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GLOBAL VS. LOCAL: PANEL ANALYSES OF ENVIRONMENTAL, ECONOMIC, AND POLITICAL GENDER INEQUALITIES IN LATE CAPITALISM

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For

“Woman, Life, Freedom”

Dedicated to the ever-living memory of all who died for the freedom of Iran.

زن، زندگی، آزادی

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Abstract

This dissertation is an empirical attempt to bridge and synthesize two distinct sets of theories in the sociology of development and the study of cross-national inequalities. Through this study, I gather data on three types of inequality (i.e., environmental, economic, and gender/political) observed between and within nations of the world and create panel datasets that track countries' profiles over time. By using a growth curve modeling (GCM) approach, I study the trajectories of inequality and explain them by time-invariant contextual (local) and time-varying external (global) factors. This dissertation aims to contribute to the development of a more general and comprehensive framework for studying the observed trends of inequality in the last three decades by implementing a methodology that effectively incorporates theoretical elements from multiple schools of thought. By discovering the underlying trajectories and contributing factors to nations' inequality trends, this dissertation implies several policy suggestions in the conclusion section that can benefit the international, national, and local actors and policymakers concerned with the overall well-being of societies and people in both developing and developed countries.

Key Words: Development, Inequality, Modernization, World-Systems Analysis, Dependency, World Society, Environmental Degradation, Air Pollution, Ecologically Unequal Exchange, Income Inequality, Foreign Direct Investment, Political Gender Gap, Growth Curve Models

"No real observation of any kind of phenomena is possible, except in so far as it is first directed, and finally interpreted, by some theory."

- Auguste Comte (2009 [1830]: 42)

Chapter 1: Introduction and Theoretical Framework

A large body of sociological literature is devoted to theoretical and empirical studies that define and explain stratification at the global level and propose policies that can alleviate multiple types of inequality observed between and within different parts of the world (Sernau 2020). Several scholars in sociology and other related disciplines (e.g., economics, political science, and international studies) suggest that while different types of social inequality might increase to a certain point as nations start to modernize, they will eventually decrease as countries continue their journey towards "development" – a theoretical concept typically measured by the level of national income and economic growth (Kuznets 1955; Alderson and Nielsen 1995; Bergesen and Bartley 2000; Larrain 2013; Shahbaz et al. 2015; Bilgili et al. 2016; Zaman et al. 2016; Alam and Paramati 2016).

Recent studies and reports show that some of the indicators of between-country social inequality have declined in the face of modernization. However, there is evidence that within-country inequalities, as well as several indicators of between-country inequality, persist, and are even on the rise, not only in developing nations but also in the developed world – a phenomenon usually referred to as the "Great U-Turn" (Bluestone and Harrison 1988; Alderson and Nielsen 2002; Brady and Leicht 2008; Clark 2011; Kollmeyer and Pichler 2013; Kollmeyer 2015; Nielsen 2017; Mahutga et al. 2017).

For instance, studies in environmental sociology provide overwhelming evidence supporting the persistence of ecologically unequal exchange between different parts of the world (Burns et al. 2018). This type of unequal exchange is typically grounded in ecological imperialism, which becomes more pronounced overtime (Jorgenson and Burns 2004; 2007). Further growth of developed nations happens at the expense of significant environmental degradation in developing countries. Ecologically unequal exchange and ecological imperialism have resulted in large-scale environmental problems such as deforestation, natural resources depletion, climate-change-related problems, health-related inequalities (e.g., higher levels of water pollution and infant mortality), and the loss of biodiversity (Burns et al. 1997; Burns et al. 2003; Jorgenson and Burns 2004; Bergesen and Bartley 2000; Clark and Foster 2009; Jorgenson 2006; Jorgenson and Burns 2007; McKinney et al. 2010; Frumkin and Haines 2019).

Furthermore, according to the World Inequality Report of 2018, there are persistent and increasing gaps in income between the top 10% and the rest of the population within virtually all countries in the world, albeit to different degrees for each nation (Alvaredo et al. 2018). There is also evidence that global wealth inequality increased by approximately 5% in the Gini coefficient from 2000 to 2017. To make it more concrete, in 2000, the top 1% of wealthy individuals in the world owned 31.2% of all the wealth. However, their share increased to 37.3% of the world's total wealth in 2017 (Davies and Shorrocks 2018).

Moreover, although the relative size varies, reports show persistent gender gaps in economic participation and opportunity, educational attainment, health, and political empowerment within all nations worldwide (World Economic Forum 2020). Also, according to the Freedom House's 2019 report entitled "Democracy in Retreat," global freedom, in terms of citizens' protected political rights and civil liberties, in the last thirteen years, has been declining

within several countries in the world "from long-standing democracies like the United States to consolidated authoritarian regimes like China and Russia" (Freedom House 2019: 1).

Therefore, as current research implies, within- and between-country inequalities continue to exist and, in some cases, are even increasing. This dissertation aims to identify and explain contributing factors to the perpetuation of different forms of global inequality in recent decades. In this dissertation, I classify multiple manifestations of global inequality into three categories: 1) environmental, 2) economic, and 3) gender inequalities, particularly as it pertains to the gap in political empowerment. As a theory-driven empirical study, this dissertation attempts to account for one of the most important but frequently overlooked facts – that inequalities form and operate differently, considering the unique characteristics of social contexts (Christiansen and Jensen 2019). In the empirical analyses presented in the following chapters, I disentangle time-invariant contextual factors from time-varying forces through a methodology that effectively accounts for each country's unique trajectory of development and inequality (see Chapter 2: Methodology). In the following sections of this chapter, I will first discuss two distinct perspectives in the sociology of development and global and transnational sociology, comparing their main arguments, basic assumptions, and empirical implications. Then, in the final section of the chapter, I elaborate on the theoretical framework of this dissertation as a synthesis of the two perspectives.

Modernization Theory

Modernization theory explains the lag in the development of non-Western nations by referring to countries' specific historical and cultural heritage, primarily manifested in traditional religious values and norms (Sernau 2019; Larrain 2013; Inglehart 1997; Inglehart and Welzel 2005; Weber 1958 [1904]). Proponents of this perspective argue that a country's unique cultural,

historical, and geographic characteristics can adequately explain its current state of development. From this perspective, all countries in the world are in the process of development, albeit at different rates and to different degrees.

From this perspective, at the early stages of modernity as a global project, some areas (i.e., Western societies) set off to modernize earlier while others lagged behind, most probably due to their traditional cultural values and practices that hindered the rationalization of economic and political institutions (Robertson and Lechner 1985). Non-Western and collectivist cultures – as opposed to the more individualistic Western culture - are often blamed for failing to modernize and adopt new technologies and ways of life as rapidly as Western societies (Inglehart and Baker 2000; Mills 1999). From this perspective, modernization follows a universal and linear path through which one stage of development precedes the next (Bernstein 1971). Rostow (1959, 1971) described these as "stages of growth," assuming that every nation would go through the same development stages in the process of modernization as Western countries (Rostow 1959).

Nonetheless, there is abundant evidence that nations' current level of development is to some degree impacted by their history, especially in the case of former colonies. For instance, research shows that early European settlers developed inclusive political and economic institutions only in places they found suitable for living while establishing extractive institutions in other areas (Acemoglu et al. 2001). The type of economic and political institutions set up by colonial powers can partially explain the heterogeneity in the current economic performance of former colonies (Kwon 2011). There is also evidence that colonialism, particularly through the process of ethnic patronaging, has contributed to increased risk of civil violence, political

instability, border disputes, wars, and therefore decreased quality of life in sub-Saharan Africa (Lange and Dawson 2009; Michalopoulps and Papaioannou 2016; Goeman and Schulz 2017).

Geography is another important factor in shaping countries' development profiles since isolated societies, particularly landlocked nations, historically have had lower chances of interacting with other countries and benefiting from the cultural and material exchange (Lenski and Nolan 1984; Lenski 2005). Research shows that regional inequalities and geographic factors, such as having access to natural resources, can significantly predict the possibility of civil conflict within African nations (Østby et al. 2009). Furthermore, empirical studies suggest that historical factors such as slave trades, alongside other geo-ecological and demographic characteristics, have negatively impacted the current economic performance of African countries (Nunn 2008; Bloom and Sachs 1998).

Several researchers have argued that nations' unique paths towards development and historical events, such as the collapses of great civilizations, can be better explained and understood by focusing on societies' relationships to their surrounding environment and resource consumption patterns as contextual factors (Ponting 2008). However, societies' internal resource consumption patterns are not the sole factor responsible for their thriving or collapse. For example, there is evidence that the introduction of new plants, animals, and diseases by European settlers to the ecosystems of North America, Australia, and Africa was highly detrimental to the well-being of indigenous people and possibly led to the extermination of up to 90 percent of the populations in some of the colonized areas (Crosby 2004).

Scholars have extended modernization theory into other areas of development besides economic growth (Marsh 2014). For instance, ecological modernization is one of these extensions that strives to explain how the disastrous impacts of pollution from industrial,

modernizing practices will eventually subside through the modernization of production processes (Mol 1995). These processes will become more environmentally friendly over time, primarily due to the technological advancement believed to be inherent in modernization (Mol 2002; Mol et al. 2009). In particular, ecological modernization posits that economic growth will eventually improve environmental problems after a period of initial degradation (Grossman and Krueger 1995). Therefore, through adopting new efficient and environmentally friendly technologies, due to their efficiency and profitability, ecological crises can be resolved while the economy continues to grow (Hajer 1995; Jorgenson 2016; Mol 1995; Mol and Sonnenfeld 2000; Mol et al. 2009).

Overall, modernization theory implies that while countries have different development trajectories, they will eventually converge, and continual development will allow for further growth. Therefore, modernization theory argues that development is primarily an endogenous and society-specific process, emphasizing the importance of context in cross-national comparative studies. However, according to some proponents of modernization theory, all nations will eventually overcome these contextual barriers and join the developed world in celebrating their maturity in terms of reaching the age of "high mass consumption" (Rostow 1960). Based on the principle of comparative advantage, some have hypothesized that developed nations can help developing countries catch up and eventually converge with the modernized world through trade, direct investment, and technology spillover (McClelland 1961; Sachs and Warner 1995; Marsh 2007; Firebaugh 1992; Firebaugh and Beck 1994). Therefore, modernization theory sees between- and within-nation inequalities as results of the lack of development in some areas and countries, which will eventually diminish as all nations modernize and ultimately converge.

Nevertheless, as discussed earlier in this chapter, empirical evidence points toward widening gaps and increased global inequalities, particularly in late capitalism – an era marked by the emergence and rapid growth of multinational corporations within ever-expanding globalized markets of goods and labor, higher levels of financialization and easier flow of the capital, and more frequent and exacerbating economic, environmental, and political crises (Mandel 1999). Therefore, the ultimate convergence hypothesized by modernization theory seems far from happening, at least in the foreseeable future. Moreover, one of the most significant implications of modernization theory – that developing nations' incorporation into the global market by establishing and increasing trade with already developed countries can and will help them catch up, eventually leading to decreased levels of inequality – appears not to be supported by empirical evidence. Thus, one can safely argue that an alternative lens is needed to better understand the causes, consequences, and trajectories of global inequalities.

Theories of Globalization

An alternative perspective on development and inequality at the global level focuses primarily on the effects of globalization as the process of emergence and expansion of world-scale cultural, economic, and political relations (Bunker and Ciccantell 2005). In other words, globalization refers to "the increasing worldwide density of large-scale interaction networks" between nations (Chase-Dunn et al. 2000: 82). Scholars have categorized these world-scale networks into three interrelated types: 1) the global network of trade and exchange, 2) the global culture, and 3) the global political system (Sklair 2002; Beckfield 2010).

Globalization is not a new phenomenon in the history of the world. In fact, many scholars believe that it started with the rise of capitalism, as a world economy, in the 16th century in Western Europe (Wallerstein 1974; Wallerstein 2004; Chase-Dunn and Hall 2019 [1997]).

However, as globalization grows in scope and scale, it becomes increasingly important to consider its impacts on multiple aspects of societies worldwide. According to this perspective, different parts of the world are increasingly becoming interconnected, consolidating large-scale hierarchical networks of economic, political, cultural, and social interactions (Chase-Dunn et al. 2000). As more nations are embedded within these networks, it becomes almost impossible to study societies in isolation and explain their state of development solely by endogenous factors. In other words, one needs to employ a global perspective instead of looking at each country separately and trying to explain why a single country has lagged behind in the process of modernization (Wallerstein 1974; Meyer 1980).

Dependency and World-Systems Analysis

Dependency theory emerged in the late 1960s as an alternative approach to modernization in studying the underdevelopment of "Third World" countries, particularly focusing on Latin American nations (Namkoong 1999). Andre Gunder Frank (1969) proposed a dichotomous classification of countries in the capitalist economic system where metropolises (central countries) continuously exploit the surplus value generated in satellite nations. Therefore, unlike modernization, dependency theory sees development and underdevelopment as two opposite sides of the capitalist economic system rather than successive stages of growth (Frank 1967). Thus, dependency theory explains global inequalities by emphasizing the process of unequal exchange occurring between nations and areas of the world. Through the unequal exchange, developing countries tend to specialize and center their entire economy around exporting agricultural products and raw materials extracted from natural resources. At the same time, developed countries monopolize the global financial system and specialize in producing and exporting value-added consumer goods to the developing world. This division of labor leads

to the dependence of developing nations on developed countries, which in turn can boost further development of the highly industrialized countries at the expense of the hindered growth of developing nations (Ferraro 2008).

Proponents of world-systems analysis criticized dependency theory because of a lack of attention to historical processes that have led to the emergence of the current global division of labor which harbors unequal exchange as only one of the mechanisms necessary for its continual existence (Wallerstein 1974). More importantly, according to Wallerstein (1974, 2004), dependency theory tends to reify parts of the totality of the history of global relations into discrete units (i.e., unequal exchange between the developed and developing nations), which leads to oversimplification of the complexities of the contemporary reality. World-systems analysis, on the other hand, focuses on social systems as historical entities with a unique division of labor, as well as a politico-cultural framework (Wallerstein 1974; Wallerstein 2004). According to this perspective, the division of labor within the current world system – modern capitalism – categorizes nations into three groups: core, periphery, and semi-periphery. Within this division of labor, proponents of this perspective argue that the core systematically exploits the peripheral areas, particularly through the same process of unequal exchange emphasized by dependency theory. As a result of this exploitative dynamic, we see huge gaps in economic, social, and environmental outcomes between countries (Wallerstein 1974).

According to proponents of world-systems analysis, semi-periphery plays a crucial role in the maintenance of the system. Because of its intermediary role in the world economy, a large semi-periphery can act as a shield against the uprising of the periphery to overthrow the core (Wallerstein 1974; Wallerstein 2000). The semi-periphery has an elusive nature for methodological purposes (Terlouw 1993) as nations appear to fall in and out of the semi-

periphery over time. Nevertheless, despite the elusiveness of the semi-periphery due to upward and downward mobility within the system, Arrighi and Drangel (1986) used gross national income (GNI)[1] per capita as a proxy for a country's overall benefit from the global division of labor to show that the stratified structure of the world economy remains stable over time with a large group of semi-peripheral countries and two smaller core and periphery. Despite its lack of accuracy in capturing the dynamics of the world economy, the use of national income as a proxy for countries' positions in the economic hierarchy of the world has become a common practice in the literature, most probably due to methodological considerations such as data availability that ensures the inclusion of more countries in the analysis (Chase-Dunn 1998; Grell-Brisk 2017; Roberts 2013; Zhu 2017; Hekmatpour and Leslie 2022).

Nevertheless, other scholars have operationalized nations' positions in the world economy in a trichotomous way (i.e., core, periphery, semi-periphery) using different techniques and indicators including but not limited to the level of centrality in the network of trade and exchange, the dominant type of economic activities (capital- vs. labor-intensive), and commodity classification (Snyder and Kick 1979; Nemeth and Smith 1985; Chase-Dunn 1998; Babones 2005; Clark and Beckfield 2011; Clark and Mahutga 2013). However, empirical studies using network analysis methods barely support the conceptualization of the world economy in terms of three distinct groups. This has led some scholars in world-systems tradition to move beyond the tripartite model. For example, Mahutga and Smith (2011) suggest a six-group model (i.e., core, core contenders, upper-tier semiperiphery, strong periphery, weak periphery, and the weakest periphery) that can better explain the complexities of the modern world economy.

[1] A list of all the abbreviations used in the text can be found in Appendix Table A1-1.

Moreover, several researchers have pointed out the emergence of a new category as "semi-core" (Burns et al. 1997; Burns et al. 2003; Mahutga and Smith 2011). There is evidence that the rapid growth and upward mobility of a group of emerging economies known as the BRICS (i.e., Brazil, Russia, India, China, and South Africa) can challenge the hegemony of the current core over the world economy (Hung 2017). Moreover, some world system analysts have hypothesized a future convergence between the core and wealthy semi-periphery (semi-core) while they both diverge from the periphery and the rest of the semi-periphery, resulting in a more polarized and unequal world with exacerbated internal crises (Mahutga and Smith 2011; Wallerstein 2004). This polarization is fueled by the unequal exchange of goods, services, financial assets, and natural resources between the core and periphery and the weaker bargaining power of the periphery in trade vis-à-vis core nations. Core countries benefit more from trading with peripheral nations with fewer trade partners, which gives them higher bargaining power, and thus they dictate the terms of the trade (Clark and Mahutga 2013).

Overall, proponents of world-systems analysis and dependency theory – despite their differences on several theoretical issues – both conclude that due to the hierarchical order of the world economy and the unequal exchange occurring between nations, further development in advanced countries obstructs the growth and development of others (Clark and Mahutga 2013; Ferraro 2008). There is empirical evidence suggesting that the same mechanisms believed by modernization theory to be beneficial (e.g., trade openness, direct investment, etc.) leads to an array of adverse outcomes in developing nations, including but not limited to environmental degradation, stalled economic growth, disarticulation, decapitalization, increased income inequality, and deteriorated well-being of citizens (Dixon and Boswell 1996; Kentor and Boswell 2003; Curwin and Mahutga 2014; Stokes and Anderson 1990; Alderson and Nielsen 1999;

Mahutga and Bandelj 2008; Stokes and Anderson 1990; Curwin and Mahutga 2014; Hekmatpour and Leslie 2022).

World Society

World society theory aims to explain the cultural and political aspects of globalization (Meyer and Brian 1991; Schofer and Meyer 2005; Longhofer and Schofer 2010; Longhofer, Schofer, Miric, and Frank 2016). From this perspective, globalization is responsible for the diffusion and legitimation of modern structures and institutions, including nation-states, throughout the world (Meyer et al. 1997; Boli and Thomas 1997). There is evidence that nation-states, as well as other organizations and institutions, are becoming increasingly similar in their forms across the world. World society, relying on an institutional-cultural explanation, sees this "institutional isomorphism" as a natural state in the development of a global system (i.e., globalization) (DiMaggio and Powell 1983; Meyer 1980).

According to this perspective, world culture is "a system of rules legitimating the extension and expansion of the authority of rationalized nation-states." (Meyer 1980: 134) This system gives nation-states legitimized control over territory, populations, and the means of violence. It also delegitimizes other organizational forms (e.g., ethnic groups). From this perspective, the "proper state" is defined based on cultural values of rationalization and progress. Within this system, nation-states are supported (financially, technologically, and sometimes militarily) by other nation-states and international organizations in their efforts toward "progress." (Meyer 1980; Meyer et al. 1997; Meyer and Brian 1991). Within the world society, however, there is a hierarchy of status and prestige. Advanced countries – those with higher levels of gross national product (GNP) relative to other nations – are considered more prestigious

and successful and thus are looked into by other members of the world society as role models. (Meyer 1980).

Moreover, according to world society theory, the world is not just a network of economic and political interactions between nation-states but an "international society" with its own culture independent of governments. This world culture values universalism, individualism, democracy, rational progress, and world citizenship (Boli and Thomas 1997). From this perspective, the nation-state is a worldwide institution that is exogenously constructed, reinforced, and maintained by global associational processes (Meyer et al. 1997: 144; Meyer 1980). World polity facilitates the impact of world culture on nation-states through the diffusion of "world models" supported by rationalized international political, financial, and scientific organizations (e.g., UN, European Union, International Monetary Fund, the World Bank, the International Council for Science, etc.) (Meyer et al. 1997; Boli and Thomas 1997; Frank et al. 2000; Hironaka 2002).

Therefore, international governmental and non-governmental organizations (IGOs and INGOs) and their influence on local policies and practices are the center of attention in the world society literature (Meyer 1980; Schafer 1999; Boli and Thomas 1997; Hafner-Burton and Tsutsui 2005; Kim 2013; Frank et al. 2000; Buttel 2000; Hironaka 2002; Longhofer and Schofer 2010; Longhofer et al. 2016). In sum, world society's primary concern is the homogenizing forces that, through embedding states in a network of intergovernmental organizations, are making all nations of the world, at least in the form, if not in the content, similar to each other (Beckfield 2010). This homogenization by IGOs and INGOs reshapes nation-states' policies regarding several aspects of society, including but not limited to environmental protection, democracy, human rights, education, and child labor (Frank et al. 2000; Buttel 2000; Longhofer and Schofer

2010; Longhofer et al. 2016; Torfason and Ingram 2010; Mathias 2013; Kim 2013; Hafner-Burton and Tsutsui 2005; Schofer and Meyer 2005; Schafer 1999; Clark 2011)

Nevertheless, there is evidence that the decision-making power within international governmental institutions, such as the IMF and the World Bank, is not equally distributed, and advanced countries have more power than developing nations (Clark 2017). Given the fact that these institutions are the ones that promote neoliberal policies – forcing other countries to open their economies to the forces of globalization – advanced countries are now controlling world society to a greater extent than before. Therefore, it appears that the current global system is controlled by a small number of core states, which have dominated not just the world economy – as argued by the world-systems analysis – but also world culture and polity.

Moving Forward: Theoretical Framework of This Dissertation

The theoretical framework of this dissertation is inspired by recent metatheorizing efforts to build a more general framework that can capture the multidimensional aspects of development (Burns and Rudel 2015; Fisher and Jorgenson 2019). As I discussed above, compared to the simplified and linear argument of modernization theory – that the development of all nations and therefore decreased inequality between them is only a matter of time, mainly depending on endogenous factors – theories of globalization offer a richer understanding of the complex and multidimensional nature of the late capitalism. However, modernization theory also offers insights that cannot be easily overlooked. When combined with theories of globalization, some aspects of modernization can shed light and explain anomalies observed in empirical studies of inequalities at the international level.

For instance, the fact emphasized by modernization theory – that each country has a unique and context-specific profile of development and inequality – is usually overlooked in

empirical studies done by scholars of globalization. Moreover, research on the effects of external and global factors typically tends to hypothesize a uniform impact, either positive or negative, on all countries. This is partially due to the limitations imposed by common methods of analysis used in the literature on global and cross-national sociology (see Chapter 2: Methodology). Nevertheless, it would be more accurate to systematically account for the possibility that some nations, due to their specific contextual conditions, might respond to external forces of globalization differently. Several recent studies have highlighted the importance of such consideration.

For instance, recent research on the impact of economic globalization – measured by indicators such as trade openness and foreign direct investment – on multiple forms of between- and within-nation inequality (e.g., environmental degradation, income inequality, etc.) shows that these effects can be moderated by nations' position in the world economy (e.g., Hekmatpour and Leslie 2022; Yeboua 2019). Moreover, scholars have not yet reached a consensus regarding the effectiveness of cultural and political globalization in improving people's lives. Literature suggests that while developing countries are adopting institutional forms imposed by the world society, there is an endemic decoupling – a disconnect between policy and practice – that prevents institutions from fully functioning (Beckfield 2010). Decoupling happens because some of the external elements of the global culture are easier to adopt. In contrast, other elements are utterly inconsistent with local culture and infrastructures (Meyer et al. 1997). Therefore, countries are forced to establish institutions to remain compatible with global culture while these institutions barely function in their local context.

As another example of decoupling, previous research shows that states that use the word "democratic" in the official name of their government are significantly below the average of the

world in terms of actual democratic performance indices (Torfason and Ingram 2010). Moreover, totalitarian governments frequently use human rights treaties as "window dressing," while, in practice, they are exacerbating human rights conditions in their countries (Hafner-Burton and Tsutsui 2005). Research also shows a significant difference between signing treaties and a real commitment to human rights in allowing individuals to complain about their conditions freely (Cole 2012). In addition to decoupling, recent studies show that international organizations are not essentially homogenizing the world and are not as impartial as they appear. IGOs are becoming more regionalized rather than global, which leads to local convergence and global divergence in the world (Beckfield 2010). Therefore, given the already disadvantaged position of regions such as Africa in the global hierarchy of power, one can argue that political globalization reifies inequalities between the global North and South.

In this dissertation, my aim is to address the lack of systemic attention to context in the literature on global and cross-national sociology by introducing a methodology that is capable of accounting for countries' unique characteristics and endogenous trajectories of development and inequality highlighted by modernization theory (see Chapter 2: My analyses effectively capture the impact of contextual factors such as culture, geography, and history on nations' trajectories of development and inequality over the past decades. Moreover, the analyses compare the impact of local factors (e.g., economic and population growth) and global forces (e.g., unequal exchange, FDI, and membership in international organizations) on indicators of three types of inequality (i.e., environmental, economic, and the gender gap in political empowerment).

Therefore, through the lens of the theories of globalization, coupled with the intuition from modernization theory that social context plays a crucial role, this dissertation attempts to explain trends of inequalities between and within nations of the world in the last three decades.

Acknowledging the complexities of the modern global relations between nations through the dynamics of the world economy and polity, which is emphasized by theories of modernization, one can argue that a more comprehensive framework, one that simultaneously focuses on the importance of local contexts and global factors, is much needed to fully explain inequalities, as well as their causes and consequences in today's world. Moreover, the interplay between contextual and global forces that leads to differing trajectories of global inequality should be highlighted in both theorizing and empirical studies. Thanks to the innovative methodology that I will explain in the next chapter, I see the analyses presented in the following chapters of this dissertation as contributing to the construction of such a comprehensive theory of global inequality and development.

Chapter 2: Methodology

This dissertation is a theory-driven empirical study that aims to develop a framework for better understanding the observed disparities in trajectories of different types of inequality between and within nations of the world in the last three decades. The literature in this line of research appears to fall short of effectively accounting for heterogeneity between different social contexts and their impacts on the trajectories of inequalities. As discussed in the previous section, distinct theoretical approaches to studying development and inequality at the global level emphasize the significance of social context, albeit to different degrees and by varying mechanisms. Nevertheless, empirical studies seem to have failed to fully incorporate and account for the interaction between contextual factors and external forces that can contribute to the perpetuation and, in many cases, aggravation of different types of inequality worldwide. As I will argue below, this is partially due to the limitations imposed by the nature of the data and conventional methods used in this line of research.

In order to address this crucial shortcoming in the sociological literature pertaining to the study of cross-national disparities in development and inequality, my analytical strategy aims to effectively differentiate between time-invariant contextual factors – that are typically internal and thus have an endogenous impact – and time-varying forces (mostly external and imposed by the structure of global economy) that can influence trajectories of inequalities in the world. To this end, I construct country-level panel datasets using information from multiple sources containing measures of inequalities within countries and time-invariant and time-varying variables that can explain the disparities observed in nations' trajectories of those indicators. The body of the dissertation focuses on three main types of inequality observed within countries in the world. There are separate chapters dedicated to each of these manifestations of inequality. In

each chapter, I provide a complete account of the data sources and measurements used for the particular empirical study in that chapter. In the following sections of this chapter, however, I provide a detailed discussion of the analytical strategy that I will use for conducting the analyses presented in Chapters 3 to 5.

Analytical Strategy: Growth Curve Models (GCMs)

As discussed above, this dissertation seeks to explain the heterogeneity in trajectories of different types of inequality by tracking countries' profiles over time. In other words, my analyses in this dissertation center on countries' changing trends in indicators of environmental, economic, and gender/political inequalities. The analyses use cross-national panel data, which provide an opportunity to effectively account for the basic elements of both sets of theories discussed in Chapter 1: Introduction and Theoretical Framework. However, panel data impose their unique challenges as well. One of the crucial challenges of modeling such data is imposed by unit-specific errors – or the unobserved heterogeneity – in terms of the unique characteristics of each unit (i.e., country) that are not directly measured (Baltagi 2013; Amini et al. 2012).

The random-effects (RE) and fixed-effects (FE) models are the two well-known and most frequently used methods that strive to address the issue of unit-specific errors in panel data, albeit through different approaches. Both of these models are widely used in sociological literature. While suitable for many research designs and questions, both of these methods suffer from significant shortcomings for the purpose of this dissertation. The main shortcoming of these conventional methods is that they fall short of effectively modeling and explaining heterogeneity observed in trajectories of different countries. In other words, these models cannot account for the fact that inequalities operate differently in various social contexts. Moreover, RE builds upon two bold assumptions, known as the random-effects assumptions: 1) unit-specific errors are

exogenous, therefore uncorrelated with other independent variables, and 2) unit-specific errors are normally distributed with a mean of zero and a known variance – or $N(0, \sigma_\eta^2)$. These assumptions are barely found to be true in real-world data.

The FE models, however, approach unit-specific errors in an entirely different way. Instead of making unfounded assumptions, the FE manages to eliminate unit-specific errors by using a mean-deviation procedure, which eliminates the unit-specific errors. In addition to unit-specific errors, panel data used in cross-national studies also face the challenge of temporal heterogeneity (i.e., unmeasured time-specific characteristics) that can impact the results of the analyses (Engelhardt and Prskawetz 2005). The common approach to account for temporal and unit-specific heterogeneity is to use a two-way FE model that simultaneously includes unit and time fixed-effects, resulting in a specification that removes the unobserved country- and time-specific characteristics (Greene 2003). While two-way FE is considered to be the most conservative approach, albeit statistically less effective compared to RE, to panel data in order to make sure that the results are not affected by any type of heterogeneity (Baltagi 2013), losing all cross-sectional and temporal variations comes at the cost of losing the ability to estimate and explain the effects of time-invariant contextual variables on the trajectory of the dependent variable (Allison 2009).

Another source of concern for studies using panel data is the serial correlation (i.e., the persistency in the values of the dependent variable that manifests itself in the high correlation among successive data points for each unit of analysis) that can lead to statistically inefficient estimates (Engelhardt and Prskawetz 2005; Baltagi 2013). The common approach to adress serial correlation is to use autoregressive or dynamic models that include a lagged dependent variable as a covariate in the specification (Cochrane and Orcutt 1949; Beck and Katz 1995). The

common practice in the literature on cross-national and comparative sociology is to use a specific case of autoregressive models called the Prais-Winsten regression with panel-corrected standard errors (Clark 2020; Clement et al. 2019; Jorgenson et al. 2015; Knight and Schor 2014; Jorgenson and Clark 2012; Jorgenson 2009). Unlike the conventional dynamic models, the Prais-Winsten transformation does not omit the first observation, leading to more efficient estimates (Prais and Winsten 1954). Since the Prais-Winsten procedure was only developed to account for autocorrelation, it is typically combined with the FE to ensure that the results are also robust to spatial and temporal heterogeneities (Clark 2020).

Nevertheless, for the analyses presented in the following chapters, I use growth curve models (GCMs) as an alternative approach to the specifications discussed above and explain how it is more suitable given the overall goal of this dissertation. GCMs first estimate each unit's parameters of growth in the evolution of the dependent variable as functions of time and then attempt to explain the observed variability between units in these parameters by time-invariant and time-varying covariates, thus effectively capturing between-unit differences in within-unit trajectories (Hox and Stoel 2014; Willett and Sayer 1994). By including time as a baseline variable, the growth curve approach allows the decomposition of longitudinal and cross-sectional variability in the overall evolution of the dependent variable (Meuleman et al. 2018). Growth curve models can condition units' trajectories on time-varying and time-invariant variables (Fairbrother 2014).

Through modeling time as an underling dimension, the GCMs address the issue of serial correlation without a need for the inclusion of lagged dependent variable.[1] Moreover, unlike the conventional approaches discussed above, the GCMs avoid imposing an overall trajectory to all units (here countries). In contrast to the FE (two-way and one-way) that removes all the unobserved characteristics of time and place, the GCMs model these heterogeneities in a way that can add to our knowledge of how the dependent variable evolves over time and how this evolution trajectory differs by place (Hox and Stoel 2014). In other words, this method can simultaneously account for country-specific or endogenous growth, which is emphasized by modernization, as well as the effects of exogenous factors highlighted by theories of globalization. Therefore, the GCMs are more suitable for the purpose of this research, which is to synthesize these two different sets of theories (see Chapter 1: Introduction and Theoretical Framework). [2]

SEM vs. HLM

GCMs can be estimated within two general statistical frameworks of structural equation modeling (SEM) and hierarchical linear modeling (HLM) (Bryk and Raudenbush 1987; MacCallum et al. 1997; Raudenbush and Bryk 2002; Willett and Sayer, 1994). Latent growth curve models (LGCs) are estimated using the SEM framework. By establishing a baseline

[1] In fact, the inclusion of lagged dependent variables in models that already control for time can lead to sever bias in estimation and should be totally avoided. For more information on this, see Paul Allison's article in *Statistical Horizons* available at: https://statisticalhorizons.com/lagged-dependent-variables/

[2] For the analyses presented in the following chapters, as robustness checks, I have also estimated two-way fixed-effects and Prais–Winsten regression models with panel-corrected standard errors. As can be seen in Appendix Tables A3-5, A4-5, and A5-5, the GCMs yield comparable and substantially similar results relative to the other two approaches. This suggests that the results of the GCMs presented in this dissertation are robust to unit-specific and time-specific heterogeneities as well as serial correlation.

relationship between repeated measurements and a unit of time, LGCs can explain units' trajectories and between-unit differences in these trajectories (Newsom 2015; Grimm, Ram, and Estabrook 2017). LGCs describe each unit's trajectory of any given indicator with a mathematical function containing different parameters specific to that unit in the sample (Grimm et al. 2017).

LGCs specify latent factors that yield specific values for the baseline mathematical function's parameters, which describe each unit's trajectory (Newsom 2015). This way, each unit in the sample will have an intercept and a slope – and a quadratic – or multiple polynomial terms in the case of nonlinear growth models – that specify their unique trajectory (Little 2013). In other words, LGCs, unlike the conventional RE and FE methods, allow units to have their unique parameters instead of imposing an overall trajectory on all units in the sample. An unconditional quadratic LGC can be specified as:

$$y_{it} = \alpha_i + \lambda_t \beta_{1i} + \lambda_t^2 \beta_{2i} + \epsilon_{it}$$

Where the value of the outcome variable for country i at time t (y_{it}), is a function of the country-specific intercept (α_i), plus a country-specific slope (β_{1i}) with a fixed factor loading of λ_t, and a country-specific quadratic term (β_{2i}) with a constrained factor loading of λ_t^2. The time-specific factor loading $\lambda_t = t - 1$ allows for the interpretation of the intercept as the starting point of the specified trajectory. Moreover, ϵ_{it} captures specific error terms for each country-year observation under the assumption of $E(\epsilon_{it}) = 0$ (Bollen and Curran 2006).

Unconditional latent growth curve models can only specify each country's growth trajectory of a given indicator of inequality (Bollen and Curran 2006). However, after estimating the growth parameters, researchers can condition these parameters on exogenous (time-varying) and endogenous (time-invariant) factors in order to fully explain the between-country differences

in within-country trajectories of the indicators of inequality (Grimm et al. 2017). Conditioned LGCs can be specified as:

$$y_{it} = (\mu_\alpha + \gamma_{\alpha 1} x_{1i} + \zeta_{\alpha i}) +$$
$$\lambda_t (\mu_{\beta 1} + \gamma_{\beta 1} x_{1i} + \zeta_{\beta 1 i}) +$$
$$\lambda_t^2 (\mu_{\beta 2} + \gamma_{\beta 2} x_{1i} + \zeta_{\beta 2 i})$$
$$+\gamma_t \omega_{it} + \epsilon_{it}$$

Where μ_α is the average of country-specific intercepts, $\gamma_{\alpha 1}$ a vector of coefficients capturing the effects of x_{1i} – the vector of time-invariant factors – on the intercept, and $\zeta_{\alpha i}$, the disturbances around the average intercept. Similarly, $\mu_{\beta 1}$is the average of slopes and $\mu_{\beta 2}$ is the average of quadratic terms while $\gamma_{\beta 1}$ and $\gamma_{\beta 2}$ are vectors of coefficients showing the country-specific impact of time-invariant factors (x_{1i}) on the slope and the quadratic term. γ_t is a vector of coefficients capturing the time-specific impact of time-varying factors (ω_{it}) on the value of the outcome variable.

Using conditioned LGCs, one can explain how countries – or groups of countries based on geographical regions and similar cultural and religious contexts – have different trajectories of any indicator of inequality and how various time-varying factors, such as economic growth or decline, international organizations' membership, trade liberalization, and population growth can impact their process of change (Bollen and Curran 2006).

Since country-year observations in panel data are nested in countries, the growth model resembles a multilevel model. Therefore, the basic logic of multilevel modeling applies to growth curves, making an HLM approach possible (Little 2013). Growth curve models estimated through HLM follow a different modeling approach:

$$y_{it} = (\mu_\alpha + \gamma_{\alpha 1} X_{1i} + \zeta_{\alpha i}) +$$

$$T\left(\mu_{\beta 1} + \gamma_{\beta 1} X_{1i} + \zeta_{\beta 1 i}\right) +$$

$$T^2\left(\mu_{\beta 2} + \gamma_{\beta 2} X_{1i} + \zeta_{\beta 2 i}\right) +$$

$$\gamma W_{it} + \epsilon_{it}$$

$$\epsilon_{it} \sim N(0, \sigma_\epsilon^2)$$

Here, y_{it}, the estimated values of the dependent variable for country i at time t, is defined as a function of T (time). μ_α is the average intercept, X_{1i} is a vector of time-invariant independent variables with accompanying $\gamma_{\alpha 1}$, $\gamma_{\beta 1}$, and $\gamma_{\beta 2}$, the vectors of regression coefficients that impact the intercept, slope, and quadratic terms of the trajectories, respectively. W_{it} is a vector of time-varying independent variables that directly impacts the values of the dependent variable with the accompanying γ vector of the coefficients.

The HLM approach to GCM first estimates each unit's unique trajectory through this mathematical design, thus accounting for the fundamental assumptions of theories emphasizing that development is primarily endogenous. Including time-invariant variables such as nations' position in the world economy and geographic location will explain the cross-national heterogeneity in trajectories of within-country inequality indicators. The models can also estimate the impact of time-varying variables on the dependent variable.

If estimated correctly, there is evidence that these two approaches should yield similar results. GCMs estimated through SEM are more flexible in terms of assumptions regarding error terms and provide a variety of model fit statistics. Moreover, SEM can be used in combination with confirmatory factor analysis (CFA) for cases with multiple indicators of the same factor, reducing the dimensionality and measurement error associated with the outcome variable (Grimmet al. 2013; Grimm et al. 2017; Acock 2013). Nevertheless, the HLM approach is computationally more efficient in terms of model convergence and yielding results, specifically

when using unbalanced and large-T panel data like the ones used in this study (Chou et al. 1998). Moreover, STATA statistical software enables the production of better-quality graphics that can illustrate the level of uncertainty when estimating the GCMs within the HLM framework. Therefore, for the analyses presented in this dissertation, I use the HLM approach to estimate GCMs.

Furthermore, the GCMs used for the analyses presented in this dissertation all consider the effect of time to be of the second-degree polynomial (i.e., models include both Time and $Time^2$ terms). The decision to treat time in this way was based on empirical evidence. Figure A2-1 in the appendix shows the marginal predictions of all dependent variables estimated by time-fixed effects as well as the second-degree polynomial super imposed fit line with confidence intervals. As can be seen in this figure, the marginal predictions of the dependent variables by time fixed-effects fall almost perfectly within the confidence intervals of the superimposed second-degree polynomial line. However, for some of the dependent variables, the effect of the squared term of time is so small that they appear to be linear. Nevertheless, Appendix Table A2-1 presents the formal likelihood ratio tests of the hypothesis that the inclusion of the squared term of time significantly increases the fit for all models, although the level of improvement varies for different dependent variables.

A Summary of Chapters' Research Topics and Questions

In the following chapters, I present three separate studies, each pertaining to the form of within-country inequality and its evolution over the past three decades. Chapter 3: The Environment – Ecologically Unequal Exchange and Air Pollution uses GCMs to study countries' trajectories of environmental inequality in terms of death rates attributable to air pollution by position in the world economy (time-invariant) and the time-varying effects of the ecologically

unequal exchange – vertical fellow of exports from lower- to higher-income countries – on these trajectories.

Chapter 4: The Economy – Foreign Direct Investment and Income Inequality studies the between-country heterogeneity in within-country income inequality (the Gini coefficient) using GCMs. More specifically, I aim to assess the impact of foreign direct investment (FDI) on income inequality as a time-varying independent variable and how this effect can differ by nations' level of economic development (time-invariant). Moreover, Chapter 4: The Economy – Foreign Direct Investment and Income Inequality studies the impact of FDI in different sectors of the economy, as well as the effect of even/uneven distribution of FDI between sectors.

Finally, Chapter 5: The Polity - Globalization and Gender Gap in Political Empowerment uses GCMs to examine between-nation differences in within-nation indicators of gender inequality in politics by focusing on women's share of seats in national parliaments, as well as an index measuring the gender gap in political empowerment as dependent variables. More specifically, I aim to answer the question of whether nations' embeddedness in a world culture that promotes gender equality – a time-varying independent variable – can lead to declined gender inequality in political empowerment and how this effect can vary depending on countries' unique cultural characteristics in terms of predominant religious traditions and the level of within-country cultural diversity as time-invariant independent variables.

Chapter 3: The Environment – Ecologically Unequal Exchange and Air Pollution[1]

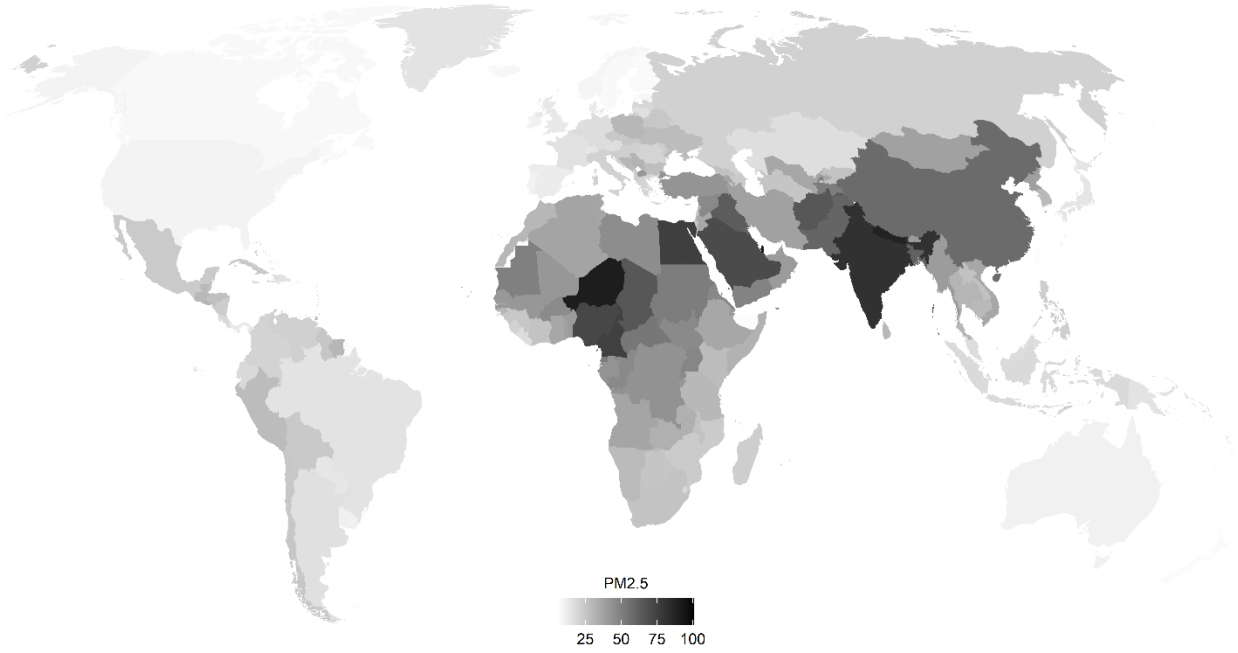
Global environmental inequality refers to international disparities in a variety of indicators, including carbon emissions (Heil and Wodon 2000; Knight, Schor, and Jorgenson 2017; Jorgenson 2006a; Duro 2012; Duro, Antonio, and Padilla 2006; Jorgenson and Clark 2012), resource consumption (Druckman and Jackson 2008), deforestation (Jorgenson and Burns 2007; Shandra 2007), exposure to hazardous toxins and wastes (Frey 2003; 2006), and burdens of environmental degradation (Pozo et al. 2020). A large body of literature highlights the fact that environmental problems are not equally distributed throughout the world. There is evidence that some communities, races, and nations are disproportionately affected by anthropogenic environmental degradation (e.g., Adeola 2000; Trainor et al. 2007; Parris, Hegtvedt, and Johnson 2020; Collins, Grineski, and Morales 2017).

Anthropogenic air pollution is among the most pressing environmental problems worldwide, which can cause significant risks to public health (Anderson, Thundiyil, and Stolbach 2011; Mejia 2020). "Ambient particulate matter air pollution (PM2.5, particulate matter with aerodynamic diameter 2.5μm or smaller) was identified as a leading risk factor for global disease burden with an estimated 2.9 million attributable deaths in the year 2013" (Brauer et al. 2015: 80). The most considerable burden of air pollution is concentrated in industrial hubs in the developing nations, particularly in Southeast Asia, Africa, and Eastern Mediterranean regions (Babatola 2018). For instance, less developed areas of western and central China, for the most part, due to higher emission-intensive inputs, lack of efficient technologies, and lower

[1] Results from this chapter are published in an article (Hekmatpour and Leslie 2022) in the *Environmental Research* journal: https://doi.org/10.1016/j.envres.2022.113161

environmental standards, suffer 4-8 times from air pollution relative to other regions (Zhang et al. 2018). There is also evidence that air pollution in impoverished counties within the United States is causing immense harm, contributing to increased mortality and loss of longevity (Bennett et al. 2019). According to the previous analyses, exposure to ambient PM2.5 air pollutants led to 4.2 million deaths in 2015 around the world, equivalent to 7.6% of total global deaths (Cohen et al. 2017). Evidence shows that different regions, particularly Africa and Southeast Asia, suffer disproportionately from air pollution (Bauer et al. 2019). Figure 1 illustrates the disparity in annual exposure to PM2.5 air pollutants in 2017 measured in logged micrograms per cubic meter. As we see in this map, East and Southeast Asia, as well as sub-Saharan African and Middle Eastern nations, experience higher means of annual exposure to PM 2.5 air pollutants relative to European, North American, and Central Asian countries. This map clearly illustrates the inter-country disparity in exposure to ambient air pollutants.

Figure 1. Mean Annual Exposure to PM2.5 Air Pollutants Across the World in 2017



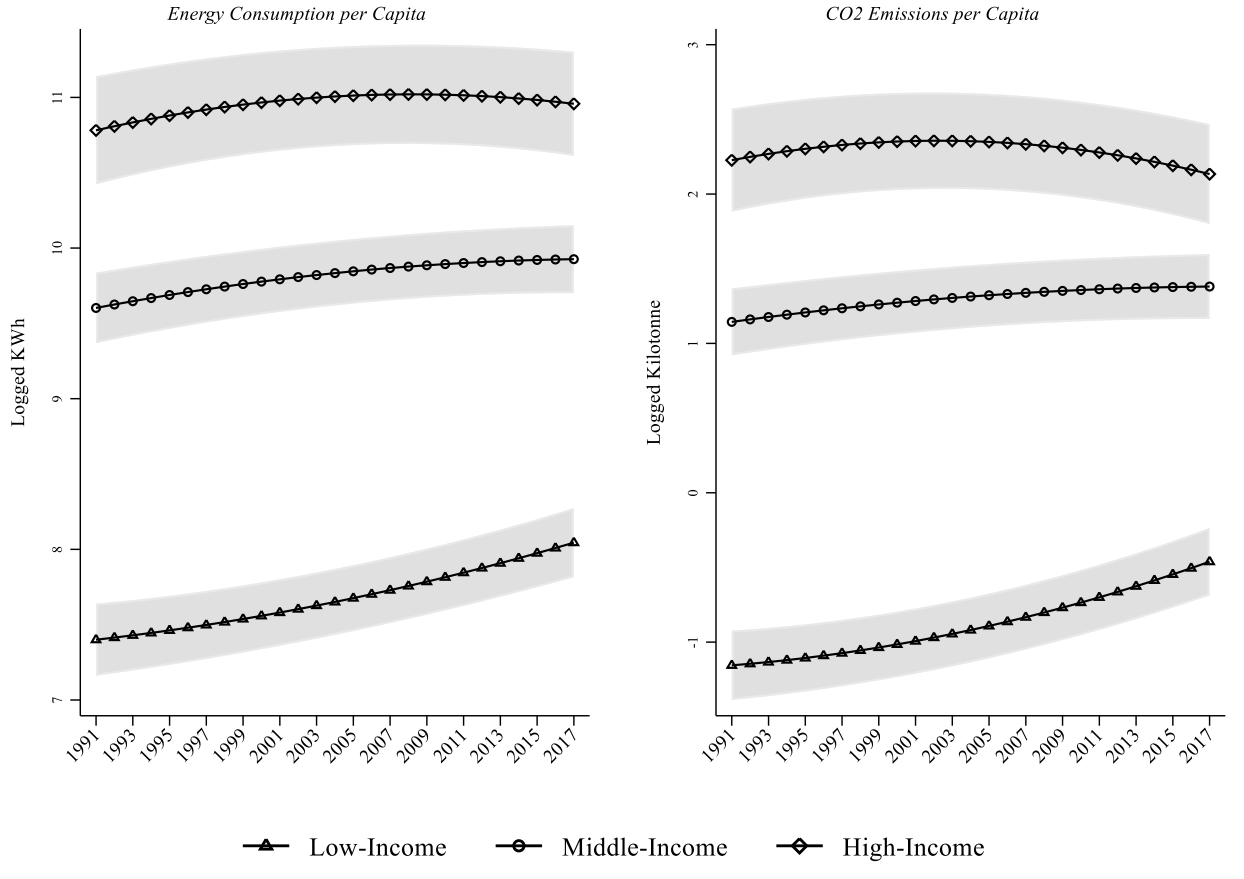
Previous research on anthropogenic air pollution has, for the most part, focused on case studies of the association between air pollution and mortality in different countries (e.g., Hoek et al. 2002; Zhao et al. 2019), as well as the moderating effects of income inequality, residential segregation of minority communities, and the socioeconomic status of residents in the triangular relationship between air pollution, health risks, and shortened life expectancy (Ard 2016; Charafeddine and Boden 2008; Jorgenson et al. 2020a, 2020b). A recent meta-analysis shows that in a cross-national setting, countries and areas of the world characterized by lower-socioeconomic-status communities and populations tend to experience higher concentration rates of ambient air pollutants (Hajat, Hsia, and O'Neill 2015).

In this chapter, using the method discussed in Chapter 2: (GCMs), I attempt to examine death rates attributable to air pollution as one of the risk factors associated with anthropogenic environmental degradation for nations, as well as an indicator of global environmental inequality. My main goal is to highlight mechanisms through which the observed disparity in nations' suffering from exposure to ambient air pollution can be explained. Consistent with the ultimate goal of this dissertation, in this chapter, I attempt to test the relative power of two distinct and often considered opposing theoretical approaches in explaining cross-national heterogeneity in trajectories of death rates attributable to air pollution from 1991 to 2017. These two theoretical approaches are ecological modernization theory and ecologically unequal exchange. As I will discuss below, one of these approaches (i.e., ecological modernization) highlights the internal factors shaping each nation's trajectory of environmental degradation. On the other hand, ecologically unequal exchange focuses on the external forces of the global economy that can affect each country's environmental and health outcomes.

Ecological modernization theory, as one of the extensions to the general modernization theory discussed in Chapter 1, attempts to explain how the devastating effects of anthropogenic pollution caused by industrial modernization will eventually lessen through the internal process of development within nations (Mol 1995). This perspective assumes that production processes will ultimately become more ecologically friendly primarily due to inevitable technological developments inherent in modernization and economic growth (Mol 2002; Mol et al. 2009). Ecological modernization suggests that through adopting new and environmentally friendly technologies, due to their efficiency and profitability, environmental problems can be unraveled without any need for radical changes in the overall structure of the economy (Hajer 1995; Jorgenson 2016; Mol 1995; Mol and Sonnenfeld 2000; Mol et al. 2009).

Moreover, ecological modernization posits that as societies adopt a post-material culture, heightened environmental concerns among the citizens will eventually lead to demands for green products and environmentally friendly policies. This pressure will subsequently make industries adopt a more sustainable approach to production and seek new and green technologies (Hekmatpour 2022; Burns et al. 2021; Burns et al. 2018; Hekmatpour et al. 2017; Jorgenson 2016; Mol 2002). According to the proponents of ecological modernization, and in line with the general argument of the modernization theory, development, in its all manifestations, including the reduced burden of environmental degradation, is primarily an endogenous and society-specific process. In other words, while countries could be on different trajectories, they will eventually converge, and continual development will allow for further growth.

Figure 2. Trajectories of Total Energy Consumption per Capita and CO_2 Emission per Capita by the Level of National Income



Using information provided by Our World in Data[1] from the BP Statistical Review of World Energy (Dudley 2018)[2], the international energy data from the US Energy Information Administration (EIA)[3], and the World Development Indicators (World Bank 2021), and employing the growth curve models (GCMs) discussed in Chapter 2: , I estimated the trajectories of total energy consumption per capita and CO_2 emission per capita illustrated in Figure 2 (for the full models see Appendix Table A3-1). Consistent with the main arguments of ecological

[1] www.ourworldindata.org
[2] www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html
[3] www.eia.gov/international/data/world/total-energy/more-total-energy-data

modernization, we can see early signs of a possible future convergence in these two indicators for low-, middle-, and high-income nations. As we can see in Figure 2, while there is a significant difference between the trajectories of these two environmental indicators for nations based on their level of national income, high-income countries have indeed reached a tipping point and started to decline. Middle-income countries are still increasing but at a slower rate compared to low-income nations. From the ecological modernization perspective, these different trajectories primarily indicate a temporal lag. Eventually, middle- and low-income countries will also plateau and begin to decline in most environmental degradation indicators. Moreover, ecological modernization contends that technology and scientific knowledge spillover from higher- to lower-income nations, primarily through trade and exchanges of goods and services, will eventually lead to decreased levels of environmental degradation in all countries.

Nevertheless, the ecologically unequal exchange theory describes the inequity in environmental degradation between low- middle-, and high-income countries as a direct outcome of the externalization and relocation of ecologically degrading industrial and agricultural processes from the Global North to the South (Bunker 1985; Hornborg 1998; Jorgenson 2012, 2016; Jorgenson and Rice 2012; Roberts and Parks 2007). The notion of "unequal exchange" has its roots in the dependency tradition and the works of Arghiri Emmanuel (1972) and Samir Amin (1976) as a theoretical concept to describe the persistent inequality in global patterns of exchange between countries. Alf Hornborg (1998) expanded this theoretical concept to include ecological as well as economic exchange. This perspective attempts to explain the unequal structure and processes of the global economy and how some countries perpetually benefit at the cost of others (Jorgenson and Clark 2011; Rice 2007a; Rice 2009).

Ecologically unequal exchange theory identifies cross-national inequalities as core functions that maintain the hierarchy of the world economy through ecological destruction, over-extraction of natural resources, differences in pollution standards, and the burdens of environmental risks (Burns et al. 2019; Frey 2003; Noble 2017; Rice 2007b). This perspective emphasizes the negative impacts of exogenous factors such as trade and incorporation into the world economy, especially for lower-income nations, because it will lead to dependency and disarticulation of small-scale local economies (Givens et al. 2019; Jorgenson and Rice 2005). Within this framework, a convergence of equal development and lessened ecological inequality among all countries will likely not happen as long as the global stratification system persists. Therefore, from this perspective, what we saw in Figure 2 is not a sign of convergence, as ecological modernization would argue, but mainly shows the relocation of environmentally degrading processes from North to South.

The ecologically unequal exchange further posits that the inequity observed in the burdens of environmental degradation is primarily a function of each nation's position in the world economy (Hornborg 2009; Jorgenson and Rice 2005; Rice 2008). The offshoring of hazardous economic activities and wastes to middle- and low-income countries has led to increased resource depletion and widespread environmental destruction within these nations (Rudel et al. 2011). Frey (2003) shows how export processing zones (EPZs), mostly established in peripheral countries and areas and marked by offering limited to non-existing labor and environmental regulations and protections, are essential for the capitalist world economy to function. EPZs are mainly used to transfer the core's hazardous production to the periphery. Therefore, multinational corporations have moved their polluting production processes to EPZs

in “more than sixty countries in Africa, Asia, Latin America, and the Caribbean” (Frey 2003: 318; Chen 1995; Jauch 2002).

As we saw, ecologically unequal exchange and ecological modernization offer opposing explanations for the impact of development on environmental degradation and its burdens, particularly in terms of incorporation into the world economy and global trade system. For the proponents of ecological modernization, development and growth will lead to decreased levels of environmental degradation, and establishing and expanding trade routes with developed nations can only help developing economies in this process. However, according to the ecologically unequal exchange perspective, the unequal structure of the global trade system will yield dissimilar results for higher- and lower-income nations. The vertical flow of goods and materials from developing economies to developed countries will exacerbate environmental degradation and its burdens in the global South. This chapter aims to empirically assess the plausibility and compare the explanatory power of these two perspectives in explaining the observed heterogeneity in nations’ trajectories of death rate attributable to air pollution – one of the risks and actual burdens of anthropogenic environmental degradation for countries and their people.

Data and Measurements

In this chapter, I will focus on the death rate attributable to air pollution as the dependent variable. The Global Burden of Diseases (GBD 2017) uses 701 sources – including national surveys, censuses, government reports, and the World Health Organization (WHO) Household Energy Database – to estimate mortality rates attributable to air pollution in countries and territories. The GBD uses the comparative risk assessment (CRA) conceptual framework developed by Murray and Lopez (1999) to estimate death rates. This framework allows for the quantification of risks or causes that contribute to health outcomes at any level of analysis.

Following Murray and Lopez (1999), the GBD uses the theoretical minimum risk exposure level (TMREL) counterfactual distribution that captures the maximum attributable burden for causal risk-outcome pairs. The GBD focuses on the relationship between ambient air pollution and cerebrovascular disease, chronic obstructive pulmonary disease, ischemic heart disease, and lung cancer to estimate death rates attributable to air pollution. The GBD uses the method of moments (MoM) to estimate the probability distribution of the risk of death from air pollution within populations. The dataset reports estimated means, as well as lower- and upper-bound estimations. In my analyses, I use the average estimates of the death rate attributed to air pollution from the GBD. Due to the skewness observed in the distribution of death rates attributable to air pollution, I use the natural logarithm of this variable in my analyses. Logged death rate attributable to air pollution has a mean of 4.902 and a standard deviation of 0.728 in the final sample.

The analyses include time-invariant and time-varying independent variables. I capture countries' *position in the world economy* by the initial level of national income as a time-invariant variable. I use gross national income (GNI) per capita in 1991, the starting point of the panel, to categorize nations into three groups: 1) high- (GNI per capita > $12,535), 2) middle- ($1,035 < GNI per capita < $12,535), and 3) low- (GNI per capita < $1,035) income following the World Bank's Atlas method. The second time-invariant independent variable in my analyses is the geographic region. I categorize countries into six groups: 1) Western Europe, North America, and Oceana, 2) the Middle East and North Africa (MENA), 3) Sub-Saharan Africa, 4) Latin America, 5) South and East Asia and Pacific, and 6) Eastern Europe and Central Asia (former communist countries).

The primary time-varying independent variable in the analyses is *export to high-income countries* as a proxy measure of the ecologically unequal exchange between nations. Previous research has used a variety of ways to operationalize ecologically unequal exchange (Noble 2017). One of the commonly used variables in the literature is "weighted export flows," a measure developed by Jorgenson (2006b), which captures the extent to which a nation's exports are sent to more-developed economies (Rice 2007b; Jorgenson and Clark 2009; York 2007). Other studies use the percent share of "merchandise exports" sent to high-income countries as a measure of ecologically unequal exchange (Fitzgerald and Auerbach 2016; Shandra et al. 2009a; 2009b; Rice 2007b; Jorgenson 2011). While there is evidence that these two measures are highly correlated (Jorgenson 2012), the weighted export flows variable is available for fewer countries relative to merchandise exports to high-income countries (Fitzgerald and Auerbach 2016). Moreover, regardless of the ways of operationalizing ecologically unequal exchange, there is overwhelming evidence supporting its negative impact on various environmental outcomes (Noble 2017).

In this chapter, I develop a measure of ecologically unequal exchange that combines the two variables discussed above and considers both the share and volume of merchandise exports to high-income countries. Previous studies have emphasized the importance of volume and the scale of economic activities, particularly in lower-income countries, that can boost the process of ecologically unequal exchange (Hickel et al. 2021; Dorninger et al. 2021). For instance, research suggests that exports from lower-income countries, per dollar sold, are more ecologically intensive and, therefore, more damaging to the local environments (Moran et al. 2013). Thus, to create a measure that simultaneously accounts for the vertical flow and the volume of exports, I multiply the percent share of merchandise exports to high-income countries by each nation's

total value of all merchandise exports in that particular year measured in constant US dollars and use a logged transformation to correct the skewness in the distribution of the variable:

$$E_{it} = \ln (p_{it} \times v_{it})$$

Here, the time-varying independent variable *export to high-income countries* (E_{it}) for each country-year unit is measured as the natural logarithm of the percent share (p) of merchandise sent to high-income countries by country i at time t multiplied by the total dollar value of all merchandise export (v) of that country in the same year. To create this variable, I use data on the percent share of merchandise exports to high-income countries calculated by the World Bank and reported in the World Development Indicators from the IMF Direction of Trade Statistics (DOTS) (World Bank 2021). Data on the total value of merchandise exports are drawn from the World Development Indicators originally reported by the World Trade Organization (WTO).

I control the analyses for the effects of a battery of time-varying variables. The natural logarithm of gross domestic product (GDP) per capita, as an indicator of the overall size of an economy and measured in constant US dollars (adjusted for inflation), is a time-varying control variable in our models, which is extracted from the World Development Indicators (World Bank 2021). The negative effect of foreign direct investment (FDI) on several environmental outcomes is shown in several studies (e.g., Shahbaz et al. 2015; Solarin and Al-Mulali 2018; Waqih et al. 2019; Hanif et al. 2019). In my analyses, I control for the time-varying effect of FDI by the stock of foreign capital measured as the logged percent share of GDP. I use data on this measure reported by the World Bank and gathered from the International Monetary Fund (IMF)'s Balance

of Payment database[1] supplemented by data from the United Nations Conference on Trade and Development (UNCTAD)[2] and official national sources.

Another time-varying control variable in this chapter is trade liberalization as an indicator of globalization and a country's incorporation into the world economy. This variable is measured by merchandise trade as a share of GDP (the sum of merchandise exports and imports divided by the value of GDP). Information on this variable comes from the World Trade Organization and the World Bank GDP estimates (World Bank 2021). I use the natural logarithm of this variable in my analysis. Moreover, I use the health access and quality index (HAQ) from the Global Burden of Disease study, which measures the availability and quality of health care provided in nations on a scale from zero to 100 (GBD 2018), based on amenable mortality. The HAQ index measures the risk of mortality rates for 32 causes of death that timely and effective healthcare could have potentially prevented (Fullman et al. 2018).

Additionally, I am controlling my analyses for the effect of population size as a well-established factor contributing to air pollution (York and Rosa 2012). Several studies have highlighted the relationship between urbanization and exposure to ambient air pollution (Wang et al. 2020; Baklanov et al. 2016). Thus, in this study, using data extracted from the World Development Indicators (World Bank 2021), I control my analyses for the percent share of the population of countries living in urban areas.

The mobility index is a variable that captures countries' upward or downward mobility in the world economy. The rationale for including this variable is that I am using countries' national income level in 1991 (the panel's starting point) as a time-invariant variable. While not too many

[1] www.data.imf.org
[2] www.unctad.org/statistics

countries change position during the panel, some move from low-income to middle-income, or from middle-income to high-income positions, and the other way around. In my sample, 94% of high-income, 96% of middle-income, and 97% of low-income nations do not change their position for the entire study period, meaning that only a small number of countries change their position. Thus, instead of ignoring this minimal mobility as noise, I decided to model it using this mobility index to ensure that my results are robust. The final sample includes 4,189 country-year observations nested in 169 countries. Appendix Table A3-2 provides summary statistics for the time-varying and time-invariant independent variables used in this chapter.

Findings

The first step in my analysis of death rates attributable to air pollution is to estimate the unconditional GCM (see Model 1 in Appendix Table A3-3). Figure 3 illustrates the average trajectory of death rate attributable to air pollution for all nations represented in the sample. The estimated intercept of 5.177 is the average of logged death rates attributable to air pollution at the panel's starting point (1991), which translates into 177.15 deaths per 100,000 individuals. As shown in Figure 3, the global death rate (average of all observations) attributable to air pollution constantly declined from 1991 to 2017 (estimated negative slope and quadratic term in Appendix Table A3-3). During the course of the panel, the average death rate attributable to air pollution decreased by a factor of 0.59 on the logged scale (an 11% decrease or 97.9 deaths per 100,000). A formal hypothesis test suggest that this decline is statistically significant (Chi2 = 559.26, df = 1, p <0.001). Next, I will condition the GCM on nations' position in the world economy (i.e., high-, middle-, and low-income) to see if there are any significant differences in trajectories of death rate attributable to air pollution based on national income (see Model 2 in Appendix Table A3-3).

Figure 3. Average Trajectory of Death Rate Attributable to Air Pollution

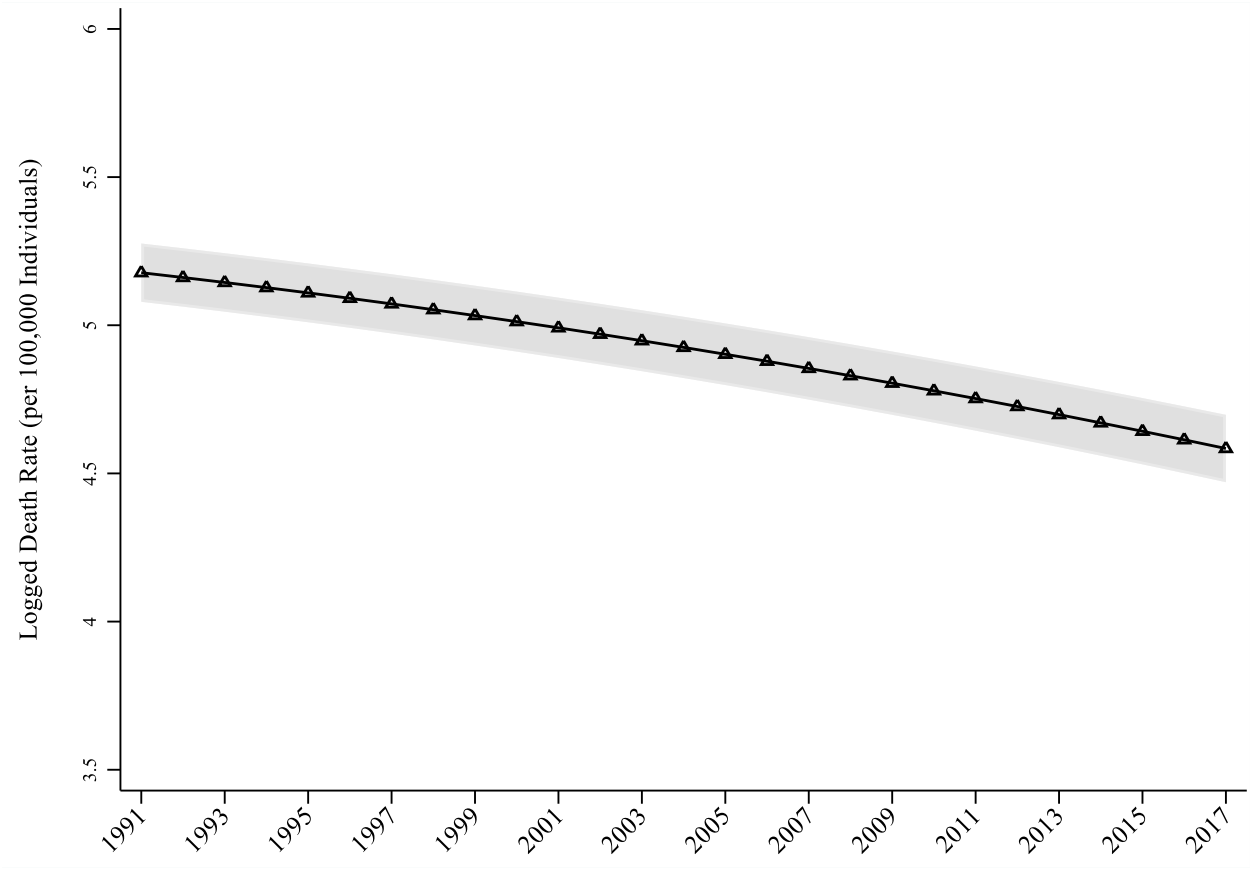


Figure 4 shows the trajectories of death rate attributable to air pollution across the initial level of national income estimated by the conditional GCM. Positive and statistically significant effects of low- and middle-income countries on the intercept show that, on average, low- and middle-income countries' starting points are higher relative to high-income countries by factors of 1.429 and 0.663, respectively. As we can see in this figure, while low-, middle-, and high-income countries have been declining in death rates attributable to air pollution from 1991 to 2017, there is a clear distinction between the three groups of nations. The decline in death rate attributable to air pollution for low-income countries is significantly slower relative to high-income countries by a factor of 0.008. Simultaneously, there is no significant difference in the slope of trajectories between middle- and high-income countries. Low-income countries have a

positive and statistically significant quadratic term, which results in an even slower decline in death rate attributable to air pollution compared to high-income countries. In other words, while almost all nations in the world have experienced decreased death rates attributable to air pollution, middle- and low-income countries have continuously been experiencing higher death rates attributable to air pollution relative to high-income countries. The gap between these groups of nations remains statistically significant throughout the panel from 1991 to 2017 (Chi2 = 361.57, df = 6, p <0.001).

Figure 4. Trajectories of Death Rate Attributable to Air Pollution by Countries' Level of National Income

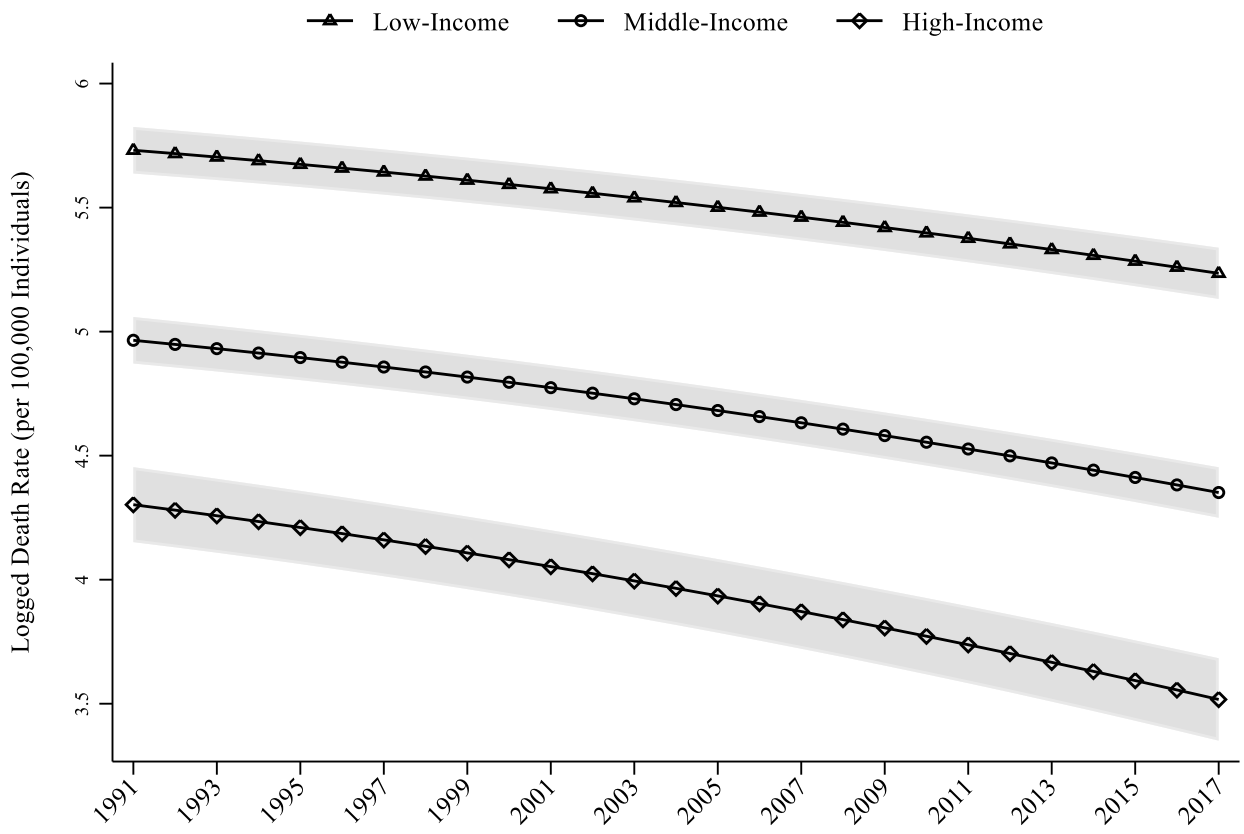


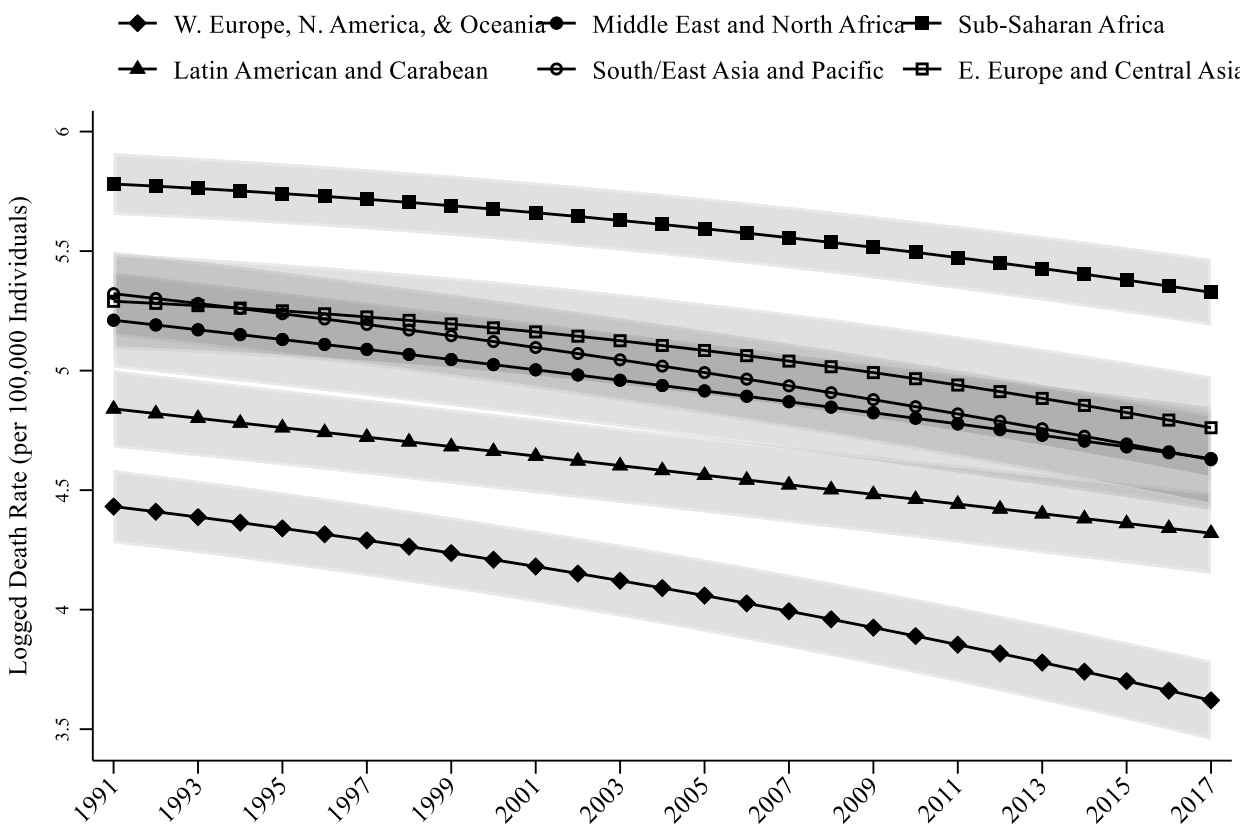
Figure 5 illustrates the trajectories of death rate attributable to air pollution across countries' geographic locations as a time-invariant independent variable (see Model 3 in Appendix Table A3-3). As we can learn from the effects of geographic location on the intercept,

on average, all areas have higher starting points of death rate attributable to air pollution relative to Western Europe, North America, and Oceania – or the Global North (the reference category). Sub-Saharan Africa has the highest starting point of death rates attributable to air pollution. This category's effect on the slope is positive and statistically significant, suggesting that the rate of decline for sub-Saharan African countries is significantly slower than Western European, North American, and Oceanic nations. This is also true for Eastern European and Central Asian (former communist) nations. Other groups of countries have positive and statistically significant quadratic terms, suggesting that relative to the countries of Western Europe, North America, and Oceana (Global North), all other regions are experiencing slower declines in death rates attributable to air pollution.

To further investigate the relevance of ecological modernization and ecologically unequal exchange, I condition the growth trajectories on time-varying independent variables (for full models, see Appendix Table A3-4). Figure 6 shows the estimated effects of time-varying independent variables on the death rate attributable to air pollution. As shown in Model 1 in this figure, export to high-income countries, as a time-varying measure of ecologically unequal exchange, significantly increases the death rate attributable to air pollution by a factor of 0.092. Moreover, economic growth in terms of increased GDP per capita decreases the death rate attributable to air pollution by a factor of 0.039. To make these effects more concrete, and since both the dependent and independent variables are logged (i.e., this is an elastic model), we can conclude that, on average, a 1% increase in export to high-income countries increases the death rate attributable to air pollution by 0.092% while the same increase in GDP per capita decreases the death rate attributable to air pollution by 0.056%. These observations provide support for the

general arguments of both ecologically unequal exchange and ecological modernization, albeit with a difference in magnitudes of the effects.

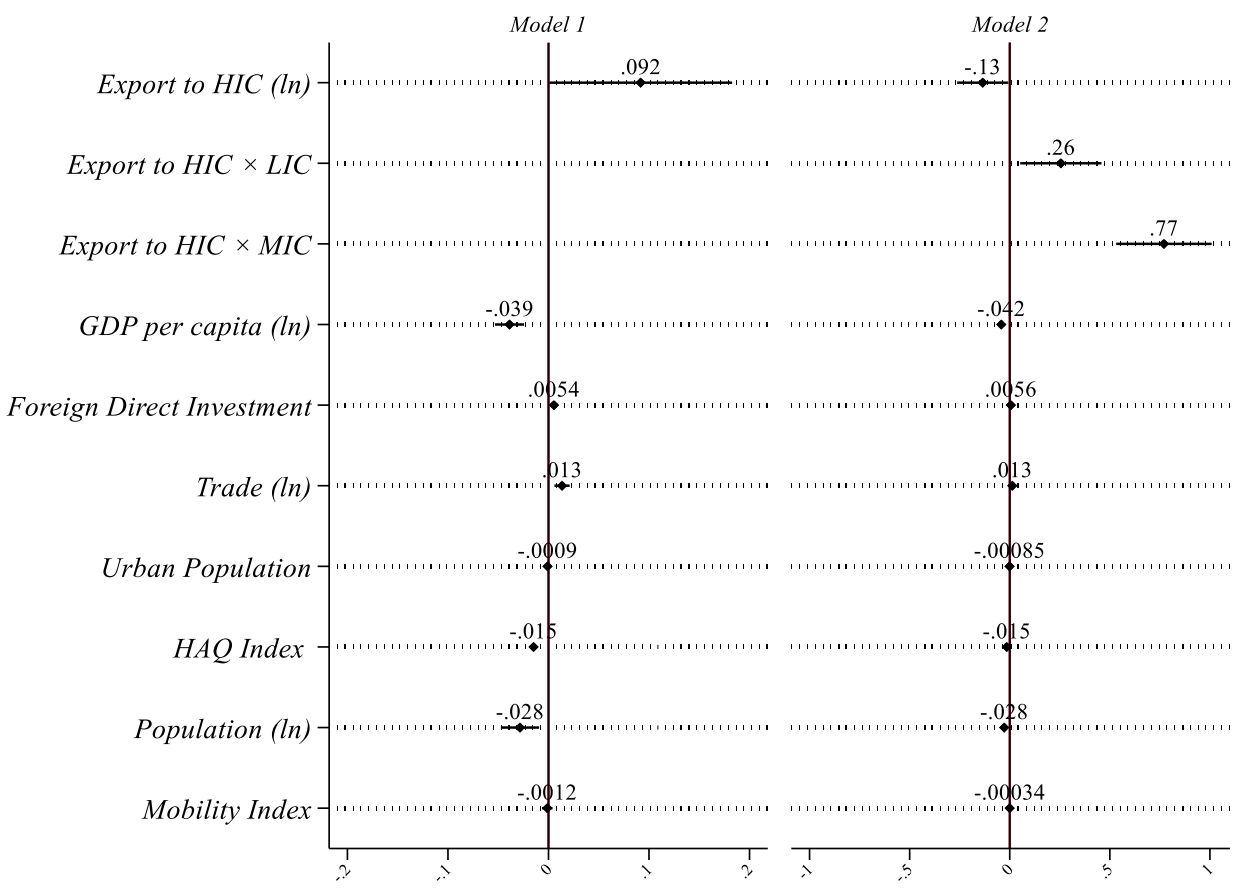
Figure 5. Trajectories of Death Rate Attributable to Air Pollution by Geographic Location of Countries



Nevertheless, other time-varying factors shown in Model 1 in Figure 6 tend to support the general argument of the ecologically unequal exchange theory since both FDI and trade liberalization – proxies for dependency, globalization, and incorporation into the world economy – are found to increase death rate attributable to air pollution significantly. The HAQ has a negative and statistically significant impact, suggesting that greater access and higher quality of health care in a nation significantly decrease the death rate attributable to air pollution. The population's effect is negative and statistically significant, while urbanization and the mobility

index do not have statistically significant relationships with the death rate attributable to air pollution.

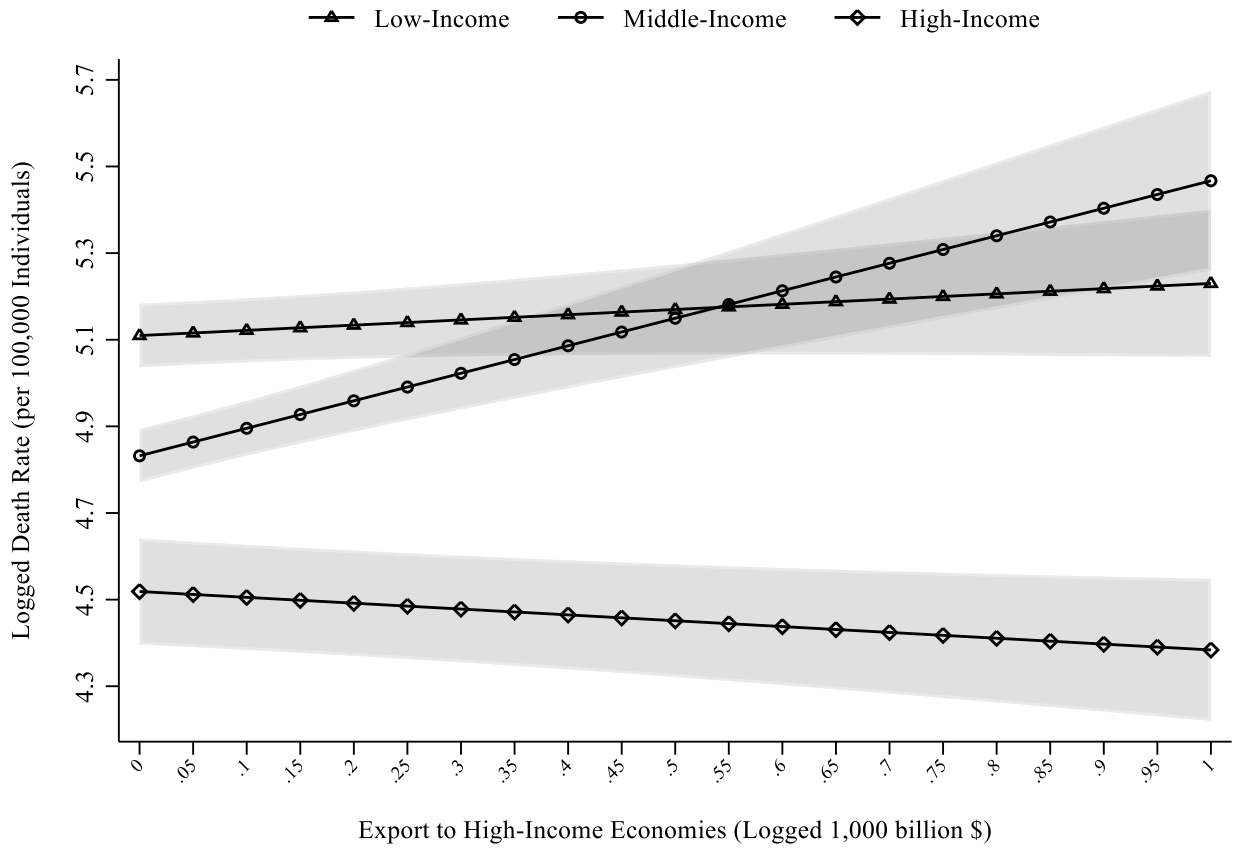
Figure 6. Estimated Effects of Time-Varying Independent Variables on Death Rate Attributable to Air Pollution



Model 2 in Figure 6 introduces the interaction effects of export to high-income countries by the level of national income. Controlled by the interaction terms, the main effect of export to high-income countries captures the impact for the reference category (i.e., high-income nations). Moreover, both interaction terms are also statistically significant, although in the opposite direction to the main effect. These effects suggest that export to high-income countries decreases the death rate attributable to air pollution in high-income nations. However, export to high-income countries increases the death rate attributable to air pollution within both the middle- and

low-income countries. According to this model, a 1% increase in export to high-income countries decreases the death rate attributable to air pollution by 0.135% in high-income countries while increasing the death rate attributable to air pollution by 0.255% and 0.770%, respectively, in low- and middle-income countries. Figure 7 illustrates these interaction effects.

Figure 7. Death Rate Attributable to Air Pollution by Export to High-Income Economies Across the Level of National Income



As shown in Figure 7, increased exports to high-income economies decrease death rates attributable to air pollution in high-income countries while increasing death rates in low- and middle-income nations. The confidence intervals for middle- and low-income countries overlap. However, a formal hypothesis test (Chi2 = 39.50, df = 2, $p < 0.0001$) suggests that these effects are jointly significant, meaning that middle- and low-income countries, together, are

experiencing an increase in death rates attributable to air pollution as they increase their export to high-income economies.

Summary

In this chapter, I examined the cross-national heterogeneity in trajectories of the death rate attributable to air pollution as an indicator of global environmental inequality. For my analyses, I used GCMs that effectively integrate (see Chapter 2: elements of different theories (i.e., ecological modernization and ecologically unequal exchange) developed to explain cross-national disparities in environmental degradation. Results support the general argument of the ecologically unequal exchange theory, reifying the unequal structure of the global economy and trade system, which results in an imbalanced distribution of devastating environmental outcomes predominantly in the Global South.

GCMs also show that increased export to high-income economies – a proxy for the ecologically unequal exchange and an indicator of the offshoring of polluting industrial production to low- and middle-income countries – results in increased mortality rates attributable to air pollution. In other words, while industrial production processes continue to be relocated to lower-income countries, death rates attributable to air pollution in these nations are not decreasing as fast as in higher-income countries. This can be one of the primary mechanisms through which environmental inequalities, at least in terms of the health risks associated with ambient air pollution, persist in the world, while the Global South is forced to bear the burden of higher mortality rates from this inequality.

Even though industrial manufacturing processes attempt to become more ecologically modernized, the deadly consequences of ambient air pollution persist in some regions of the world, particularly Africa and Asia. Results presented in this chapter strongly suggest that

development, growth, and modernization in poorer areas of the world must include ecological considerations initially and not solely as future promises of technological innovation transforming production methods. Modernization and ecological sustainability must co-occur to lessen the unequal distribution of environmental burdens, including consistently higher death rates attributable to air pollution in low-income nations. A slower decline in death rates attributable to air pollution in the Global South is at least partially due to the unequal structure of the world economy and the global trade system.

In the end, considering ecologically unequal exchange, future research must take seriously the health consequences of not only air pollution but also the impacts of externalizing industrial production on the local land and water purity. National governments, as well as international governmental and non-governmental organizations, need to reconsider the externalities of offshoring industrial production and ecologically unequal exchange; otherwise, the cost will be paid for in human lives.

Chapter 4: The Economy – Foreign Direct Investment and Income Inequality

The global disparity in the distribution of income is large and consistent. According to the World Inequality Report (Chancel et al. 2021), in 2021, the top 10% of the richest people earned approximately 52% of the global income, while the bottom 50% of the global population only earned around 8.5% of the total revenue. The same report suggests that since between-country income inequality has decreased over the past two decades, this persistent global income gap is primarily due to increasing income inequality within countries (Chancel et al. 2021). Literature shows that income inequality is related to a variety of adverse outcomes, including but not limited to poverty, depressed economic growth, poor health, mass incarceration, violent crime rates, and human rights violations (Clark 2020; Pickett and Wilkinson 2015; Nolan et al. 2014; Fosu 2010; Landman and Larizza 2009; Ostby et al. 2009; Barro 2008 Keefer and Knack 2002). Multiple factors have been identified in the Nielsen–Alderson core model (Nielsen 1994; Nielsen and Alderson, 1995) as contributing to income inequality within nations. Foreign direct investment (FDI) is the one over which there is no sign of consensus between scholars (Huang et al. 2020).

Theoretically, the proponents of endogenous growth and modernization have posited that at the early stages of development, the introduction of foreign capital (e.g., FDI) into the economy of the host country can increase income inequality through shifting the employment from the agricultural sector, where wages are traditionally low to the industrial sector marked by higher-paying opportunities. However, as more labor shifts to the industrial sector, income distribution becomes more even – the phenomenon referred to as the Kuznets curve (Kuznets 1955; Aghion and Howitt 1998). Therefore, from this perspective, while FDI in the short run might increase income inequality in developing countries, in the long run, it will improve income

distribution within these nations. Nevertheless, the literature suggests that as economic growth continues and countries begin to shift from industrial to the service economy, economies will experience a "Great U-Turn" as income inequality starts to rise again (Harrison and Bluestone 1988; Alderson and Nielsen 2002; Huang et al. 2020).

On the other hand, the proponents of the dependency/world-systems perspective posit that the dependence of developing countries on foreign capital would increase income inequality by distorting the labor structure within the host economies (Evans and Timberlake 1980). From this perspective, while the FDI can boost economic growth in developing countries, foreign investment will most likely go into more capital-intensive activities where a small portion of total workers (i.e., highly skilled workers) are employed. The introduction of new technologies by FDI will simultaneously displace traditionally unskilled workers through automation of processes and increase the demand for more educated/skilled workers who can operate with new technologies. Overall, this perspective argues that developing nations' reliance on FDI for growth will distort the local economy, widen the skilled vs. unskilled wage gap, and thus increase income inequality (Lee et al. 2007; Kaulihowa and Adjasi 2018; Mihaylova 2015; Pigato 2000; Adams 2009).

Previous empirical studies on the FDI – income inequality nexus have found mixed results, including a positive effect (exacerbating inequality) (e.g., Choi 2006; Jaumotte et al. 2013; Asteriou et al. 2014), no effect (e.g., Sylwester 2005; Bussmann et al. 2005), and negative (improving inequality) either directly or indirectly through boosting economic growth (e.g., Jensen and Rosas 2007; Fazaalloh 2019). Some scholars have argued that the impact of FDI on income inequality is location specific as the impacts of the inflow of FDI can only be observed in particular regions (e.g., East/Southeast Asia) (Pan-Long 1995). Nevertheless, more recent studies

show that the impact of FDI on income inequality is significant in other regions such as Central and Eastern Europe, Latin America, and Africa (e.g., Mahutga and Bandelj 2008; Herzer and Nunnenkamp 2011; Herzer et al. 2014; Kaulihowa and Adjasi 2018; Mihaylova 2015).

Several studies have suggested that other factors moderate the effect of FDI on income inequality. For example, there is evidence that the deteriorating impact of FDI on within-nation income distribution lessens with increased mass education and economic development (Mihaylova 2015). Moreover, previous research suggests that when the size of the public sector (government) is small, FDI can lead to increased income inequality while it has the potential to improve inequality in income in countries with larger public sectors (Lee et al. 2007). Political (e.g., instability), economic (e.g., inflation), and financial (e.g., currency fluctuation) risks can also moderate the impact of FDI on income inequality as FDI is found to deteriorate inequality under conditions of higher risks while alleviating inequality within more stable and risk-free economies (Wang et al. 2021).

Human capital is another factor that moderates the impact of FDI on income inequality. Overall, the human capital theory posits that education and training can lead to enhanced economic outcomes at the individual (micro), organizational (meso), and national (macro) levels (Bae and Patterson 2014). At the macro level, through expanding growth opportunities (i.e., education and training) for a significant portion of the population, particularly in nations with lower average human capital, FDI can improve inequality in income distribution. On the other hand, FDI in countries marked by higher human capital tends to benefit the rich at the expense of the poor, thus contributing to increased income inequality (Lin et al. 2013). On the contrary, there is also evidence that inward FDI stock, mainly through widening the domestic skilled-unskilled wage gap, tends to increase income inequality in developing countries. However, for

already developed and advanced economies, where most workers are skilled, FDI can have a homogenizing impact on wages, leading to decreased income inequality (Figini and Go¨ rg 2011).

Furthermore, several studies suggest that the impact of FDI on income inequality can depend on absorptive capacity – a conceptual notion refereeing to countries' level of maturity in technologies, financial systems, infrastructures, and human capital (Clark et al. 2011). Research shows that FDI tends to decrease income inequality in developed countries, marked by higher levels of absorptive capacity while increasing income inequality in developing countries (Wu and Hsu 2012; Cho and Ramirez 2016; Yeboua 2019). Therefore, one can argue that the effect of FDI on income inequality differs between developed and developing countries. Advanced economies, due to their higher absorptive capacity, can fully integrate FDI and, while they might experience an increase in income inequality at first, will see a decline in income inequality in the long run. Thus, the first hypothesis I aim to test through my analyses is that *FDI's curvilinear – or the inverted U-shaped – impact on income inequality can only be observed in developed countries (Hypothesis I).*

Furthermore, previous studies highlight the importance of studying the differing impact of FDI for developed and developing countries, as well as the distribution of FDI between sectors of the economy (Clark 2020; Bogliaccini and Egan 2017; Basu and Guariglia 2007). Previous studies show that one of the mechanisms through which FDI can lead to increased income inequality is contributing to within-sector inequality by widening the wage gap between domestic and foreign-owned businesses, which tend to rely on high-paid skilled labor (Huynh 2021; Farhan et al. 2014). Another possible mechanism through which FDI can increase income inequality is by widening the between-sector inequality. The *disarticulation* of the host economy

through foreign capital penetration refers to a series of negative outcomes, including but not limited to foreign firms' tax evasion, depressed local businesses, and the lack of reinvestment and linkages to the domestic economy (Dixon and Boswell 1996; Firebaugh 1992).

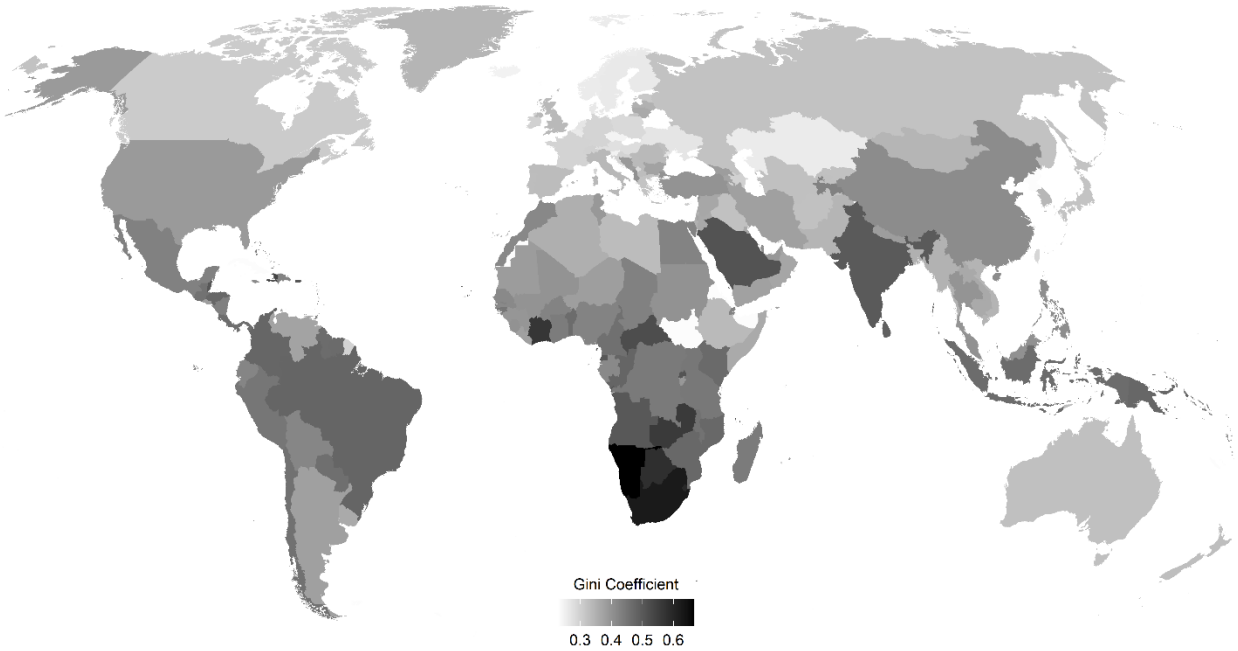
All these processes can lead to a situation where one sector (the one that is the receiver of foreign capital) would overgrow while other sectors lag. The concentration of FDI in one sector of the economy, thus, can boost the early stages of either the Kuznets curve (FDI concentrated in the secondary sector) or the Great U-Turn (FDI concentrated in the tertiary sector), both of which have a positive association with increased income inequality. The concentration of FDI in the primary sector can also cause increased income inequality through enlarging the share of labor in low-paying occupations relative to small portions of high-paying jobs in the secondary and tertiary sectors. Therefore, in this study, I also aim to test the hypothesis that *an uneven distribution of foreign capital between sectors can lead to increased income inequality by contributing to both within-sector and between-sector wage disparities (Hypothesis II).*

Data and Measurements

The focal dependent variable in this chapter is within-nation income inequality. I use the Gini coefficient as a measure of within-nation income inequality extracted from the Standardized World Income Inequality Database (SWIID v9.0) (Solt 2020). As a widely used source of information on income inequality in sociological literature (Clark 2020; Hekmatpour 2020; Kerrissey 2015; Cole 2015), SWIID provides estimates of the Gini coefficient for the market (pre-tax) and net (post-tax) income. Following Clark (2020), I use the Gini coefficients of net income in order to account for the role of the governments and policies in shaping income inequality within countries. Figure 8 shows between-country variations in within-nation income inequality (the Gini Coefficient). Visually, we can learn that there is heterogeneity in the

distribution of income inequality as countries of the Global North appear to be enjoying lower Gini coefficients compared to the nations in the South.

Figure 8. Within-Nation Income Inequality Measured by the Gini Coefficient - 2019



The analyses presented in this chapter come from a series of growth curve models (GCMs) controlled for the impact of both time-invariant and time-varying independent variables. Two time-invariant independent variables in this study are: 1) nations' geographic location, and 2) OECD countries. I include these measures in models to account for the observation by previous research that some of the trends and mechanisms pertaining to income inequality appear to be specific to either a region of the world (Nunn 2008; Pan-Long 1995) or just the affluent countries (Kollmeyer and Pichler 2013; Alderson and Nielsen 2002). As for time-varying independent variables, I follow Clark's (2020) modification of the original Nielsen–Alderson core model (Nielsen 1994; Nielsen and Alderson, 1995).

The main focus of this chapter is on the impact of foreign direct investment (FDI), one of the elements of the Nielsen-Alderson core model. For the first set of analyses, I use the stock of the FDI as the percent share of countries' GDP using the information provided by the United Nations Conference on Trade and Development (UNCTAD). For the second set of analyses, I use data from the Investment Map of the International Trade Center (ITC)[1], which uses information provided by local (e.g., central banks, national statistical offices, departments of trade and investment, etc.), regional (Association of Southeast Asian Nations – ASEAN, Common Market for Eastern and Southern Africa – COMESA, etc.), and international (OECD, IMF, and UNCTAD) institutions and organizations to break down the stock of FDI into different types of economic activities within three sectors of the receiving economy: 1) primary (i.e., agriculture, fishing, forestry, mining, etc.), 2) secondary (i.e., manufacturing), and 3) tertiary (i.e., service). In cases where the sum of the stock of FDI divided between three sectors does not add up to the total stock of FDI, the Investment Map assigns the difference to a fourth category named "Unspecified FDI." [2] In the final sample, this unspecified category does not exceed 30% of the total stock of FDI for all observations.

Sector pluralism is an addition to the core model by Clark (2020), which captures the between-sector income disparities in an economy. I create this measure as the product of each economy's percent share of employment in agricultural, industrial, and service sectors (sector pluralism = % share of workers in agriculture × % share of workers in industry × % share of workers in service). Larger sector pluralism means that employment is spread out between sectors (greater heterogeneity), while smaller products indicate a more homogeneous distribution

[1] www.investmentmap.org/
[2] For a detailed discussion of the methodology used by the ITC Investment Map refer to: www.investmentmap.org/methodology-fdi-data

of labor between sectors. Data to create this measure comes from the World Development Indicators (World Bank 2021). In addition to sector pluralism, I also control the share of workers in agricultural and industrial sectors to account for within-sector income disparities. Since the sum of the shares of workers in three sectors adds up to 1, here I exclude the percent share of workers in the service sector as the reference category.

Using data provided by the World Development Indicators (World Bank 2021), my GCMs are controlled for the effect of population growth (crude birth rate minus crude death rate), tertiary education (the percent of students enrolled in post-secondary educational institutions), trade openness (the total volume of trade, import and export, as percent share of GDP), migrant population (percent share of the population who are foreign-born[1]), female political representation (percent share of parliamentary seats held by women), female labor force participation (percent share of women age 15 and older in the formal labor force), and unemployment rate (percent share of the working-age population who are unemployed but seeking employment).

Moreover, using data from the Fraser Institute's *Economic Freedom of the World* (Gwartney et al. 2021), I control the size of the government as an index which measures the level of government's intervention in the economy through consumption, transfers and subsidies, investment, taxation, and ownership of assets. In my analyses, this index ranges from 0 (low intervention) to 1 (high intervention).[2] Using the same source, I control my analyses for the impact of labor regulations. The Economic Freedom of the World considers many factors to

[1] World Bank data on this measure reports every five years. Thus, following Clark (2020), I replaced missing values by using linear interpolation.
[2] I have reverse coded the original information in a way that higher values show greater intervention.

measure labor regulation, including hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. Similar to the size of the government, this index ranges from 0 (low regulation) to 1 (high regulation).[1] Descriptive statistics for the dependent variable (Gini) and time-varying and time-invariant variables can be found in Appendix Table A4-1.

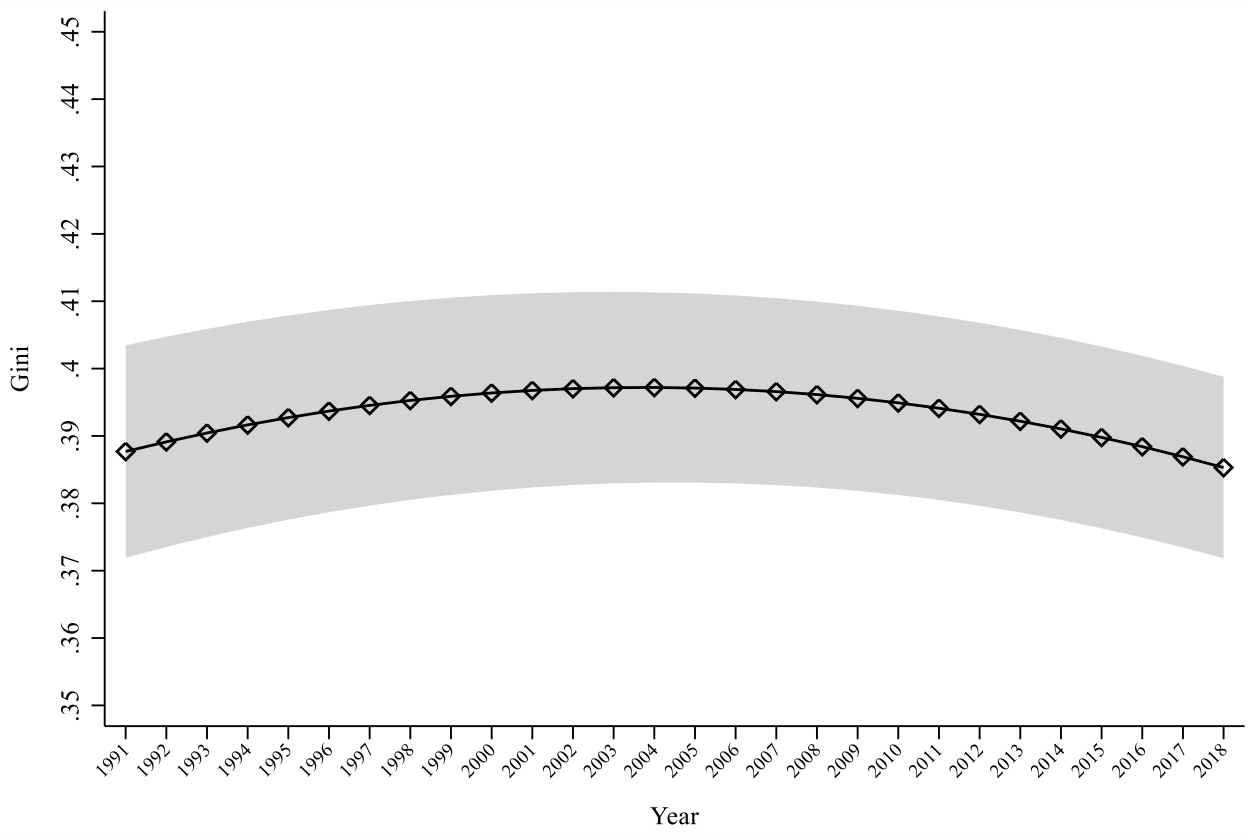
Findings

Figure 9 illustrates the overall (average) trajectory of the Gini coefficient estimated by an unconditional growth curve model (see Model 1 in Appendix Table A4-2). As can be seen in this figure, the global average of intercepts (the average of all Gini coefficients in 1991) is around 0.39. A positive slope and a negative quadratic term, both statistically significant, suggest that the overall evolution of the Gini coefficient in this sample of the world is curvilinear and follows an inverted U-shape path.

Therefore, as we can see in Figure 9, the average of the Gini coefficient first increases, then plateaus around the years 2005-2006, and finally starts to decline. This is consistent with prior research suggesting that within-country income inequality began to stabilize in the early years of the 2000s, and started to decline in many nations (Clark 2020). The results of a formal hypothesis test suggest that while the estimated values for the two tails of the trajectory are not significantly different from one another (Chi2 = .34, df = 1, p = .562), mutually, they are significantly different from the middle point of the curve (Chi2 = 396.53, df = 2, p <0.001).

[1] I have reverse coded this index.

Figure 9. Estimated Overall Trajectory of the Gini Coefficient by an Unconditional GCM

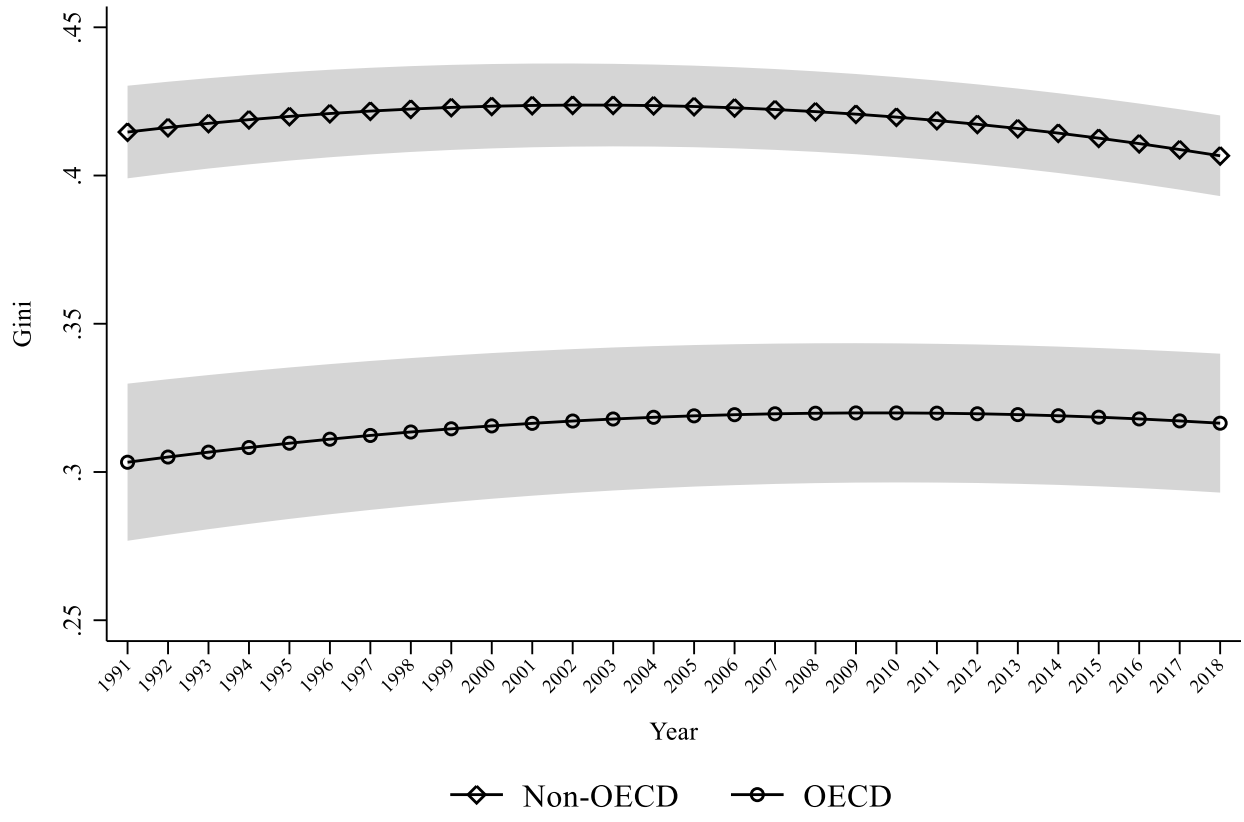


N = 2,095 observations nested in 141 countries (1991-2018)
Data Source: Standardized World Income Inequality Database (SWIID v9.0)

The next step in my analysis is to condition the GCMs on time-invariant variables. First, to see if the Gini coefficient trajectories are different for developed and developing nations, I condition the GCMs on a binary indicator for OECD countries. A likelihood ratio test performed to compare model fit between the unconditional GCM and the GCM conditioned on the binary indicator of OECD reveals that introducing this extra complication improves the model's overall fit (Chi2 = 58.92, df = 3, p <0.001). In other words, a GCM conditioned on OECD as a binary time-invariant variable better fits the data relative to an unconditional GCM (see Model 2 in Appendix Table A4-2). Figure 10 illustrates the estimated trajectories of the Gini Coefficient for OECD and non-OECD countries. As we can see in this figure, there is a significant gap between the two groups of countries.

Moreover, from 1991 to 2018, non-OECD countries constantly suffer from higher levels of income inequality relative to OECD nations. However, while there is no difference between the positive slopes estimated for these two groups based on the GCM, the negative quadratic term estimated for non-OECD countries is greater in magnitude, which translates to a faster rate of decline in the Gini coefficient towards the end of the panel. Conversely, the OECD countries show a slow increase in the average Gini coefficient from 1991 to 2018, which appears to level toward the end of the panel.

Figure 10. Estimated Trajectories of the Gini Coefficient for OECD and Non-OECD Countries



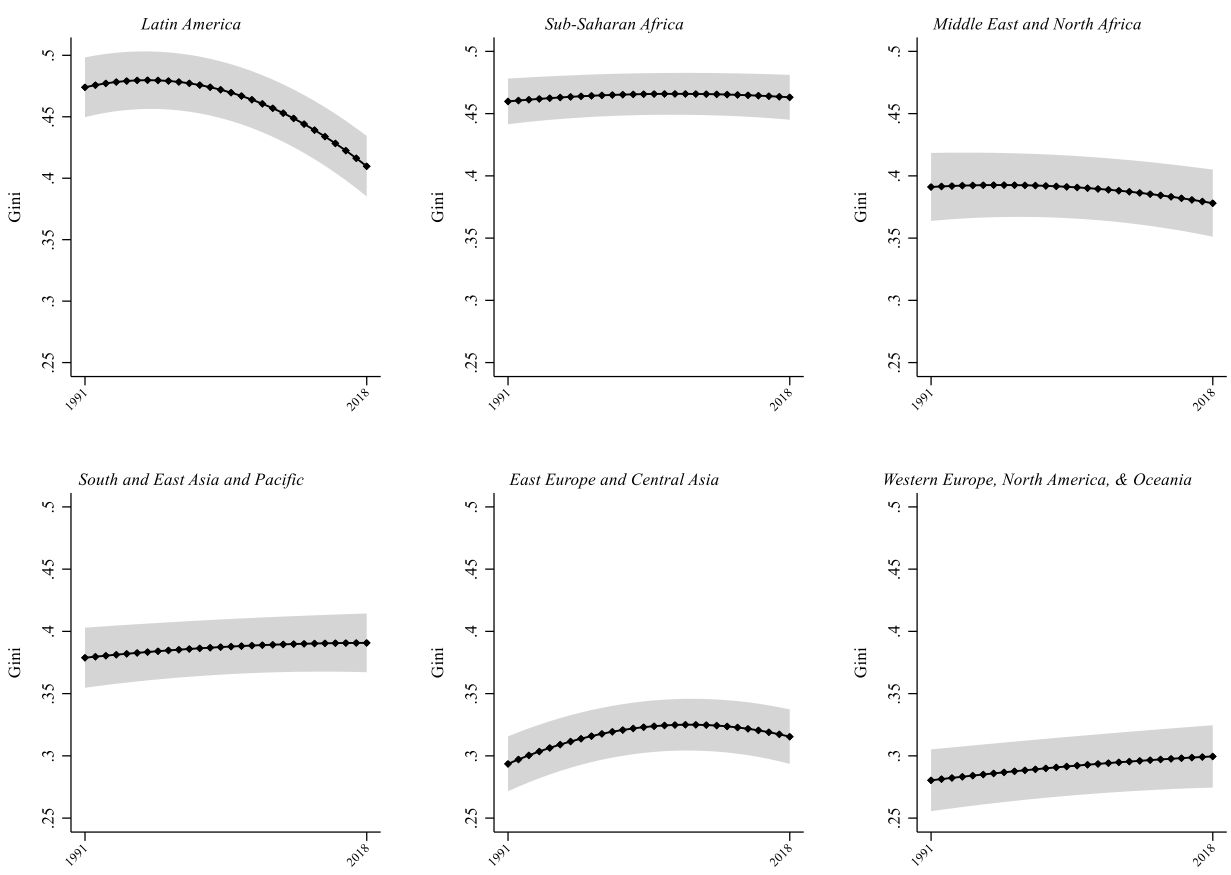
N = 2,095 observations nested in 141 countries (1991-2018)
Data Source: Standardized World Income Inequality Database (SWIID v9.0)

Figure 11 illustrates estimated trajectories of the Gini coefficient across regions of the world (see Model 3 in Appendix Table A4-2). Similar to the model conditioned on OECD as a

binary time-invariant variable, a likelihood ratio test (Chi2 = 549.11, df = 15, p <0.001) reveals that the inclusion of regions as time-invariant variables significantly improves the model fit relative to the unconditional GCM. Among the six regional categories, Figure 11 shows that Sub-Saharan African and Latin American countries have the highest intercepts (starting points), followed by the nations of the Middle East and North Africa (MENA), South and East Asia, East Europe and Central Asia (former communist countries), and Western Europe, North America and Oceania (Global North).

In terms of the evolution of the Gini coefficient over time, Figure 11 shows that Latin American countries, despite their higher starting point, have a faster rate of decline compared to other groups due to a negative and statistically significant interaction with the quadratic term (see Model 3 in Appendix Table A4-2). The average Gini coefficient for these countries dropped by approximately 7 points. A formal hypothesis test confirms that this decline is in fact statistically significant (Chi2 = 62.84, df = 1, p <0.001). On the other hand, Sub-Saharan African countries show a high level of income inequality that appears to be stable over time (no significant difference between the starting and the end point).

Figure 11. Estimated Trajectories of the Gini Coefficient Across Regions of the World



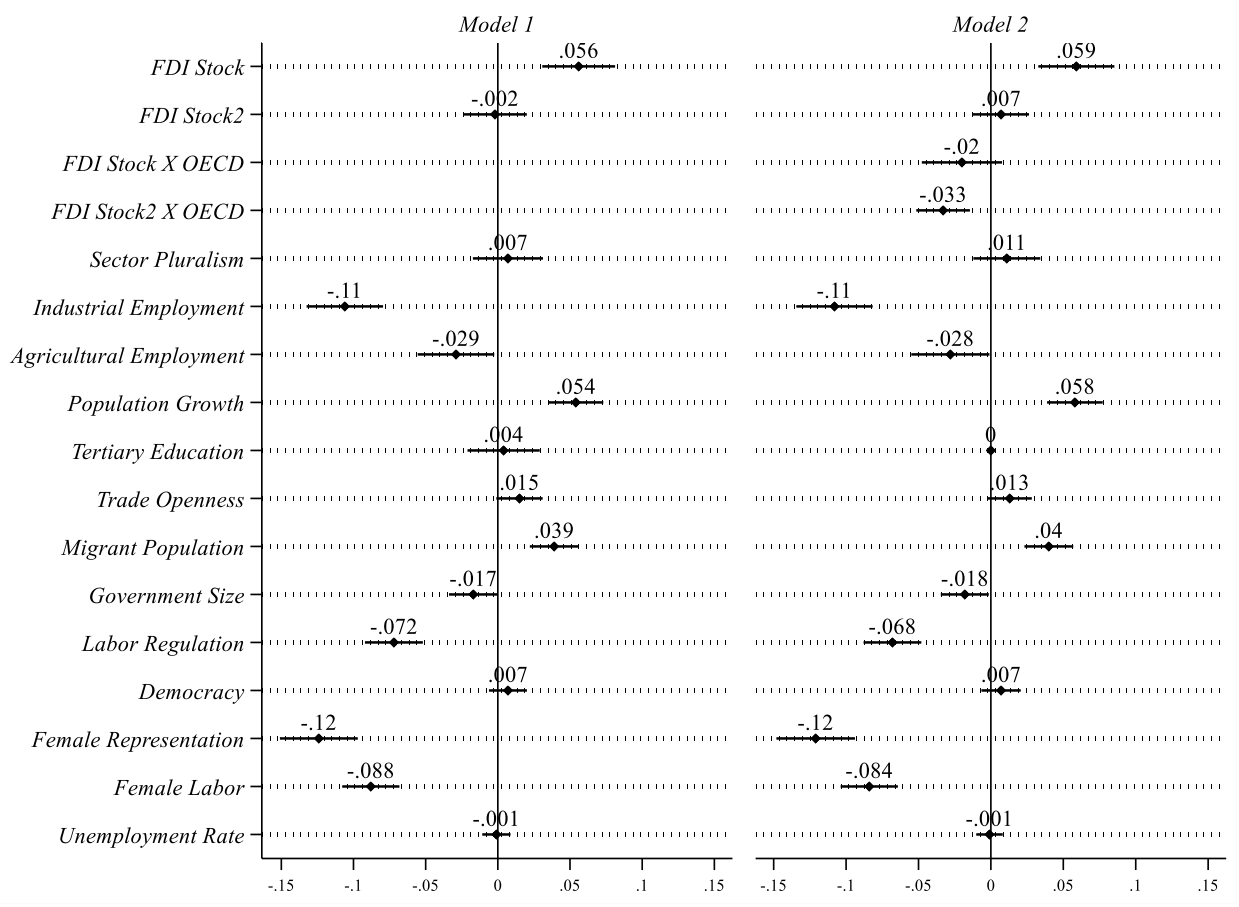
N = 2,095 observations nested in 141 countries (1991-2018)
Data Source: Standardized World Income Inequality Database (SWIID v9.0)

Moreover, from Figure 11, MENA countries show a slow rate of decline in income inequality. However, this effect is not statistically significant. This is also the case for the South and East Asian countries. Eastern European and Central Asian countries (former communist bloc) show a curvilinear and statistically significant trajectory of the Gini coefficient after 1991, suggesting an increase in income inequality after the collapse of the Soviet Union. This observation is well established in the literature (Kelley and Zagorski 2004; Heyns 2005; Mahutga and Bandelj 2008; Bandelj and Mahutga 2010).

The countries in Western Europe, North America, and Oceania (Global North), while having the lowest starting point (intercept), show a slow but statistically significant (Chi2 = 5.80,

df = 1, p <0.05) increase in the Gini coefficient from 1991 to 2018. This is consistent with the previous studies arguing that due to a variety of factors, including the decline of the manufacturing sector and labor unions, rising unemployment, and the emergence of service economies marked by higher wage gaps and low-paying and precarious jobs, the Global North is in the midst of experiencing the "Great U-Turn" in income inequality (Harrison and Bluestone, 1988; Bluestone and Harrison 1988; Alderson 1999; Alderson and Nielsen 2002; Lee 2005; Kollmeyer and Pichler 2013; Kwon 2014; Kollmeyer 2015; Clark 2020).

Figure 12. Estimated Effects of Time-Varying Independent Variables on Income Inequality (Gini)



N = 2,095 observations nested in 141 countries (1991-2018)
Data Source: Standardized World Income Inequality Database (SWIID v9.0), World Development Indicators (World Bank 2021), and Economic Freedom of the World (2021)

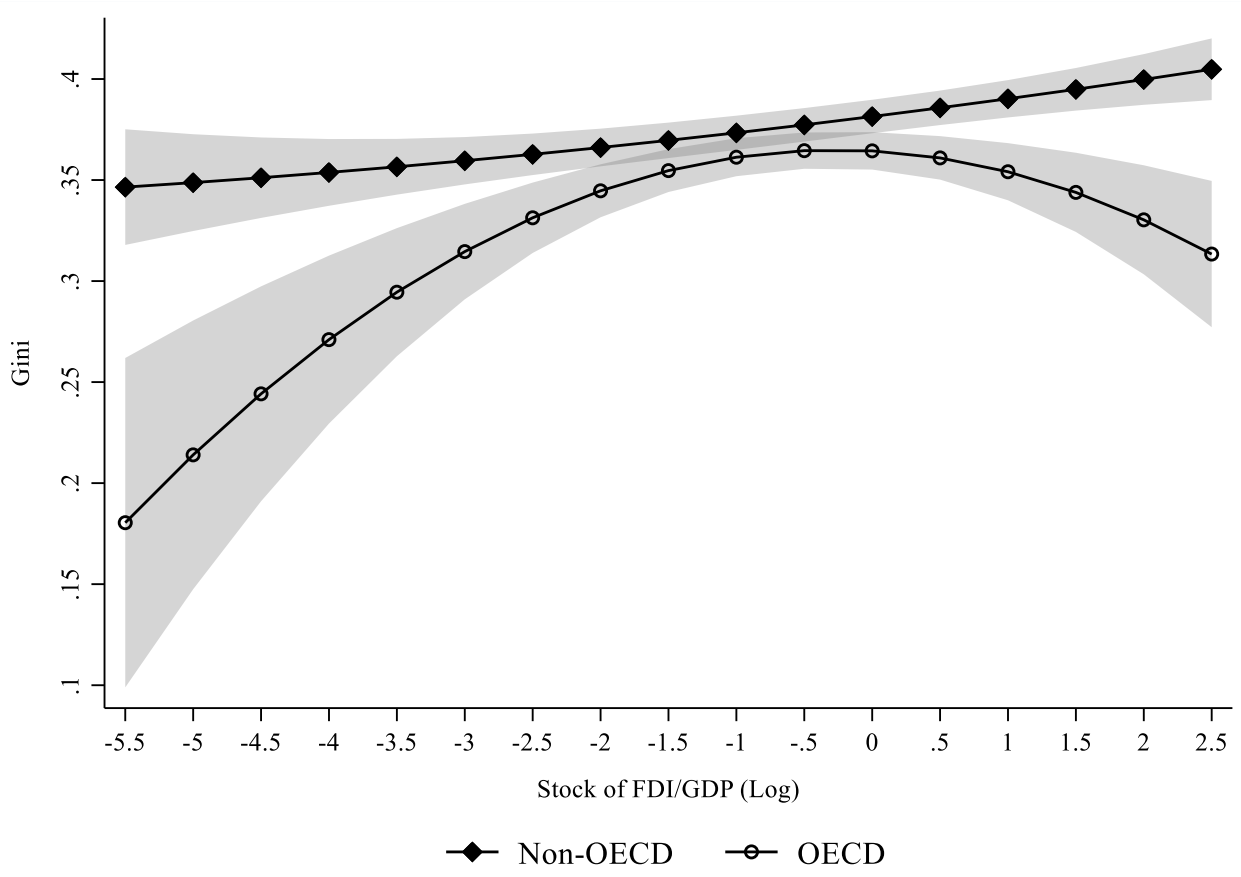
The next step in my analyses is to condition GCMs on time-varying independent variables. Figure 12 illustrates the coefficients estimated for time-varying independent variables (for full models, see Appendix Table A4-3). Model 1 in Figure 12 replicates Clark's (2020) study of the modified core model with more recent data and a different analytical strategy. As we can see from Model 1 in Figure 12, the stock of FDI has a curvilinear relationship (i.e., inverted U-shape) with the Gini coefficient (positive main effect and negative squared term). Model 2 interacts the effect of FDI with the binary OECD variable. As we can see, the main effect of the stock of FDI remains positive and statistically significant for non-OECD countries.

Nevertheless, the square of the FDI for OECD countries is negative and statistically significant. Figure 13 illustrates this interaction. As we can see in this figure, the effect of FDI on income inequality appears to follow a linear path for non-OECD nations, while the curvilinear impact of FDI on the Gini coefficient, suggested by previous studies (Huang et al. 2020; Aghion and Howitt 1998), can only be observed in advanced (OECD) countries. This can be due to the fact that already developed countries possess the absorptive capacity in terms of technology, infrastructure, labor organizations, and financial stability needed to fully and efficiently incorporate foreign investment in the local economy and ensure redistribution (Furceri and Loungani 2018; Wu and Hsu 2012), supporting *Hypothesis I* discussed in the previous section.

Among the other time-varying factors shown in Figure 12, an increase in the share of workers in both industrial and agricultural sectors, relative to the service sector, negatively affects income inequality, which is due to the fact that within-sector income inequality is higher in the service sector (Kwon 2014; Clark 2020). According to Model 1 in Figure 12, a 1% increase in the share of workers in the industrial sector decreases the Gini coefficient by 0.11%. Similarly, a 1% increase in the share of workers in the agricultural sector is associated with an

approximately 0.03% decline in the Gini coefficient. Population growth as a time-varying independent variable has a positive and statistically significant relationship with income inequality. Model 1 in Figure 12 predicts that a 1% increase in the size of the population will increase the Gini coefficient by 0.05%.

Figure 13. The Effect of FDI on Income Inequality for OECD and Non-OECD Countries.



N = 2,095 observations nested in 141 countries (1991-2018)
Data Source: Standardized World Income Inequality Database (SWIID v9.0), World Development Indicators (World Bank 2021), and Economic Freedom of the World (2021)

Migrant population size has a positive and statistically significant relationship with income inequality. As Model 1 in Figure 12 shows, a 1% increase in the size of the migrant (foreign-born) population increases the Gini coefficient by 0.04%. Conversely, the government size (i.e., the degree to which the state is involved in the economy) tends to reduce income

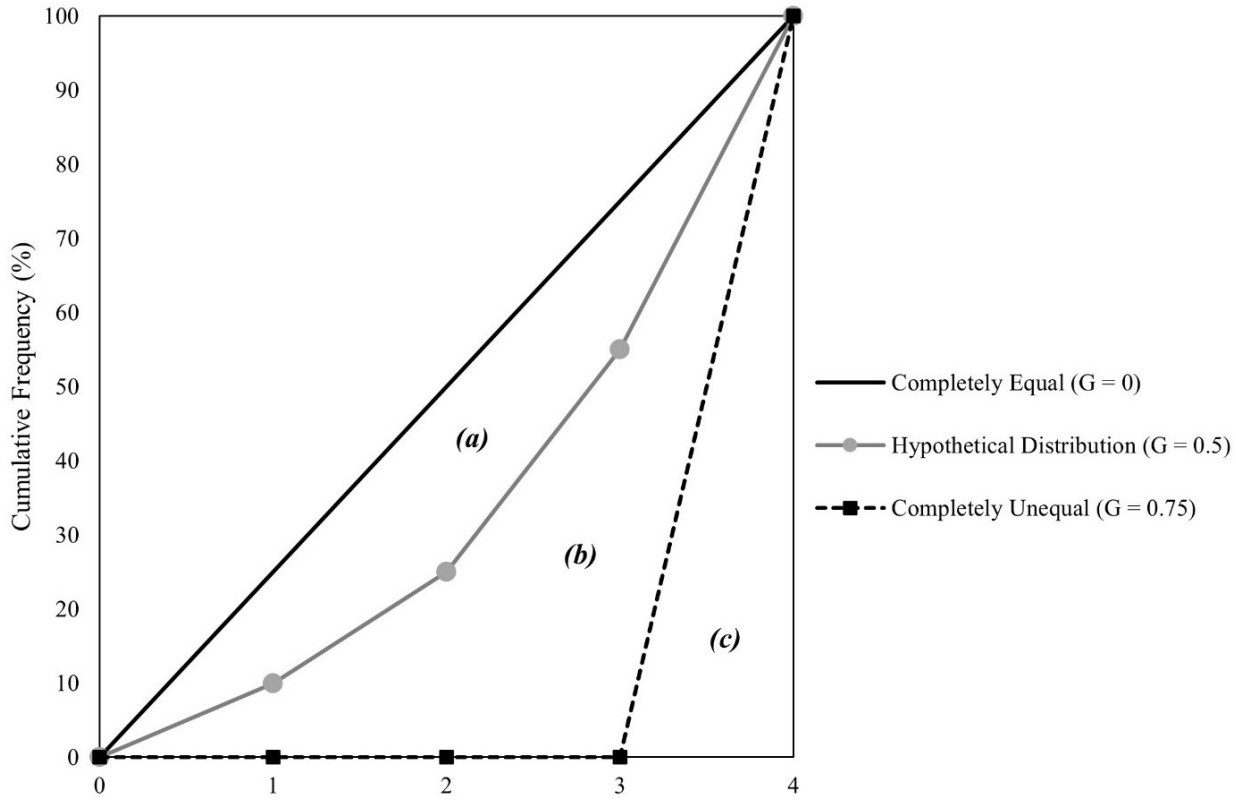
inequality within nations, as a 1% increase in the government size index is associated with an approximately 0.02% decrease in the Gini coefficient. Moreover, labor regulation, female representation, and female labor force participation are also predicted to reduce income inequality. Model 1 in Figure 12 suggests that a 1% increase in labor regulation index, female representation, and female labor force participation reduces the Gini coefficient by 0.07%, 0.12%, and 0.09%, respectively.

The second part of the analyses focuses on the sectoral distribution of FDI and its effects on income inequality. As discussed earlier, the literature is inconclusive regarding the impact of foreign capital on the Gini coefficient. Thus, scholars have called for a more nuanced analysis of the relationship between FDI and income inequality that takes into account the sectoral nature of foreign capital (Clark 2020) to test *Hypothesis II* discussed above. For this purpose, I use the information provided by the Investment Map of the International Trade Center (ITC), which includes a breakdown of FDI between three sectors of the economy. In addition to the share of FDI in each sector, I introduce two new indices to measure the evenness/unevenness of the distribution of FDI among the sectors of the economy.

The first index is called the FDI Pluralism Index. To create this measure, I follow Clark's (2020) rationale for the sector pluralism index. This measure simply multiplies the share of FDI in each sector. By definition, the product of the shares of FDI in each sector will yield a lower value if FDI is concentrated in one sector. For example, if 80% of FDI is concentrated in the secondary sector, while the share of FDI in the primary sector is only 5%, and the remaining 15% goes to the tertiary sector, the FDI Pluralism Index will be 6,000. On the other hand, in the case of more evenly distributed foreign capital (40% in the tertiary, 30% in the secondary, and 30% in the primary sector), the FDI Pluralism Index will yield a higher value (i.e., 72,000).

Therefore, higher values of the FDI Pluralism Index show a more even distribution of foreign capital in a host economy. So, considering the hypothesis above, the relationship between FDI Pluralism Index and income inequality (Gini) should be negative.

Figure 14. Schematic Illustration of Hypothetical Lorenz Curves and Corresponding Gini Coefficients for Four Categories.



The second measure I will use to capture the evenness of the distribution of FDI is called the FDI Sectoral Gini Coefficient. The Gini coefficient is the most frequently used measure of inequality or concentration in the distribution of a positive variable (Hong et al. 2018). The Gini coefficient equals the area between the Lorenz curve and the 45-degree line divided by the total are beneath the 45-degree line. In Figure 14, for example, for a hypothetical distribution (gray line), the Gini coefficient can be calculated by $G = \frac{a}{a+b+c}$. Moreover, as can be seen in Figure

14, in a hypothetical scenario where 100% of FDI goes to just one of the four categories (completely unequal distribution), the FDI Sectoral Gini Coefficient would be 0.75. On the other hand, if FDI is equally distributed between four categories – each 25%, the FDI Sectoral Gini Coefficient will be equal to zero (the 45-degree line). The Gini coefficient can also be calculated by this equation:

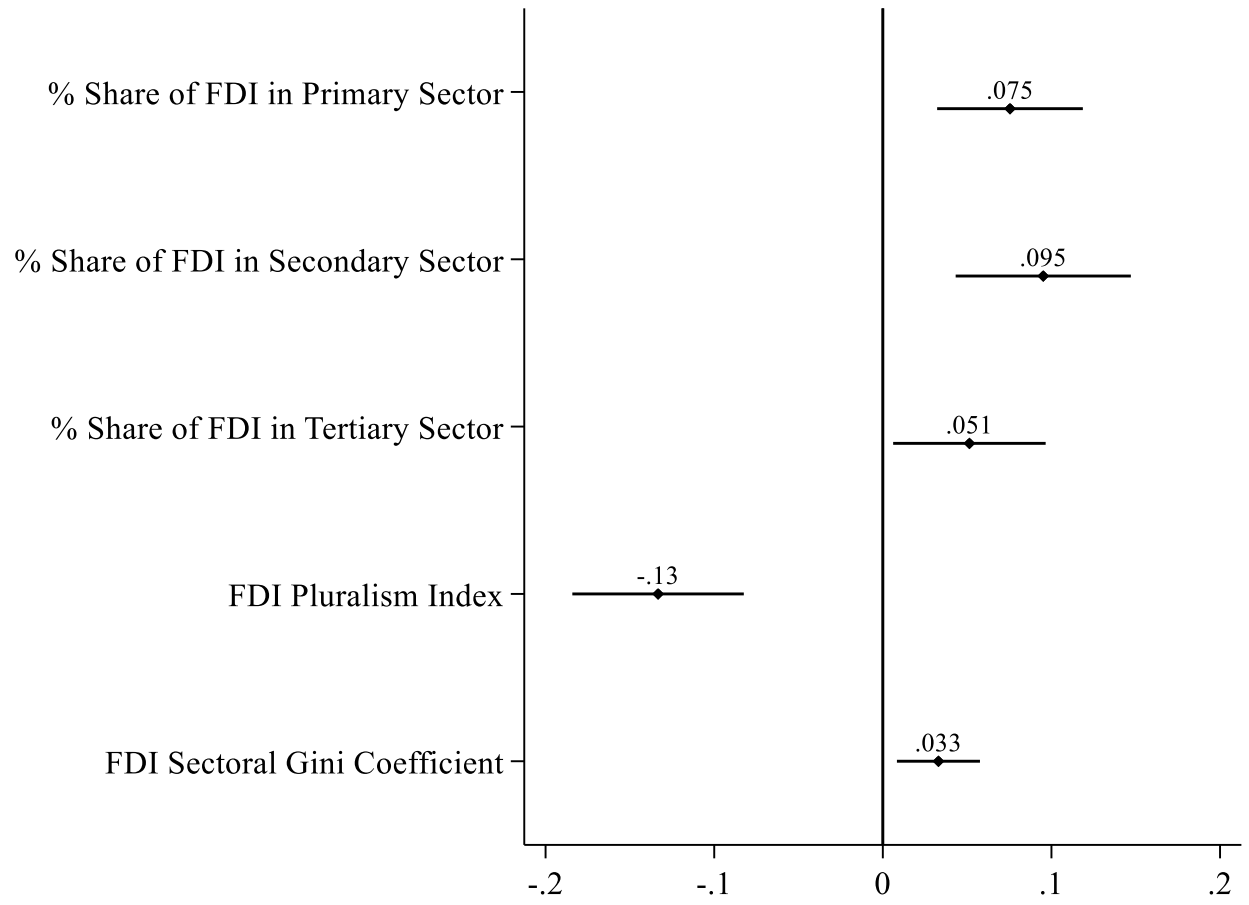
$$G_i = \frac{1}{n}(n + 1 - 2(\frac{\sum_i^n (n + 1 - i)y_j}{\sum_i^n y_j}))$$

Here, G_i is the FDI Sectoral Gini Coefficient for country-year observation i as a function of n, the number of categories or sectors (i.e., 4) and y_j is the share of FDI in each sector for that country-year. If the FDI Pluralism Index and FDI Sectoral Gini Coefficient are, in fact, measuring the same concept but in opposite directions, then there should have a strong but negative correlation (r = -0.62, p <0.001). The FDI Sectoral Gini Coefficient in the sample of this study ranges from 0.1 to 0.74, with a mean of 0.51 and a standard deviation of 0.11. For the analyses, I use a log transformation of the FDI Pluralism Index to correct the skewness in the distribution of this variable. The logged FDI Pluralism in the sample ranges from 0 to 12.77, with a mean of 5.04 and a standard deviation of 4.68. Data provided by the Investment Map of the ITC covers the period from 2000 to 2018 and is not reported for all countries. Thus, we see a decrease in the original sample size. The sample in the second set of analyses includes 405 country-year observations nested in 61 countries.

Figure 15 shows the estimated effects of the share of FDI in sectors, as well as the unequal distribution of FDI between sectors on income inequality. These results are produced by four different GCMs presented in Appendix Table A4-4. As we can see in Figure 15, an increase in the percent share of FDI in any of the three sectors, relative to "unspecified" as the reference category, significantly increases the Gini coefficient. More concretely, a 1% increase in the share

of FDI in the primary sector increases the Gini coefficient by 0.07%. Similarly, a 1% increase in the share of FDI in secondary and tertiary sectors increases the Gini coefficient by 0.09% and 0.05%, respectively. This can suggest that income inequality corresponds positively with the concentration of FDI in any sector of the economy. Therefore, one can argue for the favorability of a more even distribution of FDI between sectors with regard to income inequality.

Figure 15. The Effect of the Sectoral Distribution of FDI on Income Inequality from GCMs



N = 405 observations nested in 61 countries (2000-2018). Sectoral FDI Data from the International Trade Center (ITC)
The omitted category is "Unspecified FDI"

FDI Pluralism Index measures how unequally the foreign capital is distributed among the sectors of a receiving nation's economy. By definition, a higher FDI Pluralism Index indicates that foreign capital is more evenly distributed between the sectors. Thus, for the hypothesis that

the concentration of FDI in one sector increases income inequality to be supported, there should be a negative association between the Gini coefficient and FDI Pluralism Index. As shown in Figure 15, FDI Pluralism Index has a negative and statistically significant relationship with income inequality. A 1% increase in FDI Pluralism Index is associated with a 0.13% decline in the Gini coefficient.

FDI Sectoral Gini Coefficient is an alternative way to measure how evenly foreign capital is distributed between the sectors of an economy. By definition, a higher FDI Sectoral Gini Coefficient shows an inequality between sectors in terms of FDI. In other words, greater FDI Sectoral Gini Coefficients indicate more unequal distributions of foreign capital among the economic sectors. According to the results shown in Figure 15, the FDI Sectoral Gini Coefficient has a positive and statistically significant relationship with the Gini coefficient (income inequality). A 1% increase in the FDI Sectoral Gini Coefficient increases the Gini coefficient by 0.03%. This observation, coupled with the effect we saw for the FDI Pluralism Index, provides empirical support for the hypothesis that the concentration of foreign capital in one sector of the economy leads to increased income inequality. This increase in income inequality can be due to the disarticulation of the local economy by the introduction of foreign capital. A rapid growth caused by foreign investment in one sector of the economy can lead to a widening between-sector employment disparity, which in turn can increase income inequality since, on average, between-sector wage differences tend to be larger relative to within-sector income inequality (Clark 2020; Kwon 2014; Kuznets 1955).

Summary

In this chapter, I examined within-country income inequality. Using information from the Standardized World Income Inequality Database (SWIID v9.0) (Solt 2020) and other sources, I

developed a panel dataset that includes 4,189 country-year observations nested in 169 countries from 1991 to 2018. I used growth curve models (GCMs) that can effectively account for unit-specific variations in trajectories of the evolution of the dependent variable (i.e., income inequality here measured by the Gini coefficient) over time (see Chapter 2). In this chapter, I mainly focused on the impact of foreign direct investment on income inequality. The estimated overall (average) trajectory of the Gini coefficient from an unconditional GCM showed that the global average of within-country income inequality started to increase in the early 1990s and then began to decline around the mid-2000s (see Figure 9).

Results from conditional GCMs showed that this effect could be observed for both developed (here, the OECD) and developing (non-OECD) nations. However, a statistically significant and persistent gap between these two groups – developing countries suffering from higher levels of income inequality – was observed for the entire panel duration – from 1991 to 2018 (see Figure 10). Nevertheless, my results suggest that there is a greater heterogeneity in trajectories of within-nation income inequality between regions of the world (see Figure 11).

This chapter focuses on the effect of FDI on the Gini coefficient. I developed two hypotheses, which the empirical analyses set out to test. The first section of the study explored how the impact of FDI on income inequality differs between developed and developing countries. The GCMs showed that FDI, as a time-varying independent variable, tends to increase income inequality within nations. However, interaction effects show that while the positive impact of FDI on the Gini coefficient appears to be linear for non-OECD countries in the sample, in advanced economies (OECD countries), this effect is curvilinear and follows and inverted U-shaped path (see Figure 13). This confirmed *Hypothesis I*, which argued that, for the most part,

due to the differences in absorption capacity between developed and developing countries, the effect of FDI on income inequality might be different.

The second part of the study focused on FDI in different sectors of the host economy and its impact on income inequality. I argued that the concentration of FDI in one sector would distort the structure of the economy, leading to disarticulation and overgrowth of one sector, which in turn can lead to increased income inequality since between-sector income inequality appears to be greater than within-sector inequality. Therefore, I hypothesized (*Hypothesis II*) that uneven distribution of FDI between sectors will lead to increased income inequality. I developed and introduced two new measures to test this hypothesis: 1) FDI Pluralism Index and 2) FDI Sectoral Gini Coefficient. Both indices measure the level of concentration of FDI in one sector of the host economy, albeit with different scales and in opposite directions. Results from the GCMs showed that uneven distribution of FDI between sectors of the economy tends to exacerbate income inequality, supporting *Hypothesis II*.

This chapter attempted to shed some light on the relationship between foreign direct investment and income inequality, a highly debated topic in the literature, by using an empirical method that fully and effectively incorporates the elements of different theoretical perspectives. As discussed earlier in this chapter, despite an observed overall decline in income inequality within countries, this classic type of social inequality appears to persist within and between different nations and areas in the world. As I showed in this chapter, empirical studies of income inequality should go beyond traditional measures to provide a more comprehensive understanding of the effects of local or global forces that shape each nation's trajectory. Moreover, the findings in this chapter stress the importance of heterogeneity based on countries' level of development and the specific characteristics of different regions in the world. Future

research must delve into the impacts of external forces such as FDI and trade by highlighting the network structure and dynamics of the global economy. In a highly specialized global economy, it seems almost impossible to explain phenomena such as income inequality with a battery of variables, which are assumed to have unified effects within all nations and across different regions.

Chapter 5: The Polity - Globalization and Gender Gap in Political Empowerment

In the last couple of decades, significant progress has been made in closing the gender gap on many fronts, including but not limited to women's formal labor force participation and taking leadership positions in both industry and politics. Nevertheless, in 2022, the World Economic Forum (WEF) estimated that it would take 132 years to reach complete parity at the current rate of progress (World Economic Forum 2022). This estimation is based on an overall index created by the WEF that captures gender inequality at the country level in its four main manifestations: 1) economic participation and opportunity, 2) educational attainment, 3) health and survival, and 4) political empowerment. Among these four factors, the gap in political empowerment was the largest (22%) in 2022 and showed a slower rate of progress compared to the other three (World Economic Forum 2022).

Despite all the progress, there is evidence of persistent cross-cultural disparities in supporting women's rights and gender equality (Cole 2022; Cole and Geist 2018; Inglehart and Norris 2003; Okin 1999). Thus, some scholars have highlighted the importance of unique cultural contexts, particularly in terms of traditional and patriarchal attitudes that are typically rooted in religions and their teachings (Richards 2003; Norris and Inglehart 2001; Reynolds 1999; Paxton et al. 2006). Therefore, one must pay close attention to countries' unique cultural characteristics, particularly religion, when studying gender inequality. On the other hand, however, another theoretical stand – the world society theory – posits that there is a world culture – a set of agreed-upon standards for organizations, policies, and behaviors – that is becoming increasingly dominant at the global level (Meyer et al. 1997). Women's rights and

gender equality are two of the highly emphasized values in this world culture (Cole 2013; Ramirez et al. 1997).

From a world society perspective, norms and values associated with the world culture will eventually become internalized within national bureaucracies through international treaties between governments, as well as the collective efforts of a wide array of actors organized in intergovernmental and nongovernmental organizations (i.e., IGOs and NGOs) (Meyer et al. 1997; Finnemore and Sikkink 1998; Hulme and Fukuda-Parr 2009; Lechner and Boli 2008; Wotipka and Ramirez 2008). Previous research in world society literature provides abundant evidence that through political globalization, particularly governments' membership in international organizations, several norms, and values such as rationalism, democracy, individualism, secularism, environmentalism, and human rights will diffuse cross-nationally. This diffusion of norms can eventually lead to institutional isomorphism – the process through which political, economic, and social institutions in different countries become increasingly similar to each other (DiMaggio and Powell 1983; Hannerz 1990; Meyer et al. 1997; Ramirez et al. 1997; Boli and Thomas 1999; Frank et al. 2000; Thomas 2001; Boli and Brewington 2007; Bush 2007; Torfason and Ingram 2010; Zainiddinov 2018).

The role of international organizations (governmental and non-governmental) on women's political empowerment – typically measured by women's parliamentary representation – has been extensively studied in sociological literature (e.g., Jacob et al. 2014; Paxton et al. 2006; Cole 2022). Previous studies show that world society linkages – typically measured by governments' membership in the international governmental and non-governmental organizations – have been instrumental in women's political enfranchisement (e.g., parliamentary and ministerial representation, right to vote, right to stand for elections, etc.) as

well as enhanced educational attainment, and employment equality (Cole 2022; Cherif 2015; Murdie and Peksen 2015; Cole 2013; Swiss 2009; Paxton et al. 2006; True and Mintrom 2001; Berkovitch 1999). Nevertheless, previous studies suggest that the effect of international organizations on gender equality is far from uniform (Beckfield 2003; Hughes 2009). There is a possibility of cultural backlash in terms of fundamentalist insurgences in some societies, particularly those dominated by traditional values (Hekmatpour 2021, 2020; Hekmatpour and Burns 2018; Hekmatpour and Burns 2019; Hughes et al. 2015). Moreover, as the hegemony of the current world culture declines, it is possible to observe backward trends in gender equality and women's rights (Hopgood 2013).

In this chapter, I focus on one type of cross-national gender inequality – the gap in political empowerment – and the possibly equitable effects of globalization on this front. My aim is to contribute to this literature by using a more comprehensive measure of political globalization that captures links to international organizations, as well as other factors. In addition to women's parliamentary representation, I also consider a new index (i.e., WEF's gender gap in political empowerment) as a measure of gender inequality in politics. Moreover, considering the importance of contextual factors highlighted by previous research, I study the moderating effects of the cultural context in terms of predominant religious traditions and within-nation cultural diversity on the relationship between political globalization and gender political empowerment. In the following, I elaborate on the data and measurements used for the analyses presented in this chapter.

Data and Measurements

The first dependent variable in my analyses is the WEF's gender gap in political empowerment (GGPE) index. This index is an aggregate measure that combines three factors: 1)

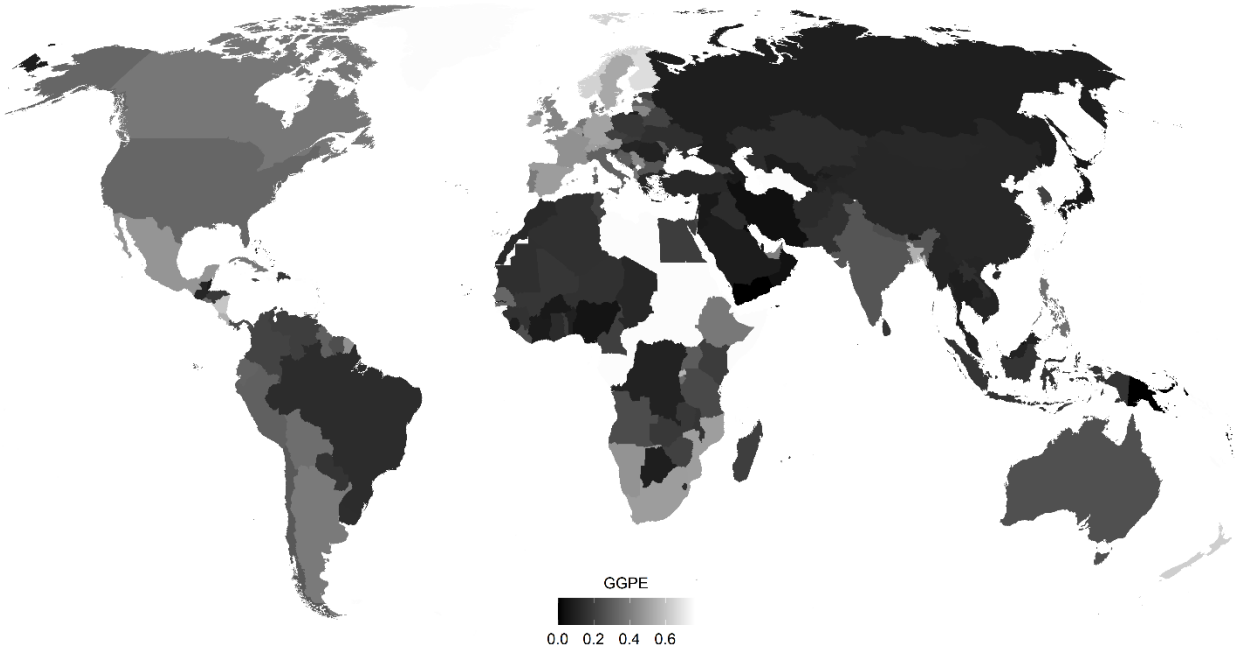
the ratio of women to men in minister-level positions, 2) the ratio of women to men in parliamentary positions, and 3) the ratio of women to men in terms of years in executive office (prime minister or president) for the last 50 years (Lopez-Claros et al. 2005; World Economic Forum 2020). I extract data on this measure from the World Bank's TCdata360 initiative website.[1] Theoretically, this measure can range from 0 (complete inequality) to 1 (full parity).

Figure 16 illustrates the distribution of this measure among the nations in 2022. As we can see from this figure, the countries of the Global North generally show a better performance in this measure of gender inequality. However, some of the nations of the Global South also show promising signs of progress. For example, since 2014, Rwanda has consecutively been among the top ten countries in political empowerment and overall gender equality performance.[2]

Rwanda's outstanding performance in achieving higher levels of gender parity is linked to various factors, including legislative reform and policy design and implementation to prevent gender-based violence and promote education since 2008 (Burnet and Kanakuze 218). There is evidence that political globalization, particularly in terms of countries' links to the world society through the presence and activities of international governmental and non-governmental organizations (IGOs & INGOs), has been instrumental in Rwanda's progress toward gender equality, as well as other nations in the Global South (Nazneen et al. 2019; Burnet 2019).

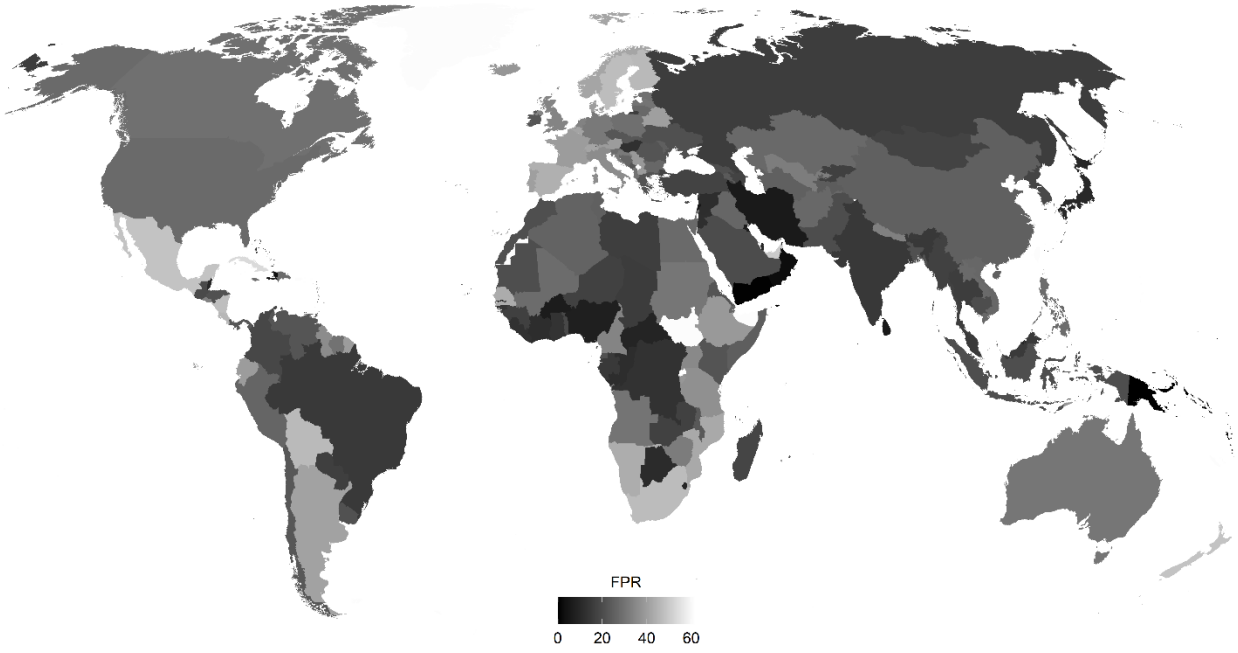
[1] www.tcdata360.worldbank.org
[2] www.weforum.org

Figure 16. Gender Gap in Political Empowerment (GGPE) - 2020



A more frequently used measure of the gender gap in politics, which is widely used in sociological literature, is Women's Share of Seats in National Parliaments (WSSNP) (e.g., Paxton et al. 2006; Hughes 2009; Swiss 2009; Fallon et al. 2012; Hekmatpour 2021; Cole 2022). Created by the World Bank and reported in World Development Indicators (World Bank 2021), this index simply measures the share of the seats in countries' national parliaments that are held by women. Figure 17 shows the distribution of this measure among the countries in 2020. As can be seen visually, there is more heterogeneity in WSSNP compared with GGPE. However, the general pattern of better performance for the Global North can also be seen in this figure. It is worth mentioning that several countries (e.g., Belgium, Poland, Mexico, etc.) have legislated candidate quota laws in place that require political parties to include a minimum share of women in their candidate lists (Gorecki and Pierzgalski 2022).

Figure 17. Women's Share of Seats in National Parliaments (WSSNP) – 2020



In this chapter, I use WSSNP and GGPE as focal variables to investigate the effect of political globalization on gender inequality in politics. The political globalization index of the KOF Swiss Economic Institute 2019 (Gygli et al. 2019: Dreher 2006) – the key independent variable in my analyses – combines *de facto* political globalization (i.e., number of foreign embassies, UN peacekeeping missions, and INGOs) as variables that capture flows and activities with *de jure* political globalization (i.e., international organizations membership, international treaties, and partners in investment treaties) as factors that, in principle, can enable those flows and activities (Gygli et al. 2019). Theoretically, this measure ranges from 1 (completely isolated) to 100 (fully embedded in the world polity). In the sample of my study, the KOF political globalization index has a high correlation with two of the widely used alternative measures in the literature: 1) the Correlates of War (COW) international organizations (IGOs) membership variable ($r = .85$, $p < .000$) and 2) Women's INGOs ($r = .81$, $p < .000$) (Hughes et al. 2017; Hughes et al. 2018; Pevehouse et al. 2020; Wallace and Singer 1970; Cole 2022). The KOF

index also provides a broader and more recent coverage (1970 – 2019) than the other two measures (the COW IGOs measure stopped reporting in 2014, and the WINGOs in 2013).

I control the analyses for an array of time-invariant and time-varying independent variables. Religious fractionalization –the probability of two randomly selected individuals belonging to the same religious tradition in each society – is a time-invariant variable in my analysis that I extract from The Quality of Government (QoG) 2022 dataset (Teorell et al. 2022). This variable is only measured in the year 2000 and thus is time-invariant. The rationale for including this variable in the analysis comes from the fact that there might be heterogeneity in nations' acceptance and diffusion of new norms introduced by the global society based on the uniformity/diversity of cultures (Cole 2022). Theoretically, this probability variable can range from 0 (completely diverse) to 1 (completely uniform).

In close association with religious fractionalization, I control nations' core religious/cultural context as a time-invariant variable. Previous research highlights the importance of cultural context in studying the impacts of cultural globalization, particularly as it pertains to women's rights. There is evidence of a persistent gap in gender equitable values and practices across different religious contexts (Kenworthy and Malami 1999; Reynolds 1999; Richards 2003; Paxton and Kunovich 2003; Paxton et al. 2006). In this study, I use the CIA World Factbook[1] to create a variable that categorizes countries' predominant religious traditions into four broad groups: 1) Islam, 2) Catholicism, 3) Protestantism, and 4) Other.

Previous studies suggest that proportional representation (PR) systems – where votes are cast for political parties or lists of candidates endorsed by a political party and then seats are allocated based on the proportion of votes received – generally lead to more women being

[1] www.cia.gov/the-world-factbook/

elected compared to simple majoritarian systems (e.g., Viterna et al. 2008; Kenworthy and Malami 1999; Cole 2022; McAllister and Studlar 2002). This is primarily because in a simple majoritarian system, political parties endorse a single candidate for each seat and, therefore, will need to appeal to the 'lowest-common denominator of voter preferences' (Rosen 2013: 308). I control proportional representation with a binary variable that I developed using data from the QoG 2022 (Teorell et al. 2022). Following the previous research (e.g., Hughes 2009; McAllister and Studlar 2002; Cole 2022), I also control my analyses for the presence of gender quotas in an electoral system with a binary variable from the Varieties of Democracy (V-Dem v12) (Coppedge et al. 2022a; Pemstein et al. 2022).

In addition to the primary independent variable of this study – KOF political globalization index – I control the analyses for the effects of a battery of time-varying variables. GDP per capita is measured in 2015 constant U.S. dollars and extracted from the World Development Indicators (World Bank 2021). I use the natural logarithm of GDP per capita to correct the skewness in the distribution of this variable. Following Cole (2022), I create a measure for gender educational parity as the ratio of female to male educational attainment measured by years of formal schooling for the population 25 and older using the information provided by the QoG 2022 (Teorell et al. 2022). Moreover, I control the state of democracy using the Electoral democracy index from the V-Dem v12 (Coppedge et al. 2022a). This is an aggregate measure that considers: 1) freedom of association (i.e., the extent to which political parties, including the opposition, are allowed to form and participate in elections and the extent to which civil society organizations can form and operate freely), 2) clean elections, 3) freedom of expression, 4) elected officials (i.e., whether the chief executive and legislature are appointed through popular elections), and suffrage (i.e., the share of adult citizens who has the legal right to

vote in national elections) (Coppedge et al. 2022b). This index ranges from 0 to 1, with higher values indicating a more democratic political system. Finally, I include a time-varying independent variable measuring the years passed since women's suffrage in each country. I developed this variable using data from Ramirez et al. (1997), supplemented with information gathered from the Inter-Parliamentary Union (IPU)[1] in cases of missing values.

After listwise deletion due to missing values on both the dependent and independent variables, the analyses are done on two separate samples: 1) for the WSSNP as the dependent variable, the final analytical sample includes 2,423 country-year observations nested in 109 countries expanding over the period of 1997 – 2019, 2) for the GGPE as the dependent variable, the final analytical sample consists of 1,373 country-year observations nested in 104 countries from 2006 to 2019. Descriptive statistics for dependent variables, as well as both time-varying and time-invariant variables, can be found in Appendix Table A5-1. Below I elaborate on my findings from the growth curve models.

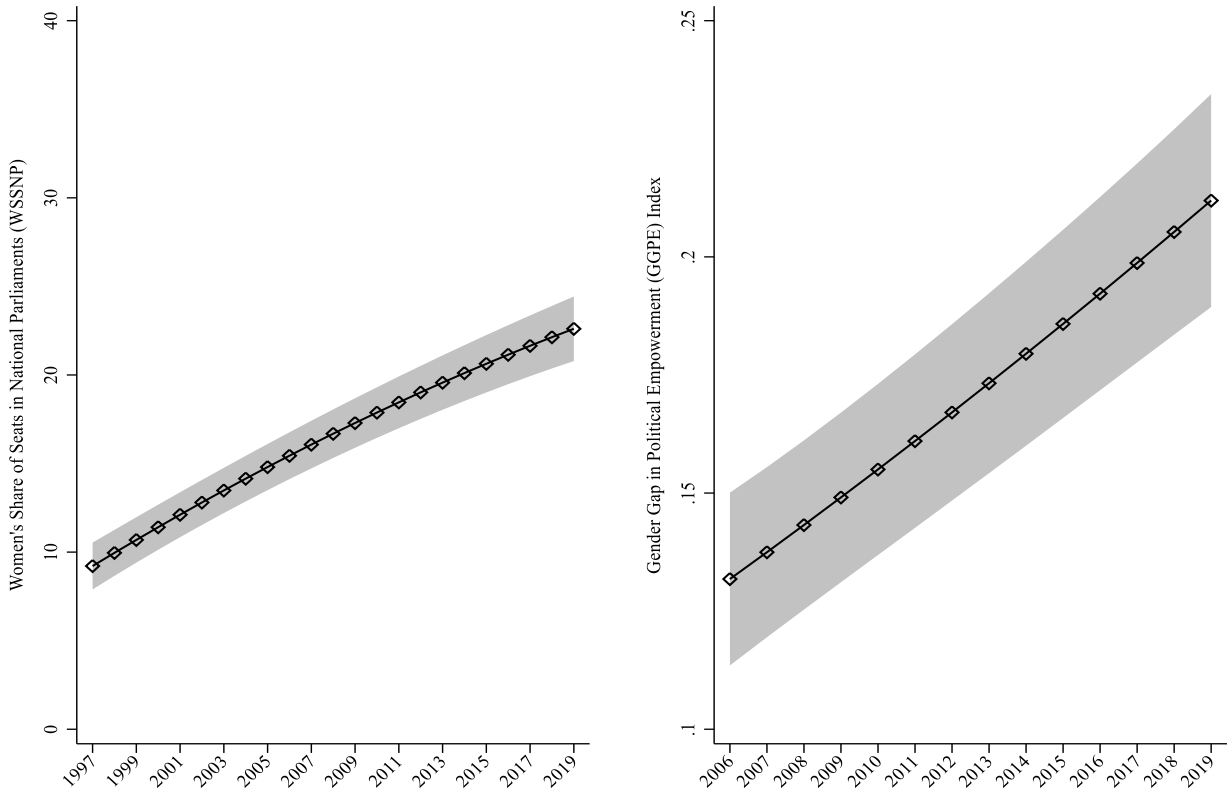
Findings

The first step in my analysis is to look at the unconditional growth curve models of both WSSNP and GGPE. Figure 18 shows the estimated average trajectories of WSSNP and GGPE (models estimating the growth parameters are shown in Appendix Table A5-2). As can be seen in this figure, both indicators show a generally positive growth trajectory. From 1997-2019, the global average of WSSNP increased by more than 11%. Based on the growth trajectories estimated by GCMs, for each additional year, it is predicted that the women's share of seats in national parliaments, on average, increased by almost 0.75%. However, a significant and

[1] www.ipu.org

negative quadratic term of 0.01 leads to the curvilinear trajectory shown in Figure 18, where the growth gradually appears to slow toward the end of the panel in 2019.

Figure 18. Estimated Trajectories of Women's Share of Seats in National Parliaments and Gender Political Empowerment Index by Unconditional GCMs



Notes:
Sample 1 (WSSNP): N = 2,423 country-year observations nested in 109 countries.
Sample 2 (GGPE): N = 1,373 country-year observations nested in 104 countries.
Data sources: World Development Indicators (World Bank 2021), World Economic Forum (WEF) Global Gender Gap Report 2020.

Moreover, as shown in Figure 18, the GGPE Index also shows steady and positive growth over time. According to the unconditional growth curve (see Model 3 in Appendix A5-2), the GGPE Index has a positive and statistically significant slope. At the same time, the quadratic term is not significant, suggesting a linear growth in the average evolution of this indicator from 2006 – 2019. For each additional year, the world average GGPE Index has grown by a factor of 0.005, which translates into an overall growth of 0.08 points, or 39%, in the 13 years of the panel. Overall, Figure 18 confirms the observation that there has been continual progress in

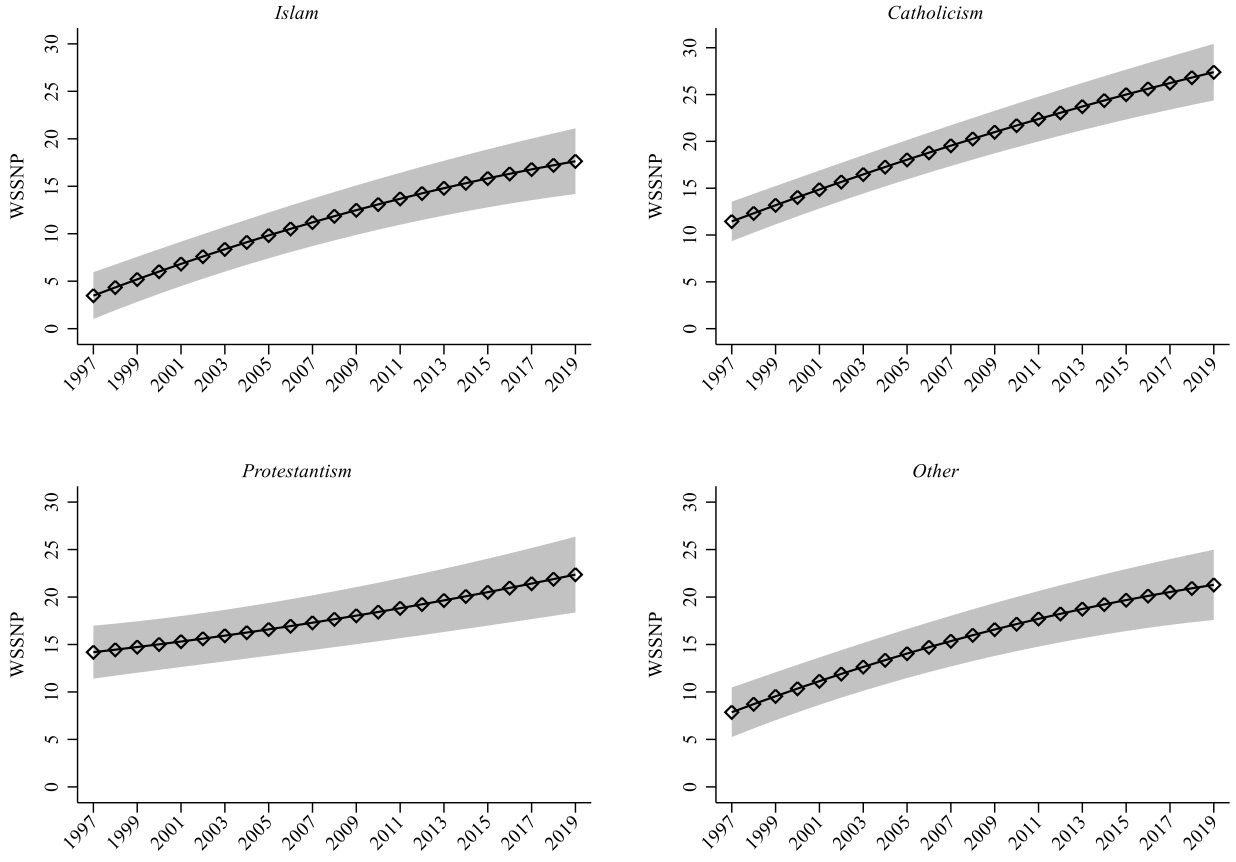
closing the gender gap in access to political power during the last couple of decades. To further investigate the impacts of internal and external factors on this overall progress toward achieving gender parity/equality in political empowerment, we need to look at the findings from GCMs conditioned on time-invariant and time-varying independent variables.

First, I condition the growth parameters on nations' religious/cultural context as a time-invariant independent variable (see Models 2 and 4 in appendix Table A5-2). Figure 19 illustrates the growth curves of WSSNP conditioned on predominant religious traditions. As can be seen in this figure, countries where Protestantism is the prevailing religious tradition, show the highest starting point (intercept) among other categories. Compared to Islamic nations (the reference category), Protestant countries, on average, have a starting point that is 10.71% higher in WSSNP. This observation is in line with previous literature suggesting that the Protestant reformation opened up opportunities for women by challenging the Catholic Church's hegemony and encouraging independent reading and interpretation of the Bible (Merolla et al. 2007; Paxton and Kunovich 2003; Hekmatpour 2021). Researchers have also shown that Protestant heritage has positively contributed to the overall density of civic participation (Jenkins et al. 2008; Schofer and Fourcade-Gourinchas 2001). Although previous cross-national research shows that Protestant tradition is associated with higher political representation of women, scholars have highlighted the United States as an exception due to the heavy presence of evangelical Protestantism, which is more socially conservative relative to other Protestant traditions (Merolla et al. 2007).

Furthermore, countries where Catholicism is the predominant religious tradition start at about 8% higher, and other nations at about 4% higher relative to Islamic nations. In terms of the growth parameters (slope and the quadratic term), however, models suggest that the only

category that significantly deviates from the overall trajectory – here, the estimated trajectory for the reference category (i.e., Islamic countries) – is nations where Protestantism is the predominant religious tradition. The negative and statistically significant interaction of Protestantism and Time, coupled with a positive and statistically significant quadratic term, results in a slower growth trajectory for Protestant countries, as shown in Figure 19.

Figure 19. Estimated Trajectories of WSSNP Conditioned on Nations' Predominant Religious Traditions



Notes:
N = 2,423 country-year observations nested in 109 countries.
Data sources: World Development Indicators (World Bank 2021), CIA World Factbook.

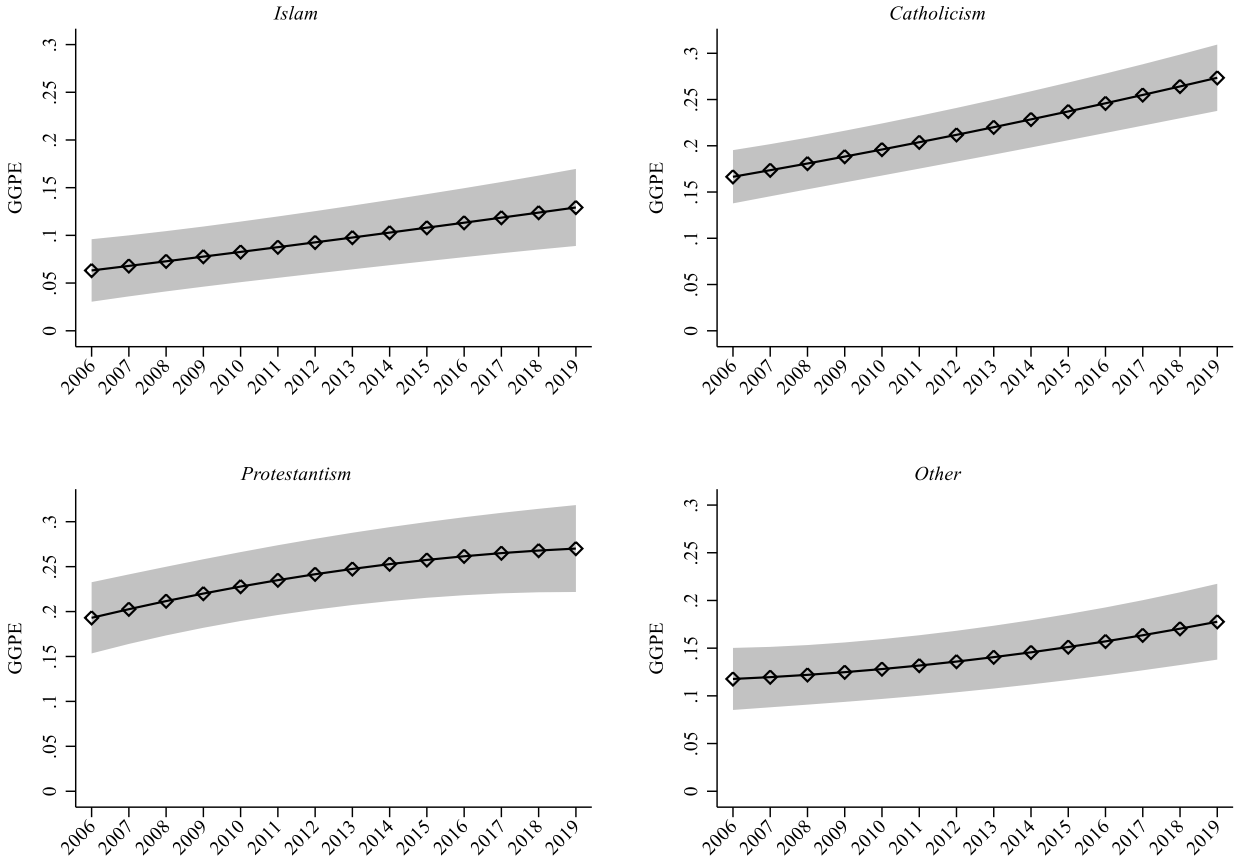
It appears that Protestant nations, which already had higher shares of seats in national parliament held by women compared to other groups, experienced a stall in their progress toward the end of the 20th and the beginning of the 21st century. However, towards the end of the 2010s,

Protestant countries seemed to increase their WSSNP while the growth rate for other groups appeared to have plateaued. This observation is consistent with previous literature suggesting the possibility of a "glass ceiling" – a notion referring to invisible barriers to achieving full gender equality/parity, especially at the top of the gender hierarchy and positions of power – in macro-level indicators of gender inequality (e.g., gender inequality in political power) similar to what happens at the micro level (e.g., gender gap in managerial and leadership positions within institutions) (Powell 1999; Cotter et al. 2001; Hekmatpour 2021). This is also evident from a negative covariance between the starting point (intercept) and slope (time) estimated by the GCMs used to produce this figure (see the bottom of Appendix Table A5-2).

Similarly, Figure 20 shows the growth trajectories of the gender gap in political empowerment for four groups of nations. Here again, the Protestant countries have the highest average starting points of around 0.19. Nevertheless, a negative quadratic term for this group of countries translates into plateaued progress in closing the GGPE toward the end of the panel. From 2006 to 2019, Catholic nations show the highest crude increase in GGPE Index (0.10 points) among all four groups, which translates to around 64% growth for this category. Nevertheless, due to their low starting point, Islamic countries show the highest growth rate (about 104%), while their average GGPE Index only increased by 0.07 points. From Figure 20, the rate growth in GGPE Index is approximately 39% (0.07 points) for Protestant countries and 51% (0.06 points) for nations where other religious traditions are predominant. Overall, these findings show that while religious/cultural context can impact nations' trajectories to some degree, all countries are on a path toward closing the gender gap in political empowerment, albeit at different rates. Nevertheless, similar to what we learned from Figure 19 about WSSNP,

Figure 20 shows signs of a "glass ceiling" phenomenon, particularly for Protestant nations, which have already reached a tipping point.

Figure 20. Estimated Trajectories of GGPE Conditioned on Nations' Predominant Religious Traditions

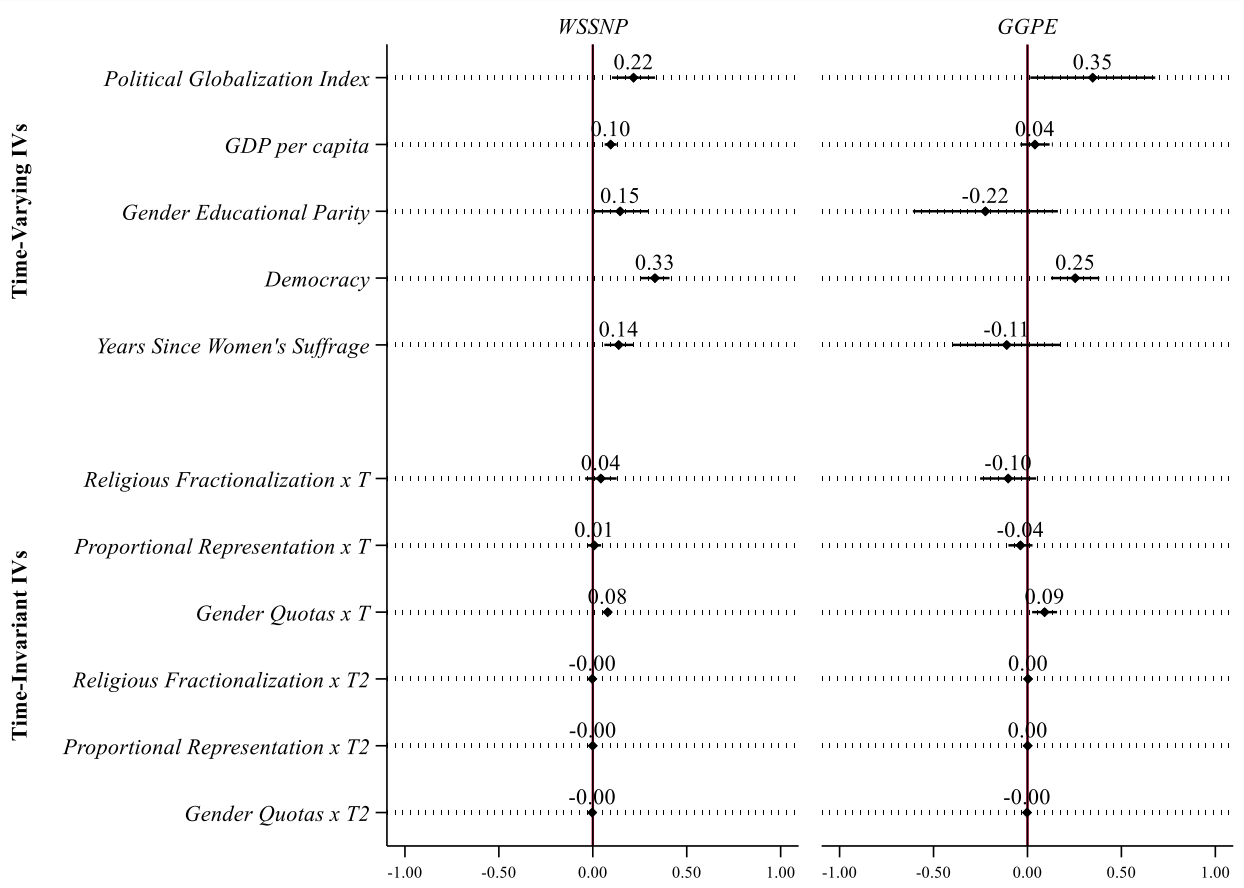


Notes:
N = 1,373 country-year observations nested in 104 countries.
Data sources: World Economic Forum (WEF) Global Gender Gap Report 2020, CIA World Factbook.

To proceed with the analysis and assess the impact of the primary variable of interest, the Political Globalization Index, I condition the GCMs on time-varying independent variables. Figure 21 illustrates the estimated effects of time-invariant and time-varying independent variables on WSSNP and GGPE in the form of a coefficient plot produced by fully conditioned (controlled) GCMs (for full models, see Appendix Table A5-3). As shown in Figure 21, Political Globalization Index has positive and statistically significant relationships with both dependent

variables under study. To make it more concrete, Figure 21 shows that a 1% increase in the Political Globalization Index increases WSSNP and GGPE by 0.22% and 0.35%, respectively. This observation provides evidence supporting the hypothesis that as nations become more embedded in the world culture, a diffusion of gender equitable norms will occur, which over time becomes institutionalized in local polity and bureaucratic systems.

Figure 21. Estimated Effects of Time-Invariant and Time-Varying Independent Variables on WSSNP and GGPE from Growth Curve Models



Notes:
Sample 1 (WSSNP): N = 2,423 country-year observations nested in 109 countries.
Sample 2 (GGPE): N = 1,373 country-year observations nested in 104 countries.
Data sources: World Development Indicators (World Bank 2021), World Economic Forum (WEF) Global Gender Gap Report 2020, CIA World Factbook, Varieties of Democracy (V-Dem v12) 2022, KOF Swiss Economic Institute 2019, Ramirez et al. (1997), The Quality of Government (QoG) 2022.

Economic development, here measured by countries' GDP per capita, only has a statistically significant relationship with WSSNP and not with GGPE. As shown in Figure 21, a

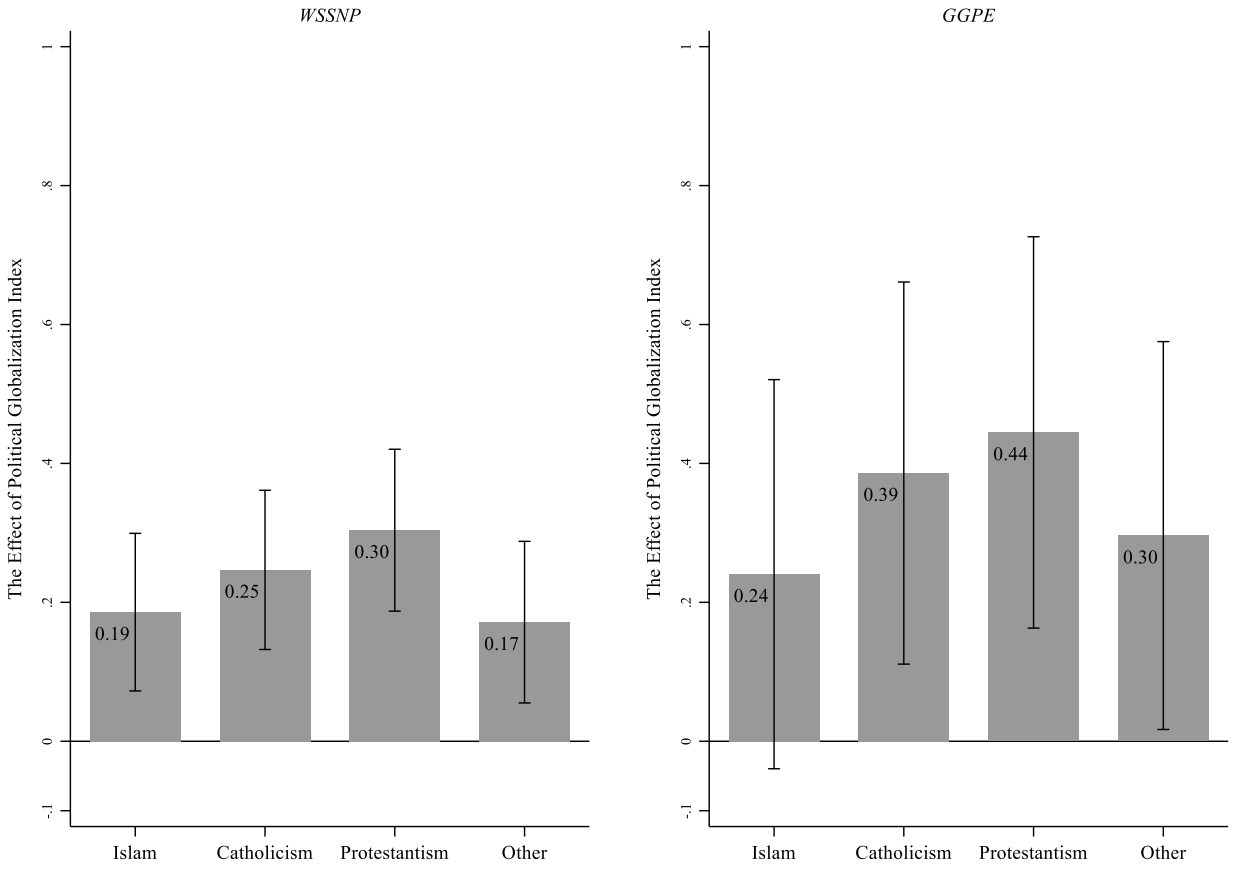
1% increase in GDP per capita is associated with an approximately 0.10% increase in WSSNP. Democracy, on the other hand, significantly impacts both dependent variables. According to Figure 21, a 1% increase in the democracy index increases WSSNP and GGPE by 0.33% and 0.25%, respectively. The impact of years past since women's suffrage is only statistically significant for WSSNP – each additional year past the women's suffrage increases WSSNP by 0.14%.

Among the time-invariant variables, the presence of gender quotas is the only one that has a statistically significant relationship with both dependent variables. The presence of gender quotas has a positive association with the slope (Time) and a negative relationship with the quadratic term ($Time^2$). This suggests that the impact of the presence of gender quotas can weaken as time passes. Simply put, it appears that the introduction of gender quotas can boost women's presence and participation in politics. However, as gender equality becomes the institutional norm, quotas seem to lose their impact over time.

As discussed above, Political Globalization Index, a proxy for nations' embeddedness in world society and world culture, has a positive and significant association with both dependent variables in this study. To assess whether and to what extent nations' religious/cultural context moderates the effect of this variable, we need to look at models that include interactions of the Political Globalization Index and contextual variables (i.e., predominant religious tradition and religious fractionalization) (see Appendix Table A5-4). Figure 22 illustrates the average marginal effects of the Political Globalization Index on WSSNP and GGPE by nations' predominant religious traditions. As we can see in this figure, the Political Globalization Index significantly effects the women's share of seats in national parliaments across all four predominant religious traditions. A formal joint hypothesis test shows that while these effects are significantly different

from zero, they are also significantly different from one another (Chi2 = 142.45, df = 3, $p < 0.001$). Therefore, I can safely argue that the impact of the Political Globalization Index on WSSNP (0.30) is the highest in countries where Protestantism is the predominant religious/cultural tradition, followed by Catholic nations (0.25), Islamic countries (0.19), and Others (0.17).

Figure 22. Average Marginal Effects of Political Globalization Index on WSSNP and GGPE by Nations' Predominant Religious Traditions

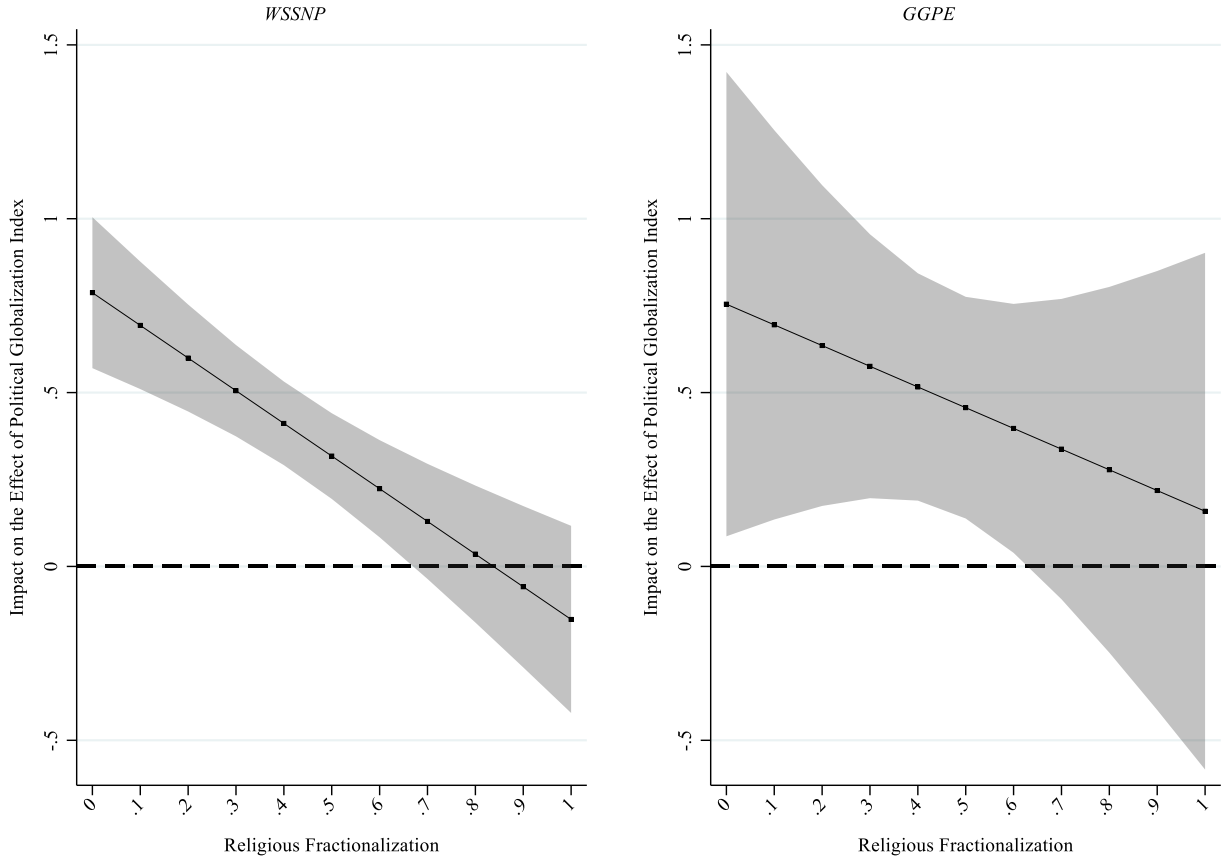


Notes:
Interactive model includes all time-invariant and time-varying control variables.
Sample 1 (WSSNP): N = 2,423 country-year observations nested in 109 countries.
Sample 2 (GGPE): N = 1,373 country-year observations nested in 104 countries.

Figure 22 also shows how the impact of the Political Globalization Index on GGPE can be different regarding nations' religious/cultural contexts. As we can see in this figure, this effect

is not statistically significant in Islamic countries. In other words, the Political Globalization Index does not improve the gender gap in political empowerment in countries where Islam is the predominant religious tradition. Nevertheless, the impact of the Political Globalization Index on GGPE is positive and statistically significant in the other three groups of nations. A joint hypothesis test on the between-group differences in the effect of the Political Globalization Index on GGPE reveals that these differences are statistically significant (Chi2 = 22.48, df = 2, p <0.001).

Figure 23. Average Marginal Effects of Political Globalization Index on WSSNP and GGPE by Religious Fractionalization



Notes:
Interactive model includes all time-invariant and time-varying control variables.
Sample 1 (WSSNP): N = 2,423 country-year observations nested in 109 countries.
Sample 2 (GGPE): N = 1,373 country-year observations nested in 104 countries.

Figure 23 illustrates the interaction between the Political Globalization Index and religious fractionalization (see Appendix Table A5-4).[1] According to the result shown in this figure, the impact of the Political Globalization Index on both WSSNP and GGPE tends to weaken as religious fractionalization increases. Religious fractionalization, the probability of two randomly selected individuals belonging to the same religious tradition in each country, can show the degree of religious/cultural diversity in each society. Thus, the interaction effect shown in Figure 23 can suggest that culturally diverse societies are more prone to the impacts of world culture. In other words, countries with more uniform cultures show higher degrees of resistance to the diffusion of norms associated with world culture. This observation can be partially explained by the fact that globalization, particularly in terms of culture, challenges the hegemony and authority of religious institutions and ideologies. In turn, this can lead to reactionary rejection of the world culture and its elements, typically in the form of revitalizing the traditional (i.e., fundamentalism), which can be more severe in societies with higher levels of religious/cultural homogeneity (Robertson 1992; Berger 2004; Tranby and Zulkowski 2012; Schnabel 2016; Hekmatpour 2021; Cole 2022).

Summary

In this chapter, I explored gender inequality in politics by focusing on two dependent variables: 1) women's share of seats in national parliaments (WSSNP) and the gender gap in political empowerment (GGPE) and using a methodology – using growth curve models (GCMs) – that fully and effectively takes into account the unobserved heterogeneity in nations'

[1] The more extensive level of uncertainty that is observable for GGPE, relative to WSSNP, is due to the difference in sample size (almost half) and the fact that for GGPE, the panel is more unbalanced (has fewer data points) in the beginning (2006) and end (2019) of data recording for this variable, compared to the middle.

trajectories of these variables over time (see Chapter 2). Overall, results from unconditional GCMs showed that countries have significantly improved in addressing gender inequality in politics. From 1997 to 2019, the global average of WSSNP increased by more than 11%. Moreover, from 2006 to 2019, the GCM showed that the gender gap in political empowerment was closed by 39% (see Figure 18). Conditional GCMs found that, albeit at different rates, the improvement in addressing gender inequality in politics has happened regardless of nations' contextual/cultural contexts in terms of the predominant religion (see Figure 19 and Figure 20).

The main focus of the analyses presented in this chapter was on explaining the impact of nations' embeddedness in world society on gender inequality in politics. Thus, I conditioned the GCMs on the Political Globalization Index – as a proxy for countries' level of embeddedness in world culture or involvement in the world society. The conditional GCMs found a positive and statistically significant association between the Political Globalization Index and both dependent variables (see Figure 21). Interactive models showed that the positive impact of political globalization on gender inequality in politics, for the most part, is not moderated by the religious/cultural context of nations (except for the impact of the Political Globalization Index on GGPE in countries where Islam is the predominant religious tradition. See Figure 22).

Nevertheless, the impact of the Political Globalization Index on gender inequality in politics was found to be moderated by countries' level of religious fractionalization – a proxy for cultural diversity within countries (see Figure 23). Results showed that culturally diverse societies are more susceptible to the positive impacts of globalization in terms of closing the gender gap in politics. Conversely, this can suggest that culturally homogenous nations appear to show some resistance to adopting the values prompted by the world culture, including gender equality in politics.

In addition to highlighting the significance of cultural diversity for addressing gender inequality in politics, my results in this chapter have policy implications for actors at local, national, and international levels. Policymakers at ana level of analysis, as well as advocates and social activists, need to pay closer attention to societies' cultural context as well as cultural homogeneity. It appears that the same cultural narratives and reform blueprints promoted by international governmental and intergovernmental organizations concerned with gender equality in politics might not be equally functional in all societies. Thus, the policies designed to address the issue of gender inequality in politics need to be altered according to each nation's unique cultural characteristics. This requires a more comprehensive image of cultural differences regarding the gender dynamics in different societies, which should be the focus of future research.

Chapter 6: Conclusions

The main goal of this dissertation as a theory-driven empirical study was to bridge and synthesize two distinct perspectives in transnational and comparative sociology on development and inequality at the global level. In summary modernization argues that inequalities between and within countries result from a lag in nations' development, primarily due to unique cultural characteristics that can impede the modernization of political and economic institutions. However, modernization theory implies that eventually, with the "help" of already developed nations, countries that are lagged behind will catch up, and thus inequalities subside. This hypothesized process of modernization for developing nations, despite their contextual uniqueness, will to some degree, resemble the same path and stages that developed countries have gone through. Therefore, according to this perspective, existing inequalities in today's unequal world can be better explained by endogenous factors specific to each society. At the same time, external forces such as international trade and investment can only serve as catalysts that can help developing countries by accelerating their modernization process.

On the other hand, theories of globalization (e.g., world-systems analysis, dependency, world society) focus on the conflicts between nations and their interests due to power relations embedded in the hierarchical structure of the world economy and international relations. This perspective is highly critical of the proposed catalyst role of external forces on development and declined inequality emphasized by modernization theory. Instead of identifying the cultures of developing nations as the main reason for their hindered development, this perspective focuses on how the current structure of global relations benefits a group of countries at the cost of others. According to this perspective, studying the division of labor between nations can better explain inequalities in the modern world. In this division of labor, which is unique to the modern

capitalist world economy, some countries are at the top of the hierarchy and in charge of regulating the world's financial and political order through consolidating power monopolies within international organizations (e.g., the UN, World Bank, IMF, WTO, etc.), while other nations are either already at, or currently racing to the bottom, centering their economies around extracting raw materials, agriculture, and manufacturing consumer goods to be exported to the developed countries. Proponents of this perspective argue that this division of labor has detrimental impacts on developing nations' economies, security, and public health.

In order to bridge the two sides of this debate, I used a methodology – using growth curve models (GCMs) – that effectively incorporates central arguments of both perspectives in empirical analyses of panel data (see Chapter 2: Methodology. In summary, GCMs, unlike other conventional methods of analysis using panel data (e.g., FE and RE), allow each unit (country) to have its unique trajectory instead of imposing an overall (or average) path on all observations. This central feature of GCMs accounts for the basic argument of modernization theory – that growth is primarily endogenous. Moreover, after estimating country-specific trajectories, GCMs can condition them on the effects of time-invariant (contextual) and time-varying (exogenous) factors. Therefore, this methodology enables researchers to systematically compare the effect of the context and external forces on countries' trajectories of inequality and to estimate the moderating impact of context on external factors.

Analytical chapters of the dissertation focused on three different aspects of inequality in the world. In Chapter 3: The Environment – Ecologically Unequal Exchange and Air Pollution I used GCMs to estimate countries' trajectories of death rate attributable to air pollution as an indicator of between-nation environmental inequality. Results suggested persistent and significant differences between high-, middle-, and low-income countries, as well as between

different areas of the world. Over the past three decades, high-income countries have always had lower death rates attributable to air pollution relative to middle- and low-income nations. Moreover, countries of North America, Western Europe, and Oceania (Global North) have had the lowest death rates attributable to air pollution, while African countries have experienced the highest rates relative to other areas in the world.

Furthermore, GCMs show that export to high-income countries as an indicator of ecologically unequal exchange is a significant time-varying predictor of death rates attributable to air pollution. Nevertheless, the interaction between the level of national income and export to high-income countries revealed that this relationship is moderated by nations' position in the division of labor of the global economy. Increased export to high-income countries increases death rates attributable to air pollution in middle- and low-income nations while decreasing death rates in high-income countries, highlighting inherent unequal power dynamics in international trade.

High-income countries tend to have stricter environmental regulations on exports and imports, which can impede trade flow but increase the demand for environmentally friendly products (Zhang and Dai 2021; Leipold et al. 2016). Nevertheless, recent research suggests that in developed countries, public demand for the state's regulation on the import of greener products declines as corporations promise to reform their polluting and environmentally degrading practices in distant locations (Amengual and Bartley 2022). On the other hand, developing nations tend to compete in a "race to the bottom" by lowering their environmental standards to attract as much foreign capital as needed for continual economic growth – a crucial necessity for staying afloat in today's global economy (Wheeler 2001). Therefore, developed countries benefit from offshoring polluting industries and then import the final products at the

cost of several environmental and health problems in developing countries, including lower air quality and its associated higher mortality rates (Rudel et al. 2011; Frey 2003).

In Chapter 4: The Economy – Foreign Direct Investment and Income Inequality results from the GCMs showed that there had been a significant gap in the level of within-country income inequality between developed (OECD) and developing (non-OECD) countries in the past three decades. The main focus of Chapter 4: The Economy – Foreign Direct Investment and Income Inequality was the relationship between foreign direct investment (FDI) and income inequality, a longstanding unresolved debate in the literature (Huang et al. 2020). Conditional GCMs showed that while the relationship between FDI and the Gini coefficient is positive and linear for non-OECD countries (i.e., increased foreign direct investment increases within-country income inequality), it follows a curvilinear (i.e., inverted U-shaped) path in developed countries. I argued that this might probably be due to developed economies' higher absorptive capacity (e.g., technological maturity, infrastructures, labor organizations, financial stability, etc.) that enables them to incorporate foreign investment in the local economy and ensure redistribution. For developing countries, however, foreign capital penetration usually leads to the disarticulation of the economy through processes such as tax evasion and the lack of reinvestment and linkages to domestic businesses.

The second portion of Chapter 4: The Economy – Foreign Direct Investment and Income Inequality was dedicated to analyzing the effects of FDI in different sectors of the host economy. I developed two new indices (i.e., the FDI Pluralism Index and FDI Sectoral Gini Coefficient) for measuring how evenly FDI is distributed among the sectors of the economy. Results from the GCMs showed that the concentration of FDI in one sector of the host economy tends to exacerbate income inequality. Based on the principle of comparative advantage, FDI tends to

flow into economic activities that are most profitable (Waldkirch 2011). Therefore, the host economy will experience an uneven growth of one sector compared to others, increasing overall income inequality within the host country by increasing the between-sector income inequality.

Finally, in Chapter 5: The Polity - Globalization and Gender Gap in Political Empowerment I studied the impact of political globalization on gender inequality in politics. GCMs showed that an increase in the value of the political globalization index – a measure developed by KOF Swiss Economic Institute that combines several indicators such as the number of foreign embassies, UN peacekeeping missions, international organizations membership, international treaties, and partnership in investment treaties – improves gender inequality in politics within nations measured by two variables: 1) women's share of seats in national parliaments, and 2) gender gap in political empowerment index from the World Economic Forum. This observation is consistent with the general argument of world society theory.

Moreover, to assess the importance of social context, I interacted the political globalization index with nations' predominant religious tradition as well as religious fractionalization – a measure of religious/cultural diversity within countries. Results suggested that the positive impact of political globalization on improved gender inequality in politics can be observed in all nations, regardless of context. However, the effect of political globalization is stronger in nations with more relative cultural diversity and becomes insignificant as religious fractionalization increases (i.e., in more religiously/culturally homogenous societies). This observation echoes previous findings suggesting that cultural and political aspects of globalization can lead to reactionary and fundamentalist movements from more conservative segments of society calling for revitalizing the traditional values and practices, particularly in

more religiously/culturally homogenous contexts (Schnabel 2016; Hekmatpour 2021; Cole 2022).

Overall, the analyses presented throughout this dissertation highlight the importance of context in studying the effects of economic, cultural, and political aspects of globalization on multiple forms of inequality observed between and within countries worldwide. Through the use of GCMs, the analyses were able to systematically account for the uniqueness of social context defined by time-invariant variables while estimating how external factors (time-varying variables) can affect the change in the level of inequality. Moreover, interacting contextual and external factors shed light on some of the mechanisms through which globalization can have dissimilar impacts on development and inequality in different societies and areas in the world, challenging the oversimplifying and reductionist argument of modernization theory that the convergence between nations is inevitable and only a matter of time.

Results presented in this dissertation call for a more comprehensive perspective on development and global inequalities that synthesizes the arguments of both modernization and theories of globalization. This general perspective, as I showed throughout the dissertation, would simultaneously consider the significance of unique contextual characteristics, and the complexity of the hierarchical order of the world in studying the trajectories of development and inequality. Moreover, a more comprehensive approach to study development and inequality should pay closer attention to local factors that can alter the impacts of global forces, leading to dissimilar outcomes for globalization in different parts of the world.

Policy Implications and Future Research

There are several policy implications associated with the findings presented in this dissertation. First, policy makers at the national level, particularly in developing countries,

should pay closer attention to the impacts of globalization on multiple aspects of inequality. National policies surrounding exports and imports of goods should regard the ecologically unequal exchange and its detrimental effects on public health as a priority. Stricter environmental regulations in developing and developed countries are needed to alleviate the harmful impacts of offshoring the polluting industries. Regarding the effects of FDI on income inequality, my results suggest that a more even distribution of foreign investment between all sectors of the host economy is more favorable than the concentration of FDI in one sector. Political globalization has shown the potential to improve gender inequality in politics. However, policymakers, particularly in countries with higher levels of cultural homogeneity, should always be wary about the possibility of an enantiodromia in terms of the emergence of counter movements from the more traditional and conservative segments of the population, which can hinder or even reverse the progress in achieving gender equality (Hekmatpour 2018; Hekmatpour and Burns 2018; Hopgood 2013).

Second, at the international level, governmental and non-governmental organizations can play a significant role in addressing inequality in the world. There is evidence that transnational environmental regulations and agreements within several international organizations, such as the Organization for Economic Co-operation and Development (OECD) and the Asia-Pacific Economic Cooperation (APEC), have increased the overall demand for green products. Therefore, regulating foreign investment at the international level can also be beneficial for the host economies. Chapter 5: The Polity - Globalization and Gender Gap in Political Empowerment discusses the effect of IGOs and INGOs on gender equality in politics in detail. However, the same caveat at the national level of policy making discussed above – paying closer

attention to the cultural context of developing countries and the possibility of a backlash – should be considered when promoting gender equitable policies.

Finally, at the local level, activists concerned with elevating inequalities can benefit from the results presented in this dissertation. Calling for more effective environmental regulations on importing and exporting goods can push policymakers toward adopting more environmentally friendly policies. Local activists in developing countries can also increase awareness and demand for policies designed to redistribute foreign direct investment between all sectors and various economic activities. Research shows that domestic non-governmental organizations (NGOs) act as interpreters of the world culture and its norms and values in their respective societies (Frank et al. 2007). Therefore, domestic NGOs are well positioned and can play a crucial role in transmitting gender equitable values and practices with the caution needed for their success.

While this work only focused on three indicators of inequality, the same methodology can be used to study other manifestations of inequality between and within nations in future research. For instance, several other indicators of between- and within-country environmental inequality, including but not limited to deforestation, natural resources depletion, climate-related disasters, water pollution, and the loss of biodiversity, can be studied using the framework introduced by this dissertation. Moreover, there is evidence that wealth is even more unequally distributed worldwide than income. According to the World Inequality Report (Chancel et al. 2021), the top 10% of wealthy individuals own more than 75%, while the share of the bottom 50% is only 2% of the world's total wealth. Future research can study between- and within-nation wealth inequality using the methodology proposed by this dissertation. Furthermore, there are many other indicators of both gender (e.g., maternal mortality, adolescent birth rate, gender gap in educational attainment, gender pay gap, labor force participation, etc.) and political (e.g.,

clean elections, inclusive suffrage, access to justice, civil liberties, absence of corruption, civil society participation, etc.) inequalities that can be studied through this framework.

Moreover, the analyses presented in this dissertation have focused on structural factors – local and global – and their impacts on inequality. Future research, however, should also highlight the role of agency in shaping inequality trajectories, particularly in terms of social movements. As discussed above, local activists can play a significant role in moderating the effects of globalization. Therefore, future studies in this line of research should focus on how movements targeting different manifestations of inequality (e.g., economic, gender, environmental) can impact nations' trajectories in the global age. Particularly, the significance of social media should be highlighted as one of the mechanisms that can link domestic activists across the world and form global movements.

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Appendices

Table A1-1. List of All Abbreviations Used and Their Definitions

Abbreviation	Definition
AIC	Akaike Information Criterion
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BIC	Bayesian Information Criterion
BP	The British Petroleum Company
BRICS	Brazil, Russia, Indonesia, China, and South Africa
CFA	Confirmatory Factor Analysis
CIA	Central Intelligence Agency
COMESA	Common Market for Eastern and Southern Africa
COW	Correlates of War
CRA	Comparative Risk Assessment
DOTS	Direction of Trade Statistics
EIA	US Energy Information Administration
EPZ	Export Processing Zones
FDI	Foreign Direct Investment
FE	Fixed-Effects
GBD	Global Burden of Disease
GCM	Growth Curve Model
GDP	Gross Domestic Product
GGPE	Gender Gap in Political Empowerment
GNI	Gross National Income
GNP	Gross National Product
HAQ	Health Access and Quality
HIC	High-Income Countries
HLM	Hierarchical Linear Modeling
IGO	International Governmental Organization
IMF	International Monetary Fund
INGO	International Non-governmental Organization
IPU	Inter-Parliamentary Union
ITC	International Trade Center
KOF	KOF Swiss Economic Institute
LGC	Latent Growth Curve
LIC	Low-Income Countries
MENA	Middle East and North Africa
MIC	Middle-Income Countries
NGO	Non-governmental Organization
OECD	Organization for Economic Co-operation and Development
PR	Proportional Representation

Table A1-1. List of All Abbreviations Used and Their Definitions

Abbreviation	Definition
RE	Random-Effects
SEM	Structural Equation Modeling
SWIID	Standardized World Income Inequality Database
TMREL	Theoretical Minimum Risk Exposure Level
UNCTAD	United Nations Conference on Trade and Development
WEF	World Economic Forum
WHO	World Health Organization
WINGO	Women's International Non-Governmental Organization
WSSNP	Women's Share of Seats in National Parliaments
WTO	World Trade Organization

Figure A2-1. Marginal Predictions of Ys by Time-Fixed Effects vs. Second-Degree Polynomial Super Imposed Fit with Confidence Intervals

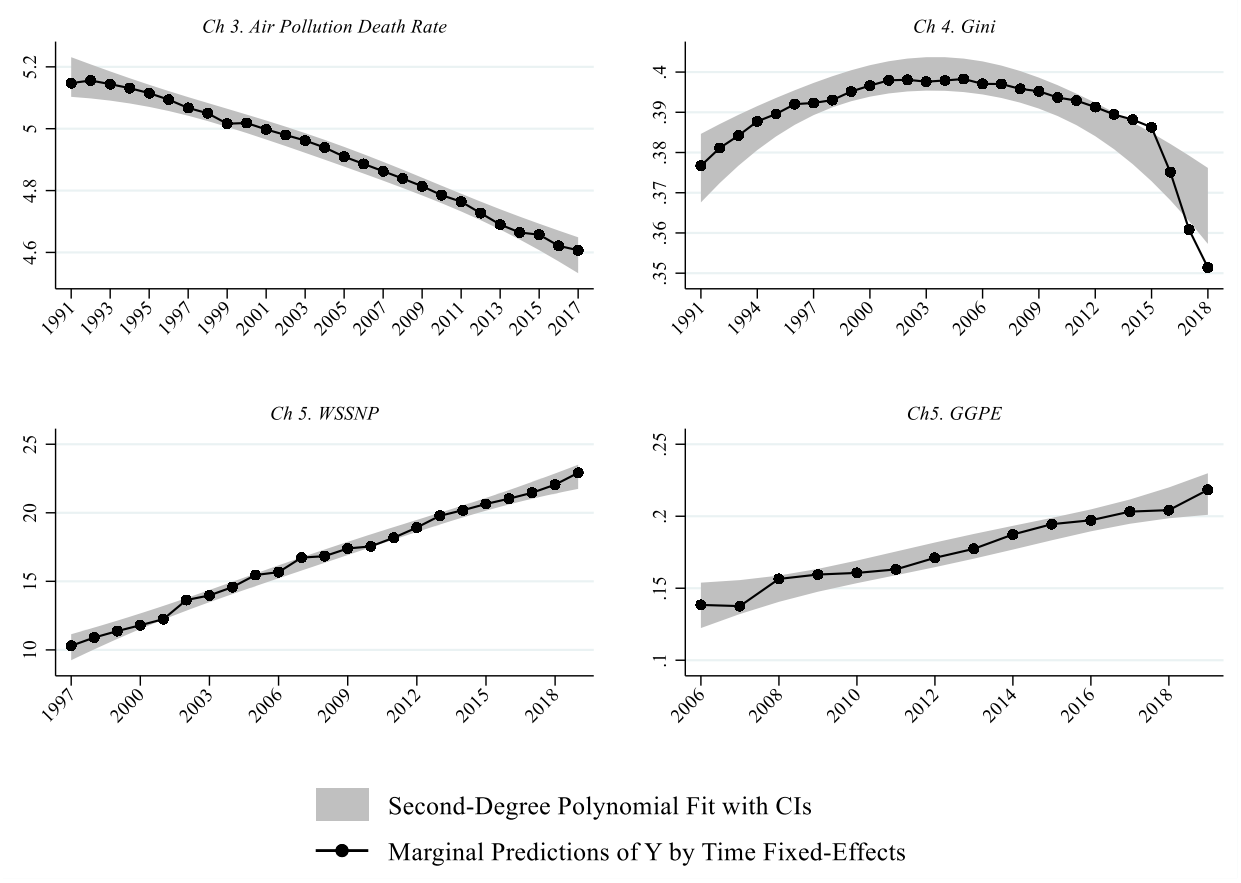

Table A2-1. Likelihood Ratio Tests of the Inclusion of the Time2 in GCMs

	Chapter 3	***Chapter 4***	***Chapter 5***	***Chapter 5***
Dependent Variable	**Death Rates Attributable to Air Pollution**	**Gini**	**WSSNP**	**GGPE**
Chi 2 (df)	503.07***	760.96***	21.25***	5.01*
p-Value	<0.001	<0.001	<0.001	<0.030

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3-1. Growth Curve Models of Total Energy Consumption per Capita and CO_2 Emission per Capita

	Total Energy Consumption per Capita		CO_2 Emission per Capita	
Growth Parameters	***Coef.***	***S.E.***	***Coef.***	***S.E.***
Time	.028***	(.01)	.023***	(.01)
$Time^2$	-.001***	(.00)	-.001***	(.00)
Effects on the Intercept				
Low-Income Countries	-3.381***	(.22)	-3.382***	(.21)
Middle-Income Countries	-1.179***	(.22)	-1.083***	(.21)
Effects on Time				
Low-Income Countries	-.014*	(.01)	-.013*	(.01)
Middle-Income Countries	-.005	(.01)	-.006	(.01)
Effects on $Time^2$				
Low-Income Countries	.001***	(.00)	.002***	(.00)
Middle-Income Countries	.000***	(.00)	.001***	(.00)
Intercept	10.782***	(.80)	2.227***	(.80)
Variance T	.001 (.00)		.001 (.00)	
Variance Constant	1.13 (.11)		1.09 (.12)	
Covariance (T, Constant)	-.02 (.00)		-.01 (.00)	
N	4,976		5,047	
N of Countries	191		200	
AIC	2281		1062	
BIC	2197		977	

A3-2. Descriptive Statistics

Variables	Description	Mean or %	S.D.
Position in World Economy			
Low-Income Countries (LIC)		43.16%	-
Middle-Income Countries (MIC)		40.20%	-
High-Income Countries (HIC)		16.64%	-
Geographic Region			
Western Europe, North America, and Oceania		19.26%	-
Middle East and North Africa		11.64%	-
Sub-Saharan Africa		27.51%	-
Latin America		15.95%	-
South and East Asia and the Pacific		14.99%	-
Eastern Europe and Central Asia		10.65%	
Export to HIC (ln)	Min = 0, Max = 0.98	0.039	0.099
GDP per capita (ln)	Min = 5.83, Max = 11.93	9.022	1.242
Foreign Direct Investment (ln)	Min = 0, Max = 7.58	3.085	1.090
Trade (ln)	Min = 2.05, Max = 5.84	3.986	0.529
HAQ Index	Min = 11.15, Max = 97.10	55.498	22.938
Population (ln)	Min = 4.14, Max = 14.16	9.046	1.770
Urban Population	Min = 5.491, Max = 100	56.090	22.538
Mobility	Min = -2, Max = 1	-0.244	0.461

Sample size (N) is 4,189 observations nested in 169 countries from 1991-2017
Data Sources: IMF Direction of Trade Database (2019), World Development Indicators (2019), Global Burden of Diseases (2017)

A3-3. Unconditional and Conditioned-on-Time-Invariant-Variable Growth Curve Models of Death Rate Attributable to Air Pollution

	Model 1			Model 2			Model 3		
	I	***T***	***T²***	***I***	***T***	***T²***	***I***	***T***	***T²***
Constant (Mean)	5.177***	-.016***	-.001***	4.302***	-.022***	-.001***	4.431***	-.021***	-.001***
	(.05)	(.00)	(.00)	(.08)	(.00)	(.00)	(.08)	(.00)	(.00)
Time-Invariant Variables									
Position in the World Economy [a]									
Low-Income Countries (LIC)				1.429***	.008**	.001**			
				(.09)	(.00)	(.00)			
Middle-Income Countries (MIC)				.663***	.005	.001			
				(.09)	(.00)	(.00)			
Geographic Region [b]									
Middle East and North Africa							.779***	.001	.001***
							(.13)	(.00)	(.00)
Sub-Saharan Africa							1.349***	.026***	.001**
							(.10)	(.00)	(.00)
Latin America							.409***	.002	.001***
							(.11)	(.00)	(.00)
South and East Asia and the Pacific							.890***	.001	.001**
							(.12)	(.00)	(.00)
Eastern Europe and Central Asia							.859***	.013***	-.001
							(.13)	(.00)	(.00)
Variance T (S.E.)	.001 (.00)			.001 (.00)			.001 (.00)		
Variance we (S.E.)	.423 (.05)			.160 (.02)			.194 (.02)		
Covariance (T, Constant) (S.E.)	.001 (.00)			-.001 (.00)			-.001 (.00)		
N (Countries)	4,189 (169)			4,189 (169)			4,189 (169)		
AIC	-12,046			-12,233			-12,309		
BIC	-12,001			-12,151			-12,169		

Data Sources: World Development Indicators (2019), Global Burden of Diseases (2017)

A3-4. Growth Curve Models of Death Rate Attributable to Air Pollution Conditioned on Time-Varying Variables

	Model 1		Model 2	
Time-Varying Variables	***Coeff.***	***(S.E.)***	***Coeff.***	***(S.E.)***
Export to HIC (ln) [a]	.092*	(.05)	-.135*	(.06)
Export to HIC × LIC			.255*	(.10)
Export to HIC × MIC			.770***	(.12)
GDP per capita (ln)	-.039***	(.01)	-.042***	(.01)
Foreign Direct Investment	.005**	(.00)	-.005**	(.00)
Trade (ln)	.013***	(.00)	.012**	(.00)
Urban Population	-.001	(.00)	-.001	(.01)
HAQ Index	-.015***	(.00)	-.015***	(.00)
Population (ln)	-.028**	(.01)	-.028**	(.01)
Mobility	-.002	(.00)	-.001	(.00)
Time-Invariant Variables				
Position in the World Economy	Yes		Yes	
Geographic Location	Yes		Yes	
Variance T (S.E.)	.001 (.00)		.001 (.00)	
Variance Constant (S.E.)	.062 (.01)		.061 (.01)	
Covariance (T, Constant) (S.E.)	-.001 (.00)		-.001 (.00)	
N (Countries)	4,189 (169)		4,189 (169)	
AIC	-13,122		-13,158	
BIC	-12,894		-12,917	

Data Sources: IMF Direction of Trade Database (2019), World Development Indicators (2019), Global Burden of Diseases (2017)

a. Reference Category: Export to HIC × HIC

A3-5. Model Comparison and Robustness Check

Time-Varying Variables	*Growth Curve*	*Two-Way Fixed Effects*	*Prais–Winsten Regression with Panel-Corrected Standard Errors*
Export to HIC (ln) a	-.135*	-.137***	-.162***
	(.07)	(.01)	(.03)
Export to HIC × LIC	.255*	.239***	.191**
	(.10)	(.02)	(.06)
Export to HIC × MIC	.770***	.756**	.600**
	(.12)	(.04)	(.06)
GDP per capita (ln)	-.042***	-.035	-.059***
	(.01)	(.04)	(.01)
Foreign Direct Investment	.005**	.010	.003*
	(.00)	(.01)	(.00)
Trade (ln)	.012**	.030	.006**
	(.00)	(.02)	(.00)
PM2.5 (ln)	-.001	.003	-.001
	(.00)	(.00)	(.00)
HAQ Index	-.015***	-.023***	-.003***
	(.00)	(.00)	(.00)
Population (ln)	-.028**	-.148*	-.051
	(.01)	(.06)	(.04)
Mobility	-.001	-.023	-.001
	(.00)	(.02)	(.00)
N	4,189	4,189	4,189
AIC	-13,158	8,576	-18,118
BIC	-12,917	8,347	-18,036

Table A4-1. Summary Statistics

Dependent Variable	***Mean or %***	***S.D.***	***Min***	***Max***
Gini Coefficient	0.37	0.09	0.19	0.68
Time-Varying Independent Variables				
FDI Stock (log)	3.10	1.10	-3.23	7.58
Sector Pluralism	17981.58	10275.58	82.32	36792.77
Industrial Employment (%)	22.17	8.43	1.95	56.33
Agricultural Employment (%)	24.90	23.16	0.06	92.21
Population Growth (% Change)	10.70	10.95	-7.60	38.57
Tertiary Education (% Gross)	38.31	26.51	0.32	142.85
Trade Openness (log)	4.02	0.50	2.37	5.32
Migrant Population (log)	1.08	1.48	-3.26	4.41
Government Size	6.51	1.21	1.55	9.45
Labor Regulation	6.72	1.23	0.00	9.24
Democracy	5.89	5.36	-10	10
Female Representation (%)	17.29	11.23	0.00	63.75
Female Labor Force Participation (%)	41.78	8.28	11.44	55.81
Unemployment Rate (log)	1.86	0.74	-1.56	3.62
Time-Invariant Independent Variables				
Geographic Region				
Western Europe, North America and Oceania		35.13%		
Middle East & North Africa		8.26%		
Sub-Saharan Africa		18.00%		
Latin America		13.70%		
South & Southeast Asia		14.17%		
East Europe & Central Asia		10.74%		
OECD		39.47%		

N = 2,095 (141 Countries)
Data Source: Standardized World Income Inequality Database (SWIID v9.0), World Development Indicators (World Bank 2021), and Economic Freedom of the World (2021)

Table A4-2. Growth Curve Models of the Gini Coefficient

	Model 1		Model 2		Model 3	
Growth Parameters	***Coef.***	***S.E.***	***Coef.***	***S.E.***	***Coef.***	***S.E.***
Time	.149***	(.02)	.160***	(.02)	.099***	(.03)
Time^2	-.006***	(.00)	-.007***	(.00)	-.001***	(.00)
Effects on the Intercept						
OECD			-11.137***	(1.57)		
Middle East and North Africa					11.073***	(1.88)
Sub-Saharan Africa					17.9946***	(1.57)
Latin America					19.365***	(1.77)
South and East Asia and Pacific					9.849***	(1.77)
East Europe and Central Asia					1.325	(1.70)
Effects on Time						
OECD			.020	(.04)		
Middle East and North Africa					-.052	(.05)
Sub-Saharan Africa					-.024	(.05)
Latin America					.093	(.05)
South and East Asia and Pacific					-.013	(.05)
East Europe and Central Asia					.263***	(.05)
Effects on Time^2						
OECD			.002***	(.00)		
Middle East and North Africa					-.002*	(.00)
Sub-Saharan Africa					.001	(.00)
Latin America					-.015***	(.00)
South and East Asia and Pacific					.001	(.00)
East Europe and Central Asia					-.009***	(.00)
Intercept	38.769***	(.80)	41.467***	(.80)	28.037***	(1.27)
Variance T	.03 (.00)		.03 (.00)		.01 (.00)	
Variance Constant	88.82 (10.77)		63.81 (7.85)		28.99 (3.64)	
Covariance (T, Constant)	-.79 (.16)		-.61 (.13)		-.19 (.07)	
N	2,095		2,095		2,095	
N of Countries	141		141		141	
AIC	5632		5579		5113	
BIC	5672		5636		5237	

Notes: Western Europe, North America, and Oceania is the reference category for regions. *Data Source: Standardized World Income Inequality Database (SWIID v9.0), World Development Indicators (World Bank 2021), and Economic Freedom of the World (2021).* Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A4-3. Growth Curve Models of the Gini Coefficient

	Model 1	Model 2	Model 3
Time-Varying Independent Variables			
FDI Stock	.057***	.056***	.059***
	(.00)	(.00)	(.00)
FDI Stock^2		-.002	.007
		(.00)	(.00)
FDI Stock × OECD			-.020
			(.00)
FDI Stock^2 × OECD			-.033***
			(.00)
Sector Pluralism	.006	.007	.011
	(.00)	(.00)	(.00)
Industrial Employment	-.106***	-.106***	-.108***
	(.00)	(.00)	(.00)
Agricultural Employment	-.029*	-.029*	-.028*
	(.00)	(.00)	(.00)
Population Growth	.054***	.054***	.058***
	(.00)	(.00)	(.00)
Tertiary Education	.004	.004	.000
	(.00)	(.00)	(.00)
Trade Openness	.015	.015	.013
	(.00)	(.00)	(.00)
Migrant Population	.039***	.039***	.040***
	(.00)	(.00)	(.00)
Government Size	-.017*	-.017*	-.018*
	(.00)	(.00)	(.00)
Labor Regulation	-.072***	-.072***	-.068***
	(.00)	(.00)	(.00)
Democracy	.008	.007	.007
	(.00)	(.00)	(.00)
Female Representation	-.124***	-.124***	-.121***
	(.00)	(.00)	(.00)
Female Labor	-.088***	-.088***	-.084***
	(.00)	(.00)	(.00)
Unemployment Rate	-.001	-.001	-.001
	(.00)	(.00)	(.00)
Time-Invariant Variables			
Geographic Region	**Yes**	**Yes**	**Yes**
OECD	**Yes**	**Yes**	**Yes**
N	2,095	2,095	2,095
N of Countries	141	141	141
AIC	-9268.7	-9266.7	-9276.3
BIC	-911.6	-9103.0	-9101.3

Notes: Standardized beta coefficients; Standard Errors in Parentheses. *Data Source: (SWIID v9.0), World Development Indicators (2021), and Economic Freedom of the World (2021)* * $p < .05$, ** $p < .01$, *** $p < .001$

Table A4-4. Growth Curve Models of the Gini Coefficient with FDI Sectors & Measures of FDI Sectoral Concentration

Independent Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
FDI Stock	.335**	.301**	.297**	.356**
	(.01)	(.01)	(.01)	(.01)
FDI Stock2	-.086	-.089	-.058	-.091
	(.00)	(.00)	(.00)	(.00)
Share of FDI in Sectors				
Primary		.137***		
		(.00)		
Secondary		.127***		
		(.00)		
Tertiary		.085*		
		(.00)		
FDI Pluralism Index			-.062**	
			(.00)	
FDI Sectoral Gini Coefficient				.036*
				(.01)
Controls				
Core Model Covariates	**Yes**	**Yes**	**Yes**	**Yes**
Region (Time-Invariant)	**Yes**	**Yes**	**Yes**	**Yes**
N	405	405	405	405
N of Countries	61	61	61	61
AIC	-2367	-2404	-239	-2376
BIC	-2251	-2276	-227	-2256

Notes: Standardized beta coefficients; Standard Errors in Parentheses. Data Source: (SWIID v9.0), World Development Indicators (2021), and Economic Freedom of the World (2021) * p < .05, ** p < .01, *** p < .001

Table A4-5. Model Comparison and Robustness Check

Time-Varying Variables	**Growth Curve**	***Two-Way Fixed Effects***	***Prais–Winsten Regression with Panel-Corrected Standard Errors***
FDI Stock	.056***	.052***	.063***
	(.00)	(.00)	(.01)
FDI Stock^2	-.002	-.001	-.003
	(.00)	(.00)	(.00)
Sector Pluralism	.007	.005	.011
	(.00)	(.00)	(.00)
Industrial Employment	-.106***	-.101***	-.121***
	(.00)	(.00)	(.00)
Agricultural Employment	-.029*	-.023*	-.033*
	(.00)	(.00)	(.00)
Population Growth	.054***	.039***	.045***
	(.00)	(.00)	(.00)
Tertiary Education	.004	.003	.006
	(.00)	(.00)	(.00)
Trade Openness	.015	.011	.014
	(.00)	(.00)	(.00)
Migrant Population	.039***	.033***	.041***
	(.00)	(.00)	(.00)
Government Size	-.017*	-.012*	-.019*
	(.00)	(.00)	(.00)
Labor Regulation	-.072***	-.069***	-.082***
	(.00)	(.00)	(.00)
Democracy	.007	.003	.010
	(.00)	(.00)	(.00)
Female Representation	-.124***	-.119***	-.133***
	(.00)	(.00)	(.00)
Female Labor	-.088***	-.076***	-.092***
	(.00)	(.00)	(.00)
Unemployment Rate	-.001	-.001	-.001
	(.00)	(.00)	(.00)
N	2,095	2,095	2,095
AIC	-9268.7	-8216.5	-9813.1
BIC	-911.6	-611.0	-1101.3

Table A4-6. List Countries in Regions

Western Europe, North America, and Oceania	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States
Middle East & North Africa (MENA)	Algeria, Bahrain, Cyprus, Egypt, Greece, Iran, Israel, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, Yemen
Sub-Saharan Africa	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameron, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Ivory Coast, Ethiopia, Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leon, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe
Latin America	Argentina, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela
South & Southeast Asia	Bangladesh, Bhutan, Cambodia, China, Fiji, India, Indonesia, South Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Timor, Vietnam
East Europe & Central Asia (former communist)	Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Ukraine

A5-1. Descriptive Statistics

	Sample 1				Sample 2			
Dependent Variables	***Mean or %***	***S. D.***	***Min***	***Max***	***Mean or %***	***S. D.***	***Min***	***Max***
Women's Share of Seats in National Parliaments (WSSNP)	18.56	10.86	0.91	53.07				
Gender Gap in Political Empowerment (GGPE)					.20	.13	0	.75
Independent Variables (Time-Varying)								
Political Globalization Index	72.15	16.81	31.02	98.06	76.82	14.13	33.90	98.06
GDP per capita (log)	8.73	1.46	5.54	11.63	8.97	1.38	5.63	11.62
Gender Educational Parity	.93	.16	.40	1.34	.96	.12	.47	1.33
Democracy	.65	.22	.13	.93	.66	.22	.13	.93
Years Since Women's Suffrage	63.67	20.21	4	126	69.23	19.94	13	126
Independent Variables (Time-Invariant)								
Religious Fractionalization	.43	.23	0	.86	.42	.23	0	.86
Proportional Representation	.40	.49	0	1	.41	.49	0	1
Gender Quotas (binary)	24.83%				32.33%			
Predominant Religion								
Muslim	15.19%				14.20%			
Catholic	39.66%				40.71%			
Protestant	19.40%				19.45%			
Other	25.75%				25.64%			
N	2,423				1,373			
N of Countries	109				104			
Years	1997 - 2019				2006 - 2019			

Data Sources: World Development Indicators (World Bank 2021), World Economic Forum (WEF) Global Gender Gap Report 2020, Varieties of Democracy (V-Dem v12) 2022, KOF Swiss Economic Institute 2019, Ramirez et al. (1997), The Quality of Government (QoG) 2022.

Table A5-2. Growth Curve Models of WSSNP and GGPE

	Women's Share of Seats in National Parliaments (WSSNP)		Gender Gap in Political Empowerment (GGPE)	
Growth Parameters	***Model 1***	***Model 2***	***Model 3***	***Model 4***
Time	.75***	.88***	.00**	.00
	(.05)	(.10)	(.00)	(.00)
Time^2	-.01***	-.01***	.00	.00
	(.00)	(.00)	(.00)	(.00)
Catholic [a]		7.97***		.09*
		(1.66)		(.04)
Protestant		10.71***		.06
		(1.90)		(.05)
Other		4.38*		.10*
		(1.83)		(.05)
Catholic × Time		.00		.00
		(.13)		(.00)
Protestant × Time		-.62***		.01
		(.15)		(.01)
Other × Time		-.01		-.01
		(.14)		(.01)
Catholic [a] × Time^2		.00		.00
		(.00)		(.00)
Protestant × Time^2		.02***		-.00
		(.00)		(.00)
Other × Time^2		-.00		.00
		(.00)		(.00)
Intercept	9.21***	3.48**	.08***	.02
	(.67)	(1.26)	(.02)	(.03)
Variance T (S.E.)	.23 (.02)	.22 (.02)	.00 (.00)	.00 (.00)
Variance Constant (S.E.)	80.53 (8.62)	68.53 (7.37)	.02 (.01)	.02 (.01)
Covariance (T, Constant) (S.E.)	-.82 (.34)	-.71 (.31)	-.00 (.00)	-.00 (.00)
N	4,098	4,098	1,920	1,920
N of Countries	189	189	155	155
AIC	23170	23128	-6552	-6587
BIC	23214	23229	-6513	-6498

Data Sources: World Development Indicators (World Bank 2021), and World Economic Forum (WEF) Global Gender Gap Report 2020

[a] Islam serves as the reference category.

Robust Standard errors in parentheses

* $p < .05$, ** $p < .01$, *** $p < .001$

Table A5-3. Growth Curve Models of WSSNP and GGPE Conditioned on Time-Varying Variables

	Women's Share of Seats in National Parliaments (WSSNP)	Gender Gap in Political Empowerment (GGPE)
Time-Varying Independent Variables	***Model 1***	***Model 2***
Political Globalization Index	.217***	.347*
	(.06)	(.17)
GDP per capita (log)	.095***	.040
	(.02)	(.04)
Gender Educational Parity	.146	-.224
	(.08)	(.20)
Democracy	.331***	.254***
	(.04)	(.07)
Years Since Women's Suffrage	.138***	-.110
	(.04)	(.15)
Time-Invariant Independent Variables (Effects on T)		
Religious Fractionalization	.043	-.103
	(.04)	(.08)
Proportional Representation	.008	-.037
	(.02)	(.03)
Gender Quotas (binary)	.079***	.091**
	(.01)	(.03)
Time-Invariant Independent Variables (Effects on T^2)		
Religious Fractionalization	-.002	.003
	(.00)	(.00)
Proportional Representation	-.001	.001
	(.00)	(.00)
Gender Quotas (binary)	-.003***	-.003*
	(.00)	(.00)
Predominant Religion Controlled	**Yes**	**Yes**
Variance T (S.E.)	.01 (.00)	.01 (.00)
Variance T^2 (S.E.)	.00 (.00)	.00 (.00)
Covariance (T, T^2) (S.E.)	-.00 (.00)	-.00 (.00)
N	2,423	1,373
N of Countries	109	104
AIC	1318	435
BIC	1492	591

Data Sources: World Development Indicators (World Bank 2021), World Economic Forum (WEF) Global Gender Gap Report 2020, Varieties of Democracy (V-Dem v12) 2022, KOF Swiss Economic Institute 2019, Ramirez et al. (1997), The Quality of Government (QoG) 2022.
Standard errors in parentheses
* $p < .05$, ** $p < .01$, *** $p < .001$

Table A5-4. Growth Curve Models of WSSNP with Interactions

	WSSNP		GGPE	
	Model 1	***Model 2***	***Model 3***	***Model 4***
Main Effect				
Political Globalization Index	.281**		.754**	
	(0.11)		(.34)	
Interactions				
Political Globalization Index ×				
Religious Fractionalization	-.139		-.595	
	(.20)		(.64)	
Predominant Religion				
Muslim		.186**		.240
		(.06)		(.14)
Catholic		.247***		.386**
		(.06)		(.14)
Protestant		.304***		.445***
		(.06)		(.14)
Other		.171**		.296*
		(.06)		(.14)
Time-Invariant Controls	**Yes**	**Yes**	**Yes**	**Yes**
Time-Varying Controls	**Yes**	**Yes**	**Yes**	**Yes**
N	2,423	2,423	1,373	1,373
N of Countries	109	109	104	104
AIC	1319	1310	668	605
BIC	1499	1449	744	686

Data Sources: World Development Indicators (World Bank 2021), World Economic Forum (WEF) Global Gender Gap Report 2020, Varieties of Democracy (V-Dem v12) 2022, KOF Swiss Economic Institute 2019, Ramirez et al. (1997), The Quality of Government (QoG) 2022.

Standard errors in parentheses

* $p < .05$, ** $p < .01$, *** $p < .001$

Table A5-5. Model Comparison and Robustness Check

	WSSNP			GGPE		
	Growth Curve	***Two-Way Fixed Effects***	***Prais–Winsten Regression with Panel-Corrected Standard Errors***	**Growth Curve**	***Two-Way Fixed Effects***	***Prais–Winsten Regression with Panel-Corrected Standard Errors***
main						
Political Globalization Index	.217*** (.06)	.226* (.09)	.312*** (0.09)	.347* (.17)	.198* (.07)	.264** (.04)
GDP per capita (log)	.095*** (.02)	.061* (.03)	.106*** (.03)	.040 (.04)	.022 (.08)	.040 (.03)
Gender Educational Parity	.146 (.08)	.297 (.22)	.361 (.23)	-.224 (.20)	-.051 (.19)	.225 (.19)
Democracy	.331*** (.04)	.220*** (.04)	.162*** (.04)	.254*** (.07)	.125* (.05)	.226*** (.05)
Years Since Women's Suffrage	.138*** (.04)	.289*** (.07)	.377*** (.06)	-.110 (.15)	.203 (.17)	.432 (.17)
N	2,423	2,423	2,423	1,373	1,373	1,373
Countries	109	109	109	104	104	104
AIC	1318	1101	1202	435	293	368
BIC	1492	1287	1329	591	301	476