0	1
Eastern Europe / Central Asia	1210	0.13	0.33	0	1
Time period	1210	3	1.42	1	5