SOME REGIONAL ASPECTS OF BUSINESS CYCLES; THE 1957-1958 CONTRACTION IN OKLAHOMA

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SOME REGIONAL ASPECTS OF BUSINESS CYCLES:

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PREFACE

Only three major empirical studies of regional business cycles have been published up to this time. All have been extremely limited in scope and general validity. This study attempts to add some amount of information to the current knowledge concerning regional cycles. As far as can be determined, no comparable systematic study of the cyclical fluctuations in Oklahoma has been made. However, because of the limited data and because of the narrow focus of the study, the findings must be considered as preliminary and subject to qualification and revision with further expansion of knowledge in this area.

As usual, thanks cannot be expressed to all who have shared in the preparation of this thesis. Still, acknowledgements should be made to Professors John J. Klein and Julian H. Bradsher who suffered patiently in reading the numerous preliminary drafts of the study. Particular thanks should also be given to Warren E. Moeller of the University of Oklahoma Bureau of Business Research for his help in explaining the compilation and adjustment of data published in the Oklahoma Business Bulletin.

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CHAPTER I

A GENERAL VIEW OF THE PROBLEM

I. The Scope of the Study

This thesis is an investigation of the effects of the 1957-1958 contraction in Oklahoma. In general, it is a descriptive study. The immediate purpose is: first, to identify and explain the differences between Oklahoma and the rest of the nation in amplitude and chronology during the contraction; and, second, to discover, as far as possible, the causes of the differences that occurred.

In a broader sense, the study attempts to examine the empirical relationships between state and national economic activity. Such an investigation can, perhaps, provide clues as to the precise means of transmission of cyclical fluctuations to this and similar areas. Ultimately, then, the inquiry could, in some small way give a clearer picture of the nature and origin of business fluctuations.

But, the study of one phase of a single business cycle in one state is not by any means sufficient to provide complete or conclusive answers to any part of these problems. The choice of a different geographical area, a different cycle, or even a different phase of the same cycle, may completely alter the results that are obtained. The conclusions, in all cases, therefore must be considered as preliminary parts of a larger body of available evidence.

II. The Analytical Background

In itself, the study of regional[1] cycles is related to the conceptual problems involved in defining a business cycle. Arthur F. Burns and Wesley C. Mitchell, for example, have proposed one definition:

> Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar character with amplitudes approximating their own.[2]

For the purposes, here, the significant part of the definition is centered about the phrase, " . . . a type of fluctuation found in the aggregate economic activity of nations." This restriction as to geographical area almost automatically implies that national economic activity is the relevant context for the study of the business cycle.

But requiring that cycles occur nationally may obscure movements in smaller economic areas that otherwise fulfill the prerequisites of a business fluctuation. In addition, if fairly large regional variations exist, they may produce such wide dispersions in national data that the definitional condition that movements occur

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[1] The term "regional," as it is used hereafter, should be understood to mean geographical areas defined not only by economic, but also by political characteristics, e.g. cities or states.

[2] Arthur F. Burns and Wesley C. Mitchell, Measuring Business Cycles (New York, 1946), p. 3. The definition cited above is a modification of an earlier definition by Mitchell. See Mitchell, Business Cycles: The Problem and Its Setting (New York, 1927), p. 468.

simultaneously must be altered.[3]

The problem, though, involves more than pharisaical haggling over definitions. If wide cyclical differences appear among varying geographical areas, identification, prediction, and remedies, in many cases, may be more readily applied on a regional rather than national basis. The question of regional differences, however, does not lend itself to a single, unequivocal answer. Like most questions of degree, perhaps the best answer, instead, is found empirically.

III. Some Related Studies

A review of the literature reveals the empirical aspects of these differences have been largely ignored. Theoretical treatments, ranging from Walter Isard's programming models to Ohlin's landmark, Interregional and International Trade, are comparatively numerous, and will not be discussed here.[4]

Major empirical works dealing explicitly with this question, in contrast, are few and far between.[5] One of the earliest of such studies is Frank L. Kidner's California Business Cycles,[6] an investigation, in some detail, of cyclical fluctuations

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[3]These questions have been raised by Burns and Mitchell, but they apparently did not pursue the subject further. See, Burns and Mitchell, p. 5.

[4]See, for example: Walter Isard, "Interregional Linear Programming: An Elementary Presentation and a General Model," Journal of Regional Science, I (1958), pp. 1-59; Rutledge Vining, "Regional Variation in Cyclical Fluctuation Viewed as a Frequency Distribution," Econometrica, III (1945), pp. 183-213; Bertil Ohlin, Interregional and International Trade (Cambridge, 1933).

[5]A good background for dealing with this and related empirical problems is: Frank A. Hanna (ed.), Regional Income (National Bureau of Economic Research Studies in Income and Wealth, Vol. XXI, Princeton, 1957).

[6]Frank L. Kidner, California Business Cycles (Berkeley and Los Angeles, 1946).

in that state during the interwar period--roughly, from 1920 to 1940. Philip Neff and Annette Weifenbach have, in their Business Cycles in Selected Industrial Areas,[7] explored the relationship between urbanization and business cycles. Frank A. Hanna, in an article in The Review of Economics and Statistics,[8] has presented a correlation analysis of yearly changes in state personal incomes.

All three, to a varying degree, have indicated regional differences have apparently diminished over time.[9] And yet all of the investigations show geographical variation still may be significant under several conditions.

Kidner has suggested, on one hand, the industrial structure and rate of economic development in an area--in opposition to the countervailing forces of government monetary and fiscal policies--may be prime factors behind regional differences:

> It may be that the characteristics of minor cycles in certain regions which differ from the national pattern are determined in large part by the composition of the economy and by the rate of economic development in the region affected and the counteracting forces resulting from national economic and monetary policy must be more significant than is true in a minor fluctuation if their stimuli are effectively to be transferred to the smaller region. In a major cycle, however, the effect of national policy, and the consequences of sharp expansions or contractions in employment and investment resulting therefrom for the nation, may be sufficiently powerful to overcome the influence of regional differences in structure and to impose a high degree of similarity

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[7]Philip Neff and Annette Weifenbach, Business Cycles in Selected Industrial Areas (Berkeley and Los Angeles, 1949).

[8]Frank A. Hanna, "Cyclical and Secular Changes in State Per Capita Incomes, 1929-1950," The Review of Economics and Statistics, XXVI (1954), pp. 320-330.

[9]Kidner, Neff and Weifenbach seem to believe this decreasing cyclical variation was the result of the minor cycles in the mid-Twenties rather than the result of secular tendencies. See, Hanna, "Cyclical and Secular Changes in State Per Capita Incomes," p. 328; Kidner, p. 113; Neff and Weifenbach, p. 191.

on the cyclical behavior of the whole country.[10]

These ideas, in part, are confirmed by his study. California's industrial structure in that period conformed rather well to the general pattern nationally.[11] Business cycles in the state did not differ too greatly from national cycles except during the minor fluctuations in the mid-Twenties.[12] Divergences were the greatest during the expansion phase--probably as a result of the rapid economic development in the state at the time. And conformity appeared to be stronger during contractions --possibly due to pervasive government policies and adverse expectations.[13]

Neff and Weifenbach, on the other hand, have agreed that minor cycles, particularly those with little price variations, most likely produce greater regional differences.[14] Still, they find: "The relative amplitude of area cycles cannot be foreseen from knowledge of the industrial pattern, of its resource base, of the region it serves, or its rate of growth or decline."[15] Moreover, " . . . regardless of the method employed in measurement high rates of growth do not guarantee either unusually long or unusually short cycles."[16]

By employing regression techniques, Hanna has discovered, not too surprisingly, low-income states such as Oklahoma were more cyclically sensitive than high-income areas.[17] In addition, he finds what has been called an "accordian effect": variations among states appear to increase on the downward side and,

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[10]Kidner, p. 113. [11]Ibid., p. 112. [12]Ibid., p. 113. [13]Ibid.

[14]Neff and Weifenbach, pp. 192-193. [15]Ibid., p. 193. [16]Ibid., p. 192.

[17]Hanna, "Cyclical and Secular Changes in State Per Capita Incomes, 1929-1950," p. 322.

conversely, to decrease on the upward side of the cycle.[18] This effect, of course, is the result of low-income areas being more sensitive to changes in income nationally. As incomes move upward, the volatile low-income regions rise relatively more than high-income areas. Variations in income therefore decrease. Correspondingly as incomes fall, the more sensitive states, those with low incomes, fall more rapidly. Dispersions about national averages, as a result, rise.

Though valuable, each of these studies suffers from several handicaps. None covers recent periods. The latest, Hanna's, includes data to 1950. All of these investigations use national figures as "bench-marks"; no detailed examination of the causes of national changes and how they affect smaller regions are taken into consideration. The results are, in part, conflicting: witness Kidner's versus Neff and Weifenbach's conclusions regarding the importance of variations in economic growth and industrial structure.[19] The studies are extremely limited: Neff and Weifenbach's to six cities, Hanna's to one yearly statistical series, and Kidner's to one state--California.

Empirical evidence, concerning the nature and magnitude of regional differences during business cycles, then, is inadequate and rather sketchy. Although consideration of the effects of the contraction in Oklahoma, in itself, may have some intrinsic value, the thesis then will also attempt to provide some amount of evidence concerning the more general problem of regional variations.

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[18] Ibid., p. 323.

[19] See above, pp. 4-5.

IV. The Selection of Data

Ideally, data for an investigation such as this should include detailed statistics on income, employment, production, prices, interest rates, etc.[20] Unfortunately, available information falls far short of this goal. State income statistics, as an example, are available on a yearly basis in the Survey of Current Business and its supplement, Personal Income by States; monthly figures are available from the Oklahoma Business Bulletin. In all cases, the estimates are only for personal income. Breakdowns of the figures are made once yearly. The picture of short-run changes in income, then, is rather hazy.

Another important problem is that of comparability of state and national data. Occasionally, subtle, but rather significant differences appear among the diverse sources which, by necessity, are utilized.[21] For example, national series for retail sales are subdivided into durable and non-durable sales. Data, in addition, are presented separately for department stores sales. For Oklahoma, the same divisions appear, so, at first glance, the data are apparently comparable. Yet a closer examination shows department store sales are a subdivision on par with durable and non-durable sales. In Oklahoma data, the series, then, are broken into three classifications; nationally they are divided into two. The result, as a consequence, is rather confusing.

For reasons of expediency, the impact of the recession then is investigated in terms of its importance in various industries. For purposes of analysis, all economic

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[20]For a more complete discussion of sources and methodology see Appendix A.

[21]The series discussed below are found in the Oklahoma Business Bulletin and Survey of Current Business.

activity is divided according to the divisions published in the Standard Industrial Classification Manual:[22] agriculture, mining, construction, manufacturing, utilities, trade, services, finances, and government.

Whenever possible, monthly, seasonally adjusted data are used. But such figures in many cases, are not published. Unadjusted data is smoothed by means of a twelve month moving average, and since no current state or regional price indexes are available, differential movements in prices between the state and national economies are not accounted for.

V. The Plan of the Study

Excluding the introduction, the thesis is divided into four chapters. The first, "The Recession in the National Economy," attempts to describe, in general terms, the course of the contraction and the place of these events in an historical perspective. The goal, at this point, is to obtain some idea of the relative severity of the recession, discover possible causes, and identify the sectors in which the downturn was concentrated. The next chapter, "The Growth and Structure of the Oklahoma Economy," outlines some effects of the pattern of economic development and industrial location on the contraction. The following chapter, "The Contraction in Oklahoma," presents a picture of the timing and amplitude of the downturn in the state as compared to the recession in the rest of the nation. The final chapter, "Some Tentative Recommendations and Conclusions," as the title implies, is a discussion of the results of the inquiry.

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[22]See United States Bureau of the Budget, Standard Industrial Classification Manual, A Report Prepared by the Technical Committee on Industrial Classification (Washington, 1957).

CHAPTER II

THE RECESSION IN THE NATIONAL ECONOMY

I. Introduction

The nature of a contraction in aggregate activity may, to a great extent, determine the pattern of regional fluctuations. A minor cycle may produce downswings that can be offset by localized random factors such as weather or activities of individual state and local governments. A major concentration, on the other hand, may produce declines sufficient in magnitude to swamp the cumulative effects of influences tending toward regional divergence.

The related matters of duration and timing, moreover, may be strategic in the creation of differences among various areas. Some period of time may be necessary before the action and reaction of economic factors can produce relatively uniform patterns of behavior. Significant divergences in timing, wide variations in the number and length of leads and lags in various industries, may generate concommitant variations in economic activity in areas where the industries are located.

Yet not only the chronological, but the causal sequence of events must be taken into consideration as well. Declines similar in magnitude, timing, and duration may have very different regional effects. If one contraction were produced by cuts in federal spending, economic activity among regions may be influenced more or less uniformly, yet another were caused by declines in construction, regions

gaining population at a slower rate than the rest of the country may experience greater than usual decline.

It is necessary then to provide some idea of the nature of the recession in aggregate activity. This chapter is to fill that purpose. The discussion, however, is not intended to be comprehensive; the view, consequently, is rather impressionistic. Generally, the analysis is in terms of gross national product, non-farm employment and selected indicators of money, credit, and prices.[1] Other appropriate indicators will be reserved for later consideration.

The chapter is divided into several sections. The first compares the 1957-1958 contraction with other recessions; the second is a review of the timing of the downturn at the peak and lower turning points; and the third is an outline of the amplitude of the fluctuations that occurred. The last two sections, in turn, are subdivided into parts dealing with employment, income, and the money market. The final section is a summary of preceding sections.

II. An Historical Perspective

It is commonplace to note the same phases of individual business cycles have their own individual characteristics. Yet one of the more striking features of the 1957-1958 contraction was its similarity to other contractions.

Geoffrey Moore has noted:

> In terms of severity, or magnitude of decline from peak to trough, the 1957-58 contraction closely resembled many of its predecessors. The decline was somewhat larger, according to most measures of business activity, than in each of the four milder contractions since 1920, but much smaller than in the three severe contractions of 1920-21, 1937-38, and 1929-33. The intermediate position of the 1957-58

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[1] Unless otherwise noted, the sources of the data cited are presented in Appendix A.

contraction is shown also by a much longer record. The average decline during 1957-58 in three indexes of business activity was very close to the median of all the cyclical declines in those indexes since 1854. In other words, about half the declines were larger than the latest one and half were smaller.[2]

Nevertheless, in terms of duration the 1957-1958 contraction was considerably shorter than the majority of recorded downturns. The median period of contraction from 1854 to 1954 was approximately eighteen months.[3] The 1957-1958 contraction was only nine.[4] Only three declines have been shorter, although several were not much longer: the contraction from 1890 to 1891 lasted ten months; the one in 1948-1949 lasted eleven; three others, including that in 1953-1954, lasted thirteen months.[5]

Of all contractions, the similarity of the 1957-1958 contraction to other post-war recessions was probably the most striking. The Chairman of the Federal Reserve Board of Governors has commented:

> . . . It may be noted that the downward movement from the third quarter 1957 peak has been reminiscent in many ways of the declines that occurred in 1948-49 and in 1953-54. In these two post-war recessions, lows in activity were reached in less than a year from the cyclical peak and recovery to new high levels of output, demands, and employment was rapid and substantial.[6]

Gross national product in current dollars in the 1957-1958 contraction dropped 3.8 per cent from peak to trough in the series. Corresponding declines of 2.7 per cent occurred during 1953-1954 and 1948-1949.

The intermediate position of post-war contractions can, to a great extent, be

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[2]Geoffrey H. Moore, "The 1957-58 Contraction: New Model or Old?," The American Economic Review, IC (1959), pp. 295-296.

[3]Ibid., p. 293. [4]Ibid., p. 292. [5]Ibid., p. 293.

[6]William McChesney Martin, "Economic Policy Considerations," Federal Reserve Bulletin, XLIV (1958), p. 254.

explained in terms of the high level of government spending occurring in the period. Built-in stabilizers and a large underlying base of state and federal outlays may have prevented secondary downward movements induced by initial changes such as disinvestments in inventories. At the same time, cuts in federal outlays because of their importance may have, in many cases, tended to provide part of the initial downward impetus in these contractions, inducing declines that would not have occurred in periods when federal spending was less significant.

The pervasiveness of government spending, then, may be an important contributory factor in the decline that was found in regional differences during business cycles. The ubiquitous nature of monetary and fiscal policy may have outweighed local differences--e.g., in industrial structure or in random factors such as weather--that may produce varying geographical cyclical movements. A closer examination of the contraction, of course, is necessary before the idea can be confirmed.

III. The Sequence of Economic Events

The down-turn. According to National Bureau of Economic Research reference dates, the peak in aggregate activity was reached during July, 1957 and the trough in April, 1958.[7] A softening of the boom, however, began to appear as early as the first quarter, 1957.

Employment. The peak in non-agricultural wage and salary employment, as shown in Table I, occurred simultaneously with the reference cycle peak in July.

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[7] Moore, p. 292.

TABLE 1

THE CHRONOLOGY OF EMPLOYMENT, 1956-1958

(In months)

Item	Date		Lead (+) or Lag (-)		
	Peak	Trough	From reference cycle peak	From reference cycle trough	Duration of decline
Reference cycle	July, 1957	April, 1958	--mo.	--mo.	9 mo.
Non-agricultural wage and salary employment	July, 1957	May, 1958	0	-1	10
Manufacturing	January, 1957	July, 1958	+ 6	-3	18
Durable	January, 1957	July, 1958	+ 6	-3	18
Non-durable	July, 1956	July, 1958	+12	-3	24
Mining	January, 1957	January, 1958	+ 6	+3	23
Construction	July, 1956	July, 1958	+12	-3	24

Source: See Appendix

I (Continued)

Item	Date		Lead (+) or Lag (-)		
	Peak	Trough	From reference cycle peak	From reference cycle trough	Duration of decline
Public utilities	March, 1957	October, 1958	+4	-6	20
Trade	July, 1957	May, 1958	0	-1	10
Finance	a	a	a	a	a
Service	a	a	a	a	a
Government	a	a	a	a	a
Insured unemployment, inverted	May, 1957	July, 1958	+2	-3	14

[a]Continued rise from January, 1957 to December, 1958

Source: See Appendix

Yet declines in five industry divisions--durable manufacturing, non-durable manufacturing, mining, construction, and public utilities--began up to a year before the peak in aggregate activity.

The timing of the drops in employment, in fact, was even more striking than the number of leads. On one hand, the peaks in leading sectors were clustered in the nine months from July, 1956 to March, 1957. On the other, no peaks were achieved in the four months just before the reference cycle peak in July.

The stimulus of the Suez crisis, that began in August, 1956 and ended in March of the following year,[8] may have been partly responsible. The shortage of fuel oil and the concommitant slackening of production in Europe, induced a temporary rise in economic activity in the United States at the time. Since refining is classified as non-durable manufacturing, the shift in the demand for exported oil, then, may have caused a peak in non-durable manufacturing before the peak in durable manufacturing--the reverse of the sequence that usually occurs.

The early peaks in contract construction and public utilities may have been influenced by other factors. The Federal Reserve, in the period, was carrying on an increasingly vigorous program of credit restraint. Since some investment in these sectors probably is relatively interest elastic, the comparatively long leads in these areas may have been at least partly due to increasing rates of interest and tightening availability of credit.

Employment in government, services, and finance, in contrast to other sectors, rose steadily throughout the period. The rise apparently was primarily a

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[8]See, "A Matter of Deep Concern," Time, August 6, 1956, p. 34; "Blitz in the Desert," Time, November 12, 1956, p. 32; "Soldiers and Salvage," Time, December 3, 1956, p. 86.

combined result of secular influences and the inherent stability of employment in these areas. Government employment, of course, would not be directly affected by fluctuations in the private sector. Finance and services commonly exhibit large numbers of salaried workers not usually unemployed. All three sectors have historically shown tendencies toward more than proportional increases in production and employment than the rest of the economy. These tendencies, consequently, may have outweighed the downward cyclical movement and resulted in the continued rise in the period.

Income. On the next page Table II shows gross national product in constant dollars reached a peak in the third quarter of 1957 and a trough in the first quarter of 1958--a decline of two quarters. As might be expected, the changes in consumption were not so striking as those in investment and government outlays.

The downturn in personal consumption expenditures was relatively short and coincided with the duration and timing of the fall in gross national product. Non-durable goods expenditures coincided with the timing of consumption spending, but durable goods outlays lagged one quarter at the reference cycle peak and trough.

The discrepancy between the timing exhibited in employment in manufacturing and mining, with the timing of expenditures on durable and non-durable goods would support the contention that the long leads in employment were largely the result of the Suez crisis. No decline in consumption of durable or non-durable goods and, it should be noted, no decline in inventories occurred until during or shortly after the third quarter of 1957. Net exports, on the other hand, reached their peak during the crisis--in the first quarter, 1957.

Some cyclical influences, nevertheless, must have appeared at the time to

TABLE II

THE TIMING OF GROSS NATIONAL PRODUCT IN CONSTANT DOLLARS,[a] 1956-1958

(In quarters)

Item	Date		Lead (+) or Lag (-) (In quarters)		Duration of decline (in quarters)
	Peak	Trough	From reference cycle peak	From reference cycle trough	
Reference cycle	III, 1957	I, 1958	---	---	2
Gross national product	III, 1957	I, 1958	---	---	2
Personal consumption expenditures	III, 1957	I, 1958	---	---	2
Durables	IV, 1957	II, 1958	-1	-1	2
Non-durables	III, 1957	I, 1958	---	---	2
Services	b	b	b	b	b

[a]Base year: 1954

[b]Continued rise from I, 1957 to IV, 1958

Source: See Appendix

II (Continued)

Item	Date		Lead (+) or Lag (-) (in quarters)		Duration of decline (in quarters)
	Peak	Trough	From reference cycle peak	From reference cycle trough	
Gross private domestic investment	II, 1957	II, 1958	+1	-1	4
New construction	I, 1957	II, 1958	+2	-1	5
Producers' equipment	IV, 1956	III, 1958	+3	-2	7
Business inventories	III, 1957	III, 1958	---	-2	4
Non-farm	III, 1957	II, 1958	---	-1	3
Net exports	I, 1957	II, 1958	+2	-1	5
Government purchases	II, 1957	III, 1957	+1	+2	1
Federal	I, 1957	IV, 1957	+2	+1	3
State and local	b	b	b	b	b

[b]Continued rise from I, 1957 to IV, 1958

Source: See Appendix

keep employment from rising from the decline after the Suez peak. Federal spending, new construction, and expenditures on producers' durable equipment, correspondingly, began to drop during or shortly after the crisis.

Of the three, producers' durable equipment fell first--after the fourth quarter, 1956. The long lead of three quarters and the long decline, seven quarters, in durable equipment might well be expected since outlays for this purpose are so intimately linked with volatile expectations concerning the near future. The lead was probably also influenced, via the accelerator, by the slowing increases in consumption expenditures and the restrictive policies of the Federal Reserve.

These declines were reinforced by a decline in federal spending in the second quarter, 1957 which, due to its relative importance, may easily have acted as a triggering mechanism in inducing declines in other sectors of the economy. A peak in outlays for new construction, as noted before, had occurred in the first quarter. Declines during the second quarter in manufacturing employment--particularly in durables--and in mining and public utilities occurred at the same time as the drop in federal spending.

The fall in total government purchases--federal, state, and local expenditures--began after the third quarter, coinciding with the decline in gross private domestic investment. Contractions in these sectors were followed during the next quarter by drops in personal consumption expenditures and investment in inventories. Downturns in those expenditures were offset somewhat by increasing outlays of state and local governments and consumption expenditures for services. These increases, matched by corresponding rises in employment, probably were the result of secular influences.

Money, credit, and prices. As noted previously, the recession was preceded by the ever-tightening restrictive policies of the Federal Reserve. A summary of the behavior of some indicators of conditions in the money market is shown in Table III.

Bank rates on business loans, as an indicator of credit availability and the cost of borrowing, rose until the fourth quarter of 1957. The stock of money, as measured by demand deposits and currency outside banks, fell after March, 1957, tending to accelerate the rise in interest rates. Through changes in bank credit, the fall in the money supply probably influenced and was influenced by the simultaneous peaks in other sectors--in federal spending, new construction, manufacturing, mining, and public utilities.

Yet time deposits rose throughout the entire period, mitigating the decrease in the stock of money. One large influence in this increase was a one-half per cent increase in maximum allowable interest on these deposits.[9] Another related factor was the increasing opportunity cost, with rising interest rates, of holding non-interest bearing assets--primarily demand deposits and currency. High rates of interest were still maintained even when the recession was well underway. Any tendency toward decreases in these rates, moreover, was probably offset by shifts in the propensity to hoard due to adverse expectations and increases in risk.

Debits to demand deposits probably also showed the results of the forces influencing both time and demand deposits. As the money supply decreased and the cost of holding money rose, existing cash balances were economized, resulting in a

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[9] Forty-Fourth Annual Report of the Board of Governors of the Federal Reserve System, p. 101.

TABLE III

THE TIMING OF SELECTED INDICATORS OF MONEY, CREDIT, AND PRICES, 1956–1958

(In months and quarters)

Item	Date		Lead (+) or Lag (-)		
	Peak	Trough	From reference cycle peak	From reference cycle trough	Duration of decline
Reference cycle					
Months	July, 1957	April, 1958	---	---	9
Quarters	III, 1957	I, 1958	---	---	2
Demand deposits and currency outside banks[a]	March, 1957	October, 1957	+7	+6	7
Time deposits[a]	b	b	b	b	b
Debits to demand deposits[a]	b	b	b	b	b

[a]Monthly series

[b]Continued rise from January, 1957 to December, 1958

Source: See Appendix

III (Continued)

Item	Date: Peak	Date: Trough	Lead (+) or Lag (-): From reference cycle peak	Lead (+) or Lag (-): From reference cycle trough	Duration of decline
Consumer price index[a]	b	b	b	b	b
Wholesale price index[a]	May, 1958	October, 1958	-10	-6	5
Excluding farm and food products	October, 1957	March, 1958	- 3	+1	5
Bank loans on business loans, inverted[c]	c	IV, 1957	+ 6	+2	6

[a]Monthly series

[b]Continued rise from January, 1957 to December, 1958

[c]Quarterly series, continued decline until trough

Source: See Appendix

greater turnover of balances to meet transaction and financial demands. Debits, as a result, rose throughout the period.

Prices, as usual, exhibited their characteristic "stickiness." Wholesale prices fell only slightly. Consumer prices did not fall at all. To a great extent, though, stability was due to continued rises in the price of food and services that offset declines in other areas. Wholesale prices, excluding farm and food products, for example, fell seven months before the wholesale index itself.

The lower turning point. In spite of the deflationary pressures that appeared early in 1957 and the actual appearance of the downturn after July, it was not until at least three months later, in November, that the recession was actually recognized:

> By late October, the composite of most recent economic information suggested that inflationary pressures were abating . . . . By mid-November, information becoming available, incomplete though it was, indicated that a general downward adjustment was setting in.[10]

Monetary and fiscal measures were set into operation but were limited by a fear of inflation and scruples against extending the domain of federal control.[11] In

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[10]Martin, p. 254.

[11]These attitudes were expressed in one form or another many times during the course of the contraction. For example, William McChesney Martin had said: "Now that we are in the contractive phase, we must take whatever actions are needed to minimize the hardships and to foster vigorous recovery. But in so doing we must also recognize that excessive stimulus during recession can sow seeds of inflation that can grow to jeopardize our long-run stability and our economic strength at a time when as a nation we are confronted with a special urgency to maintain all the productive strength we can muster on a sustainable basis." Martin, p. 257.

President Eisenhower in a letter written during the depths of the recession to the Republican minority leaders in the House and Senate had commented: "The proper relation of government to the growth and vigor of . . . an economy must necessarily be to stimulate private production and employment, not to substitute public spending for private spending, nor to extend public domination over private activity." Press Release by James C. Hagerty, "Letter from President Eisenhower to Joseph W. Martin, Minority Leader of the House of Representatives and to William F. Knowland, Minority Leader, United States Senate," March 6, 1958. (Mimeographed.)

addition to largely automatic factors--credit expansion, deficits induced by progressive taxes, and flows of transfer payments--federal programs for recovery largely consisted of a speed-up of existing programs--particularly in construction and defense.

Down-payments were lowered on F.H.A. insured housing; the federal highway construction program was extended; the urban renewal program was accelerated; defense contracts during 1958 rose from $17.8 billion to $23.6 billion.[12] A $3.4 billion surplus in the third quarter of 1957 was transformed to a $9.9 billion deficit by the second quarter of 1958.[13] Still, this deficit was not primarily from a rise in expenditures, but rather a $7.2 billion decline in receipts.[14]

The Federal Reserve began a program of credit expansion starting in October, 1957 with the purchase of approximately $1 billion in securities.[15] Discount rates in the next two months were reduced 1/2 per cent, and by March, 1958 had fallen from 3 1/2 per cent to 2 1/4 per cent.[16] Reserve requirements were reduced in three stages beginning in February, 1958, falling 2 per cent for reserve city and control reserve city banks and 1 1/2 per cent for country banks, releasing an estimated $1.4 billion in reserves.[17]

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[12]Press Release by James C. Hagerty, "Fact Paper on Certain Programs and Proposals Bearing on the Current Economic Situation," February 12, 1958. (Mimeographed.)

[13]U.S. Department of Commerce, Office of Business Economics, U.S. Income and Output: 1958 (Washington, 1959), p. 24.

[14]Ibid.

[15]Forth-Fourth Annual Report of the Board of Governors of the Federal Reserve System, p. 32; Forty-Fifth Annual Report of the Board of Governors of the Federal Reserve System, p. 30.

[16]Ibid. [17]Forth-Fifth Annual Report, p. 30.

Income. The immediate effects of government action resulted in some rises in constant dollar gross national product after the first quarter in 1958. Not surprisingly, government purchases lead, consumption was coincident, and investment lagged behind the reference date in the first quarter.

Data in Table II shows total government expenditures rose as a result of the slowing decline in federal outlays and the continual increase in state and local government expenditures throughout the period. The trough in federal expenditures followed in the next quarter, leading the reference cycle date by one quarter.

Personal consumption expenditures reached a trough in the next period, coinciding with the trough in expenditures for non-durable goods. The decline in more postponable purchases, durable goods, ended one quarter after the reference cycle. Expenditures for services, of course, rose throughout the period.

The trough in gross private domestic investment, as might be expected, lagged though only by one quarter. The timing was influenced by revivals in non-farm business inventories as a result of the recovery in consumption expenditures and the lagged effects of government activity in stimulating construction--particularly residential construction. Business inventories including farm products and expenditures for producers' durable equipment lagged behind the reference cycle trough by the greatest amounts--two quarters. The expenditures on plant and equipment were probably affected by low producer expectations; the accumulation of inventories occurred with unseasonably bad weather and low agricultural production. Net exports of goods and services reached a trough in the second quarter of 1958, though later in the year they declined once again with a slowing of the boom overseas and the rise of domestic incomes and imports.

Employment. Table I indicates the upturn in employment lagged somewhat behind the increases in real income, the trough in wage and salary employment occurring early in the second quarter--in May, 1958. In itself, the trough in total employment seemed to be the result of the trough at the same date in wholesale and retail trade; the increase in mining after January, 1958; and the continued rises in employment in finance, services, and government. The early rise in employment in mining, in turn, could partly be attributed to "voluntary" quotas on oil imports imposed in August, 1957.[18] The increase in wholesale and retail trade could probably be traced to the influence of previous upturns in personal consumption expenditures. The changes in government, services, and finance were likely the result of secular forces.

Employment in contract construction and manufacturing reached troughs in the third quarter, in July, both representing the effects of the general upturn that was taking place in other sectors. Rises in construction, of course, most likely represented the lagged effects of federal countercyclical policies primarily concentrated in that sector. Troughs in both sectors, moreover, were probably influenced by the coincident trough in producers' durable equipment and the trough in expenditures for durable goods in the preceding quarter.

The longest lag in the revival occurred in public utilities. To a certain degree, this lag is explainable in terms of the relatively high interest rates maintained in the period and the interest-elasticity of some investments in this sector. The secular decline in some components such as railroads, in addition, had undoubtedly

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[18]"Stormy Petrol," Time, August 12, 1957, p. 78.

some effects in producing the relatively slow rise in employment.

Insured unemployment reached its peak in July at the same time troughs were reached in construction and manufacturing employment. The data, however, probably understated the characteristic lag in this series since some number of workers, still unemployed, were omitted as their unemployment benefits expired.

Money, credit, and prices. Only a few words probably are necessary in explaining the timing of monetary indicators at the trough. Throughout, the pervasive influence of the Federal Reserve should be noted in its successive expansions of money and credit.

The stock of money reached an early trough in October, 1957 as a result of the open market operations at the time. The peak in bank rates on business loans was reached in the same period--in the first quarter. Wholesale prices excluding farm and food products reached a trough one month before the reference cycle trough in April, although the decline in the entire index did not end until October. Debits to demand deposits, the consumer price index, and time deposits, as mentioned before, rose throughout the entire period.

IV. The Amplitude of Fluctuations

Employment. As a rule, there appeared to be some correlation between the timing and the magnitude of the decline in employment in various industry divisions: sectors with long leads usually had the greatest per cent declines. Employment in contract construction, for example, evidenced the longest lead of any industry division--twelve months; Table IV indicates though the rate of decline was small, the fall in construction employment was rather large--10.8 per cent.

TABLE IV

THE AMPLITUDE OF THE DECLINE IN EMPLOYMENT, 1956-1958

Item	Per cent of 1956 monthly average	Duration of decline in months	Per cent change from series peak to trough	Average rate of change per month
Non-agricultural wage and salary employment	100.0%	10 mo.	- 3.0%	-0.3%
Manufacturing	32.6	18	- 8.3	-0.5
Durable[a]	13.9	18	-11.6	-0.7
Non-durable[a]	13.6	24	- 4.5	-0.2
Mining	1.6	23	-12.6	-0.6
Construction	5.8	24	-10.8	-0.4
Public utilities	8.0	20	- 0.7	---
Trade	21.8	10	- 1.3	-0.1
Finance	4.4	b	+ 2.6	+0.1
Service	12.0	b	+ 3.1	+0.1
Government	13.8	b	+ 6.9	+0.3
Insured unemployment, inverted	100.0	14	-45.8	-3.3

[a]Detail may not equal totals due to rounding

[b]Continued rise from January, 1957 to December, 1958

Source: See Appendix

Actually, non-durable manufacturing was the only sector in which long leads were not accompanied by large declines. In spite of a twelve month lead, employment in that series fell only 4.5 per cent at a rate of .2 per cent per month. This discrepancy between timing and magnitude only support the idea that the early peak in the data was not necessarily created by cyclical forces, but rather by the increase in domestic refining during the Suez affair.

Another striking feature of the data was that the declines in durable manufacturing, mining, and contract construction were clustered around 10.0 per cent. Activity in such areas was concentrated in the production of relatively durable goods, so such drops, in a sense, could be expected. The close correspondence in timing in these sectors, the similar duration of declines, noted before, would also tend to produce drops of the same magnitude.

More interesting, however, was the average rates of decline in these areas. All, except contract construction, fell at relatively rapid rates, suggesting the effects of autonomous declines, particularly in investments, inventories, and equipment. Contract construction, on the other hand, suggests the opposite case--gradual declines induced by successive tightenings of credit by the monetary authority.

The more varied pattern in other sectors, nevertheless, implies more diverse influences. Evidence concerning employment in transportation and public utilities suggests the same influence as that in construction--though to a lesser degree. The almost negligible decline in wholesale and retail trade, though, is perhaps best explained as effects of a relatively larger number of salaried workers in that area and the rather short decline in personal consumption expenditures. Employment in government, services, finance and real estate were probably also affected by a high number

of salaried workers, increases being the result of secular influences. The discrepancy occurring between the decline in employment, 3.0 per cent, and the rise in insured unemployment, 45.8 per cent, was caused, most likely, since the majority of the unemployed were newly entering the labor force or were the previous result of frictional unemployment.

Income. Table V shows the drop in constant dollar gross national product was moderate, proceeding at a rate of 2.4 per cent per quarter. The decline in consumption, as might be expected, was relatively slight, the major fall being in postponable purchases--durable goods.

The fall in investment was, as is typical, the largest and most rapid--26.7 per cent at a rate of 6.7 per cent per quarter. Still the figures are somewhat misleading, for the fall in investment prior to the fourth quarter of 1957 was relatively gradual. In Figure 1, the points plotted look remarkably like a movement along the marginal efficiency of capital, interest rates rising by greater and greater amounts, investment falling. After the third quarter, the decline became rapid; investment fell quickly from $59.2 billion to $44.2 billion in the second quarter of 1958 as if representing a downward shift in the investment function. The same general pattern was followed in investment in inventories and producers' durable equipment. But new construction, varied by dropping smoothly and less rapidly in the period.

The relatively small decline in federal spending, 3.7 per cent, and the resulting decline in total government spending, 1.3 per cent, were offset, to some extent, by their relatively large proportion of total gross national product. Again, it should be noted the rise in state and local spending contributed in mitigating the declines that occurred, showing a steady increase-- 41.3 per cent per quarter.

TABLE V

THE AMPLITUDE OF THE DECLINE

IN CONSTANT DOLLAR GROSS NATIONAL PRODUCT,[a] 1956-1958

Item	Per cent of 1956 monthly average	Duration of decline in quarters	Per cent change from series peak to trough	Average rate of change per quarter
Gross national product	100.0%	2	- 4.0%	-2.4%
Personal consumption expenditures	65.5	2	- 1.6	-0.8
Durables	9.4	2	-10.9	-5.8
Non-durables	32.4	2	- 5.4	-2.7
Services	23.8	---	+ 7.2	+0.9
Gross private domestic investment	15.7	4	-26.7	-6.7
New construction	8.2	5	- 4.7	-0.9
Producers' equipment	6.2	7	-27.1	-3.9
Business inventories	c	4	c	c
Non-farm	c	3	c	c
Net exports	c	5	c	c
Government purchases	18.1	1	- 1.3	-1.3
Federal	10.4	3	- 3.7	-1.2
State and local	7.8	b	+10.1	+1.3

[a]Base year: 1954; detail may not equal totals due to rounding

[b]Continued rise from I, 1957 to IV, 1958

[c]Comparable figures not available

Source: See Appendix

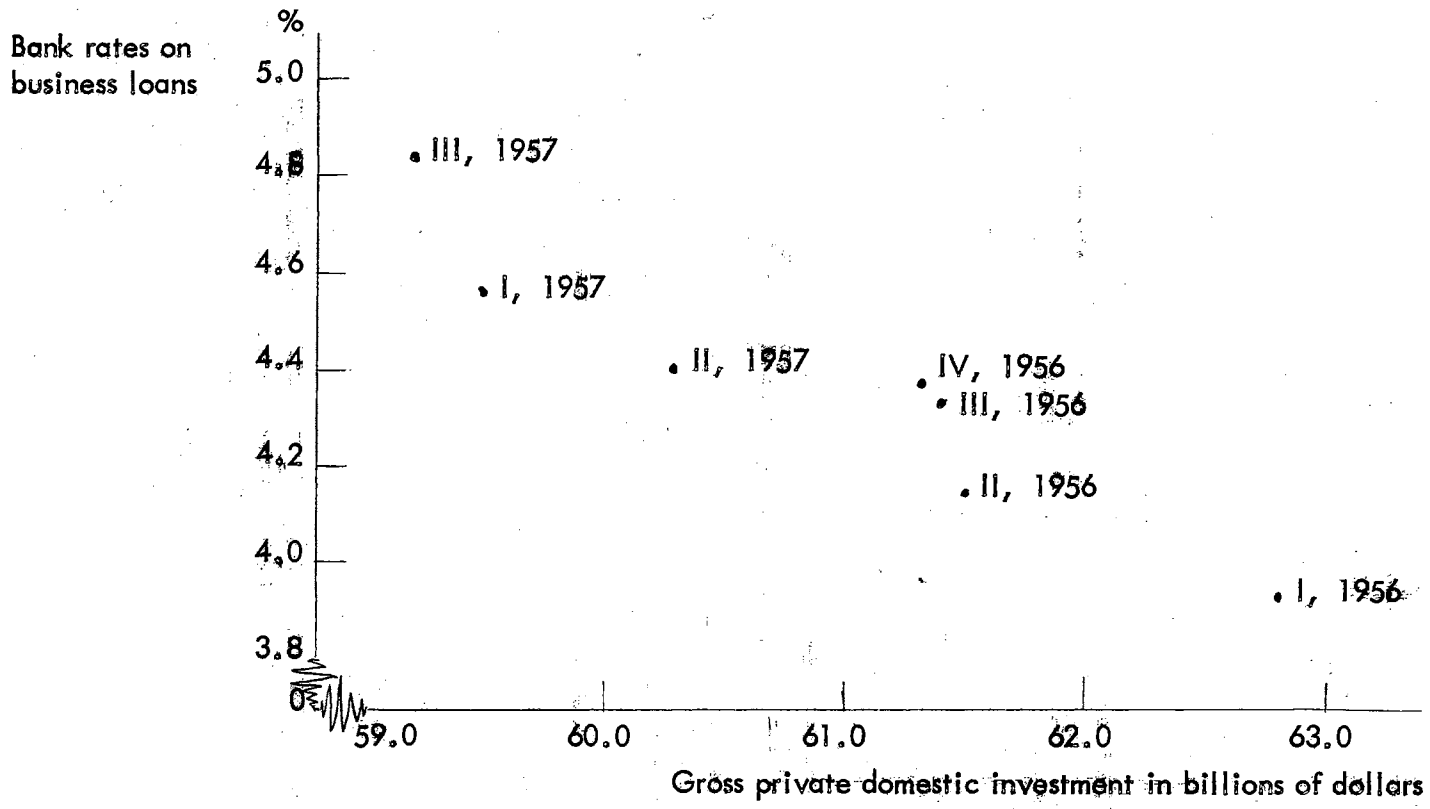

Fig. 1.--Gross Private Domestic Investment in Constant (1954) Dollars and Bank Rates on Business Loans in Seven Quarters, 1956-1957

Source: See Appendix

Money, credit, and prices. As shown in Table VI, the drop in the money supply, in contrast to most other variables, was relatively slight--0.4 per cent. Actually, the rise in interest rates, at least in terms of magnitude, appeared to be more important, rising to a figure 14.1 per cent greater than in the first quarter, 1956. The rise in debits, though not as large, represented another significant change--an increase of 10.7 per cent. The increase in time deposits was the greatest of all-- +23.0 per cent. The change in prices, on the other hand, was comparatively small, consumer prices rising 4.5 per cent at a rate of 0.2 per cent per month and wholesale prices falling 0.5 per cent at 0.1 per cent per month.

The changes that occurred, of course, were highly interrelated. As noted previously, the decline in the stock of money and the Federal Reserve "tight" money policy likely produced the higher interest rates, increasing the cost of holding money, and producing shifts in the demand for time deposits, causing a more intensive utilization of demand deposits and some increase in bank debits. Affected by other factors such as institutional rigidities and short supplies of food, prices, nonetheless, remained relatively stable.

V. Summary

Several factors were probably important in creating the downturn. The end of the Suez crisis as a random influence may likely have induced an initial downward push that was reinforced by cuts in federal spending and the restrictive policies of the Federal Reserve. The early adjustments appeared in manufacturing, mining, and construction with the slowing of the boom and tightening credit. These initial downward movements were apparently succeeded by an autonomous drop in the investment

TABLE VI

THE AMPLITUDE OF THE DECLINE

IN SELECTED INDICATORS OF MONEY, CREDIT, AND PRICES, 1956-1958

Item	Duration of decline in months or quarters	Per cent change from series peak to trough	Average rate of change per month or quarter
Demand deposits and currency outside banks[a]	7	- 0.4%	—%
Time deposits[a]	b	+23.0	+1.0
Debits to demand deposits[a]	b	+10.7	+0.4
Consumer price index[a]	b	+ 4.5	+0.2
Wholesale price index[a]	5	- 0.5	-0.1
Excluding farm and food products	5	- 0.6	-0.1
Bank rates on business loans, inverted[c]	c	-14.1	-2.4

[a]Monthly series

[b]Continued rise from January, 1957 to December, 1958

[c]Quarterly series, continued decline until trough

Source: See Appendix

function, large drops in investments in inventories and in producers' durable equipment, followed by declines in consumption outlays--particularly in durable goods.

The trough was reached, and recovery begun as increased federal spending began to take effect and consumer spending rose once again. The upturn was reinforced by increases in outlays for new construction and investments in non-farm inventories. The depth of the contraction was probably shortened by a large base of government spending and the relative stability in consumption, strengthened by government deficits and flows of transfer payments.

CHAPTER III

THE GROWTH AND STRUCTURE OF THE OKLAHOMA ECONOMY

I. Introduction

Numerous influences may determine the pattern of geographical cyclical variation. Here, they are classified under four headings: the nature of the contraction, the pattern of regional development, the structure of the regional economy, and random factors.

The nature of the contraction may affect regional variation by differences in timing, magnitude, and duration of fluctuations in various sectors. Random factors, by their nature, include imponderables such as variations in weather and thus may have different effects depending on the circumstances in which they occur. The region, in turn, may be affected by national geographical variations in the location of industries and the rate of economic development.

The pattern of geographical specialization in itself may be sufficient to produce cyclical differences among areas. For example, if declines in aggregate activity were concentrated in durable manufacturing, it would seem reasonable to expect the greatest declines to be concentrated geographically in areas heavily specialized in those industries, and conversely, the smallest drops would be concentrated in areas that produce other goods.

In a region experiencing a higher rate of economic growth than other areas,

there would seem to be some presumption for believing, at least from historical evidence, that expansions will be longer and more vigorous or contractions will be shorter and less severe. As long as the same causal factors are operative, there must, in addition, be also some presumption that future cycles will follow the same general pattern.[1]

Of all influences, therefore, the effects of growth and structure are perhaps the most easily specified. The nature of contractions in aggregate activity, except in a broad sense, cannot be determined in advance. Random events, by definition, are not easily predicted. Data for growth and structure, in contrast, are readily available and are not subject to violent short run fluctuations.

Nevertheless, the picture of specialization and development can only yield tendencies rather than concrete predictions of change.[2] In all cases, other forces such as the differential effects of federal monetary and fiscal policies may offset any resulting tendencies toward cyclical divergence or convergence in regions. Still,

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[1]Merely because there are analogous secular changes among regions, it does not necessarily follow there must be similar cyclical fluctuations. Nevertheless, parallelism in growth would, within limits of regional specialization, provide some prima facie evidence as to the degree of interdependence among geographical areas, i.e., one change in an area included similar changes in others. A high degree of interdependence indicated by such a pattern, therefore, would provide some reason for expecting parallel short run movements.

[2]Neff and Weifenbach, it should be remembered, did not find growth and structure provided a good explanation of regional divergences. Kidner, on the other hand, did. In part, these conclusions may have been the result of the size of the areas studied. Kidner, of course, was dealing with a state, California. Thus the absolute magnitude of forces determining growth in this area may have been sufficient, when opposed to countervailing factors such as expectations, to produce cyclical divergences of the state from the rest of the nation. Neff and Weifenbach, in contrast, were dealing with fluctuation in cities. Here, the strength of growth and structure in individual areas may not have been sufficient, when opposed to other forces, to produce measurable cyclical differences. See above, pp. 4-5.

however, growth and structure must be taken into consideration as potentially important, and perhaps, on occasion, even strategic variables.

Of the four categories, random factors were considered throughout the study. The nature of the contraction was reviewed in the previous chapter. The effects of growth and structure, as a result, are examined here.

The chapter is divided into three parts. The first discusses the economic development of Oklahoma; the second is a review of the changing composition of employment and output; the third is a summary of some conclusions that were obtained.

II. The Development of Oklahoma

Income statistics, as a measure of trends in economic activity, provided a means of evaluating changes in the magnitude and composition of output. Two benchmark dates, 1929 and 1956, were selected in order to provide some rough basis for examining secular influences. Both met three criteria: sufficient data were available for each year, both represented approximately the same stage of the business cycle, and both were separated by a fairly long period of time.

Unfortunately, available data for Oklahoma were confined to estimates of personal income. Moreover, since benchmark dates were at or close to cycle peaks, there was some upward bias in figures for income elastic goods and, conversely, a downward bias for income inelastic goods. Since figures were in current dollars, there was also a consequent upward bias in the increases shown for both Oklahoma and the United States.[3]

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[3]Still since regional price indexes were not available, the relative position of Oklahoma vis-a-vis the rest of the nation would not be altered by a deflation of data:

It should be emphasized, therefore, the data represent only rough approximations of what actually occurred. The statistics, obviously, would vary greatly if different years were chosen. Their value, simply, lies in providing some fairly representative picture of secular influences that may be useful in the interpretation of current series.

The development of Oklahoma, correspondingly, has shown wide variations in magnitude, but a similar direction of change with that in other areas. In growth in per capita income, Oklahoma has risen faster than the rest of the United States. But the increase must be attributed more to losses of population than increases in total income. Output in the state, at the same time, has become more diversified. Sectors such as manufacturing and government have grown rapidly at the expense of industries such as mining and agriculture.

If, as is usual, per capita income is used as a criterion of the state of economic development, Oklahoma should be classified as an underdeveloped area relative to the rest of the nation. Per capita personal income in the state for 1956 shown in Table VII was 81.4 per cent of the national figure. In 1929, however, Oklahoma income was only 64.6 per cent of personal income nationally. The rate of development, then, has been faster than in the rest of the country.

But state income, as a total, has increased less rapidly than elsewhere. Total personal income in Oklahoma during 1956 was 324.1 per cent of that in 1929. Nationally, it was 378.6 per cent of the 1929 figure. Income from participation in

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[3]division of state and national series in current dollars by the same denominator--the same price index--would not alter one with respect to the other.

TABLE VII

INCOME AND POPULATION IN OKLAHOMA AND THE UNITED STATES, 1929 AND 1956

Item	Oklahoma			United States		
	1929	1956	1956 as a per cent of 1929	1929	1956	1956 as a per cent of 1929
Population in thousands	2,369	2,245	94.7%	121,526	167,259	137.6%
Per capita personal income	$ 454	$1,608	354.2%	$ 703	$ 1,975	280.9%
Total personal income in millions	$1,077	$3,491	324.1%	$ 85,661	$324,281	378.6%
Income from participation in production in millions[a]	$ 874	$2,714	310.5%	$ 65,380	$263,276	402.7%

[a]Income from participation in production equals total personal income less property income and transfer payments

Source: See Appendix

production[4] in the same period increased 402.7 per cent in the United States and increased only 310.5 per cent in Oklahoma.

Much of the rise in per capita income, as a result, must be traced to a loss in population. Estimated population in Oklahoma for 1956 was 94.7 per cent of that in 1929. Population in the continental United States in 1956, on the other hand, was 137.6 per cent of population in 1929.

The entire process, then, suggests long-term inflows of capital and concommitant outflows of labor.[5] With lower per capita incomes, outmigrations of population were induced. As population and the labor force fell, total output fell in relation to that in the rest of the country. With large numbers of workers per unit of capital, the productivity of capital was high, creating corresponding inflows of capital with outflows of labor. Capital inflows and the influence of technical progress, as a result, may have prevented an absolute decline in output with a decreasing amount of labor. The greater changes in population, however, would suggest changes in the labor force may have been more important in producing the variation in economic growth.

Yet the variations in the rate of development that were shown were, in part, misleading. In general, the direction of increases in Oklahoma and the United States were similar. With only two exceptions, the ranking of the increases per sector in income from participation in production shown in Table VIII were the same.

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[4]Income from participation in production includes wages and salaries, other labor income, and proprietors' income; transfer payment and property income are excluded.

[5]The reasoning assumes the labor force and population vary directly.

TABLE VIII

SOURCES OF INCOME IN OKLAHOMA AND IN THE UNITED STATES, 1929 AND 1956

	Oklahoma			United States		
Item	1929 per cent of total	1956 per cent of total	1956 as a per cent of 1929	1929 per cent of total	1956 per cent of total	1956 as a per cent of 1929
Personal income, total	100.0%	100.0%	324.1%	100.0%	100.0%	378.6%
Farm income	13.0	4.3	77.9	8.5	4.4	197.6
Government income disbursements	6.9	22.4	1050.1	7.1	16.6	808.3
Federal	2.6	13.9	1739.3	2.4	10.2	1116.7
State and local	4.3	8.5	548.3	4.7	6.4	511.7
Private non-farm income	75.1	73.2	316.1	84.4	79.1	354.4

Source: See Appendix

VIII (Continued)

Item	Oklahoma			United States		
	1929 per cent of total	1956 per cent of total	1956 as a per cent of 1929	1929 per cent of total	1956 per cent of total	1956 as a per cent of 1929
Personal income from participation in production, total	100.0%	100.0%	310.5%	100.0%	100.0%	402.7%
Agriculture	22.2	5.6	77.8	11.1	5.6	198.9
Manufacturing	8.6	15.6	566.7	25.7	31.5	492.6
Mining	14.6	10.5	222.7	2.4	1.7	289.6
Contract construction	4.4	6.4	457.9	5.6	6.3	455.4
Wholesale and retail trade	20.2	22.8	349.7	18.9	20.0	426.8
Finance, insurance and real estate	4.5	4.0	279.5	5.7	4.4	307.6
Transportation and public utilities	8.5	9.1	332.4	10.1	8.4	332.8
Services	10.0	11.5	357.5	13.0	11.5	354.3
Government	6.5	14.0	668.4	7.1	10.6	601.7
Other	0.6	0.5	260.0	0.3	0.3	487.3

Source: See Appendix

The greatest gains statewide and nationally were in government, manufacturing, and contract construction. The fourth largest increase in Oklahoma was in services; nationally it was in wholesale and retail trade. The order was reversed in the case of the fifth largest increase--wholesale and retail trade in Oklahoma and services in the rest of the United States. Other sectors in both areas lagged with transportation and public utilities in sixth place; followed by finance, insurance, and real estate; mining; and, finally, agriculture.

The ranking of increases per sector, however, tended to hide sometimes the dispersion in the increases that occurred. The standard deviation of increase, as a measure of the variation in increases per sector, was rather large in both areas but was largest in Oklahoma.[6] The standard deviation for the state was 181.1 per cent as compared to 113.4 per cent in the nation as a whole.[7]

For Oklahoma, the greater dispersion of data was the direct result of increase in what, previously, were relatively unimportant areas--for example, manufacturing and government--at the expense of the more intensively specialized sectors such as mining and agriculture. Nationally, the variations appeared as a result of further declines in construction and agriculture as other sectors grew at rapid rates.

The difference in dispersion, in a sense, was simply a reflection of the operation of the law of large numbers: wide fluctuations in smaller areas tended to cancel when computed on a national basis--hence a smaller standard deviation. The wider variation in increases in the state, moreover, could be expected with more rapid

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[6]The use of standard deviations as a measure of dispersion assumes data were randomly distributed.

[7]The mean increase in output per sector was 347.3 per cent in Oklahoma and 394.6 per cent for the United States.

rates of development and correspondingly large reallocations of resources.

Output in Oklahoma, in addition, became more diversified, less subject to the fortunes of a single industry, though nationally, the trend was toward more, rather than less specialization. The dispersion of output about the mean output per sector[8] gives some idea of the relative importance of each sector in total production. The standard deviations of per cent income per sector in Oklahoma were 6.7 per cent in 1929 but 6.1 per cent in 1956. Nationally, the standard deviation, in contrast, fell from 6.7 per cent to 6.1 per cent.

III. The Composition of Output

The structure of the Oklahoma economy has, over time, tended to conform more closely to the over-all national pattern. But income produced in cyclically sensitive sectors--mining, manufacturing, and contract construction--has become relatively less important in the state. Economic activity in Oklahoma was specialized in raw material production--in mining and agriculture. Employment data, though, show rather significant divergences from employment elsewhere.

Data presented in Table VIII show the changing composition of output in Oklahoma and the United States from 1959 to 1956. As a measure of the changing structure of production, the per cent of total income generated in a sector was subtracted from the per cent of total income generated in that sector nationally. The differences for all sectors were summed, ignoring signs, giving the absolute value of per cent differences in income generated per sector.

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[8]The mean per sector was, of course, 10 per cent: total income is always 100 per cent; 100 per cent divided by ten sectors is 10 per cent.

If output in Oklahoma and the United States were allocated equally among sectors, each producing 10 per cent of the total,[9] the absolute value of differences would be zero. Actually, in 1929 the figure was 49.6 per cent, but by 1956 it declined to 32.7 per cent.

As shown in the Table, to a great extent the decline was the result of the increasing importance of government disbursements in Oklahoma and the nation at the expense of income from agriculture. More important, though, was the relative decline in the total income generated from cyclically sensitive areas--mining, manufacturing, and contract construction. Oklahoma income from participation in production in these sectors rose from 27.6 to 32.6 per cent. Yet for the United States the rise was somewhat larger--33.7 to 39.5 per cent. The difference in income generated in cyclically sensitive sectors between Oklahoma and the United States therefore increased--6.1 to 7.0 per cent.

The data also show specialization of state economic activity in production of primary products as is typical of an underdeveloped area. In Oklahoma, activity in mining during 1956 generated 10.5 per cent of total income from participation in production. The importance of agriculture was understated due to the drought occurring at the time, but later figures strongly demonstrated its significance. For example, in 1958 Oklahoma agriculture produced 11.5 per cent of total income from participation in production. Nationally, that sector in the same year produced 6.1 per cent of the total.

Employment statistics in Table IX gave a somewhat more comprehensive picture of the differences in the structure of production and allocation of resources.

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[9]Ibid.

TABLE IX

EMPLOYMENT IN OKLAHOMA AND THE UNITED STATES, 1956

Item	Oklahoma		United States	
	Per cent of total non-agricultural	Per cent of total agricultural and non-agricultural	Per cent of total non-agricultural	Per cent of total agricultural and non-agricultural
Wage and salary employment, total	---	100.0%	---	100.0%
Agriculture		25.8		11.8
Non-agricultural and salary employment, total	100.0%	74.3	100.0%	88.2
Manufacturing	15.8	11.7	32.6	28.7
Durable	8.8	6.5	18.9	16.7
Non-durable	7.1	5.2	13.6	12.1
Mining	9.1	6.8	1.6	1.4
Contract construction	5.8	4.3	5.8	5.1
Wholesale and retail trade	25.0	18.5	21.8	19.2
Finance, insurance and real estate	3.8	2.9	4.4	3.9
Transportation and public utilities	8.8	6.5	8.1	7.1
Services	11.1	8.3	12.1	10.6
Government	117.7	15.2	13.8	12.2

Source: See Appendix

In almost all cases, the divergences in employment between Oklahoma and the United States were wider than those in income.

Conformity of Oklahoma employment to national patterns was rather poor. The absolute value of per cent differences in employment per sector was 36.5 in the case of non-agricultural employment and 50.2 per cent for both agricultural and non-agricultural employment.

In terms of cyclically sensitive industry divisions--manufacturing, mining, and contract construction--employment in Oklahoma as a proportion of the non-agricultural total was 30.7 per cent and as a proportion of agricultural and non-agricultural employment was 22.8 per cent. Corresponding percentages for the United States were 40.0 and 35.2 respectively. In terms of employment in durable and non-durable manufacturing, the national data, again, showed some cyclical bias: the ratio of durable to non-durable employment was approximately 1.2 in Oklahoma, but 1.4 nationally. State employment in mining and agriculture, it should also be noted, was 32.6 per cent of the total as compared to only 13.2 per cent in the United States.

As in the case of income, employment in Oklahoma was more evenly distributed among sectors than in the United States. The standard deviation about the mean non-agricultural employment per sector in the state was 6.9 per cent and the standard deviation from the mean agricultural and non-agricultural employment[10] was 7.1 per cent. Nationally, the corresponding deviations were 9.7 per cent and 8.0 per cent.

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[10]Mean non-agricultural employment in all cases was, of course, 12.5 per cent. Mean agricultural and non-agricultural employment was 11.1 per cent.

Unlike the income data, the employment figures, in addition, may be broken down into smaller classifications other than the rather broad categories of government, construction, etc. Table X shows more detailed data for two important sectors--mining and manufacturing.

In a sense, the figures show a pattern not indicated by broader classifications. Oil and gas production, for example, that comprised the bulk of employment in mining was accompanied by substantial concentrations of employment in refining--6.4 per cent of industrial employment in Oklahoma or 4.5 per cent of the national employment in refining. The data, it should also be remembered, understate the industry's relative importance due to its capital-intensive nature. In part, the figures indicate that activity in mining and manufacturing were strongly related; the extractive process in oil and gas production was dependent on economic activity in non-durable manufacturing--refining.

In Table XI, a ranking of employment and income in various sectors according to their proportion of the totals gives some idea of differences between Oklahoma and the United States in generation of income and employment. The relationship between the state and nation was apparently affected by the long-term outmigration of population and, as the process implies, low per capita productivity of labor in Oklahoma.

Probably the most striking difference in the amount of employment and creation of income was in agriculture. The larger discrepancy was in Oklahoma where employment in agriculture ranked first, yet income derived from agriculture was eighth or next to last. A similar, though less extreme divergence was found nationally where agriculture ranked fourth in employment yet seventh in income.

TABLE X

INDUSTRIAL EMPLOYMENT IN OKLAHOMA AND THE UNITED STATES, 1956

Item	Oklahoma		United States		
	Employment in the thousands	Employment as a per cent of total	Employment in the thousands	Employment as a per cent of total	Oklahoma as a per cent of the United States
Manufacturing	90.7	63.5%	16905.0	95.3%	0.5%
Durable goods	50.3	35.2	9825.0	55.4	0.5
Lumber and wood products	2.7	1.9	741.4	4.2	0.4
Stone, clay and glass	6.1	4.3	561.5	3.2	1.1
Primary metal industries	4.1	2.9	1311.0	7.4	3.1
Fabricated metal products	6.5	4.6	1116.6	6.3	.6
Machinery	13.3	9.3	1716.4	9.7	.8
Oilfield machinery	6.7	4.9			
Transportation equipment	14.6	10.2	1830.5	10.3	.8
Other	3.0	2.1	2547.6	14.4	.1

Source: See Appendix

X (Continued)

Item	Oklahoma		United States		
	Employment in the thousands	Employment as a per cent of total	Employment in the thousands	Employment as a per cent of total	Oklahoma as a per cent of the United States
Non-durable goods	40.4	28.3	7000.0	39.9	.6
Food	14.9	10.4	1562.0	8.8	1.0
Printing and publishing	6.1	4.3	852.5	4.8	.7
Refining	9.2	6.4	202.6	1.1	4.5
Other	10.3	7.2	4472.9	25.2	0.2
Mining	52.2	36.5	816.0	4.6	6.4
Oil and gas mining	48.7	34.1	330.8	1.9	14.7
Coal mining	1.1	.8	268.5	1.5	0.4
Other	2.4	1.7	224.7	1.3	1.1
Industrial wage and salary employment, total	142.9	100.0	17721.0	100.0	

Source: See Appendix

TABLE XI

RANK OF SECTORS IN EMPLOYMENT AND INCOME ACCORDING TO PER CENT OF TOTAL IN OKLAHOMA AND THE UNITED STATES, 1956

	Oklahoma		United States	
Rank	Wage and salary employment	Income from participation in production	Wage and salary employment	Income from participation in production
1	agriculture	wholesale and retail trade	manufacturing	manufacturing
2	wholesale and retail trade	manufacturing	wholesale and retail trade	wholesale and retail trade
3	government	government	government	services
4	manufacturing	services	agriculture	government
5	services	mining	services	public utilities
6	mining	public utilities	public utilities	construction
7	public utilities	construction	construction	agriculture
8	construction	agriculture	finance	finance
9	finance	finance	mining	mining

Source: See Appendix

Perhaps the discrepancy between employment and the resulting output in agriculture produced by a downward bias from low estimates of imputed income or by the fact agriculture may be inherently labor-intensive. Still, a great amount of the low total income simply must be attributed to over-population relative to existing resources and technology.

Another arresting difference showed in the data was that in manufacturing employment and income in both areas. Nationally, manufacturing stood first in both employment and income, while in Oklahoma, manufacturing stood fourth in employment and followed only retail and wholesale trade as a generator of income. It would seem, then, manufacturing in Oklahoma generated relatively large amounts of income per worker. This high per capita productivity, in turn, could simply be the result of specialization in capital-intensive industries such as refining. Yet, to some extent, the high output may have been caused by some immobility of labor in transferring from agriculture to industry.

IV. Some Conclusions

The over-all pattern of the development and structure of the Oklahoma economy, consequently, showed several important results. Oklahoma had experienced a more rapid rate of economic development than was typical in the rest of the country. If the forces behind this development continue, economic activity may be also less cyclically sensitive than in other areas.

The great importance, proportionally, of federal, state, and local governments in creating income and output in the state would lend weight to that presumption. The lesser significance of economic activity in two commonly cyclically vulnerable

sectors, manufacturing and construction, would also support that idea.

Yet Oklahoma, it should be noted, was specialized in the production of primary products in mining and agriculture. Raw materials, of course, are notorious in creating cyclical volatility in producer incomes. Outmigrations of population in Oklahoma, moreover, showed a chronic oversupply of labor that could be accentuated by a downswing in economic activity.

The growth and structure of the Oklahoma economy may still tend to produce less severe downward fluctuations than in other areas. However, these tendencies, in fact, may be outweighed by other influences in affecting the final course of contractions. Some idea of the importance of these other factors therefore can be gained by directly examining the contraction as it actually occurred.

CHAPTER IV

THE CONTRACTION IN OKLAHOMA

I. Introduction

The purpose of this chapter is to compare the contraction in Oklahoma and in the rest of the country. Here, the aim is to identify similarities and differences during the course of the downswing and, if possible, explain their causes.

The chapter itself is divided into several sections. The first is a description and comparison of the timing and duration of the movements that occurred. The discussion, at this point, is primarily concerned with the patterns at the peak and, to a lesser degree, at the trough of the cycle. The second section is a review and explanation of the magnitude and rates of decline during the contraction. The focus, again, is on events at the peak and, to a lesser extent, at the lower turning point. Each of the two sections, in turn, is divided into three subsections: one considering general indicators of business activity, another examining data by sectors, and another dealing with the pattern of employment. The last section, finally, is a review and summary of preceding sections.

II. The Chronology of Events

The unavailability of comprehensive income data makes an exact determination of the timing and duration of the contraction almost impossible. An examination

of other available data, nevertheless, can give some idea of the sequence of events.

General indicators of economic activity. Perhaps the best over-all measure of fluctuations in Oklahoma is the index of general business activity compiled by the Bureau of Business Research at the University of Oklahoma. The index, shown in Figure 2, is based on a number of series such as personal income, employment, bank debits, and indexes of mining and manufacturing production.[1] According to the index, the contraction nationally lasted nine months, while the decline in Oklahoma lasted seven. The recovery in Oklahoma occurred two months before the rise in aggregate activity.

This conclusion is confirmed by the information in Table XII. With one exception, the declines in all series for Oklahoma were of shorter duration. The drop in personal income in Oklahoma corresponded with that in the rest of the country, leading one month from the national peak and lagging one month from the trough. The index of industrial production showed the greatest difference between Oklahoma and the United States. The downturn in Oklahoma lasted five months primarily due to a ten month lag at the national peak. The decline for the United States lasted sixteen months.

Selected indicators of activity by sectors. The timing of some representative time series for each sector is presented in Tables XIII and XIV. These series were chosen according to whether: they were broad enough to indicate some phase of activity in the sectors studied; they were comparable to similar data published for the entire United States; and they were in monthly rather than yearly or quarterly form.

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[1] As with all statistical information, this index is discussed in more detail in the Appendix. See below, pp. 96-97.

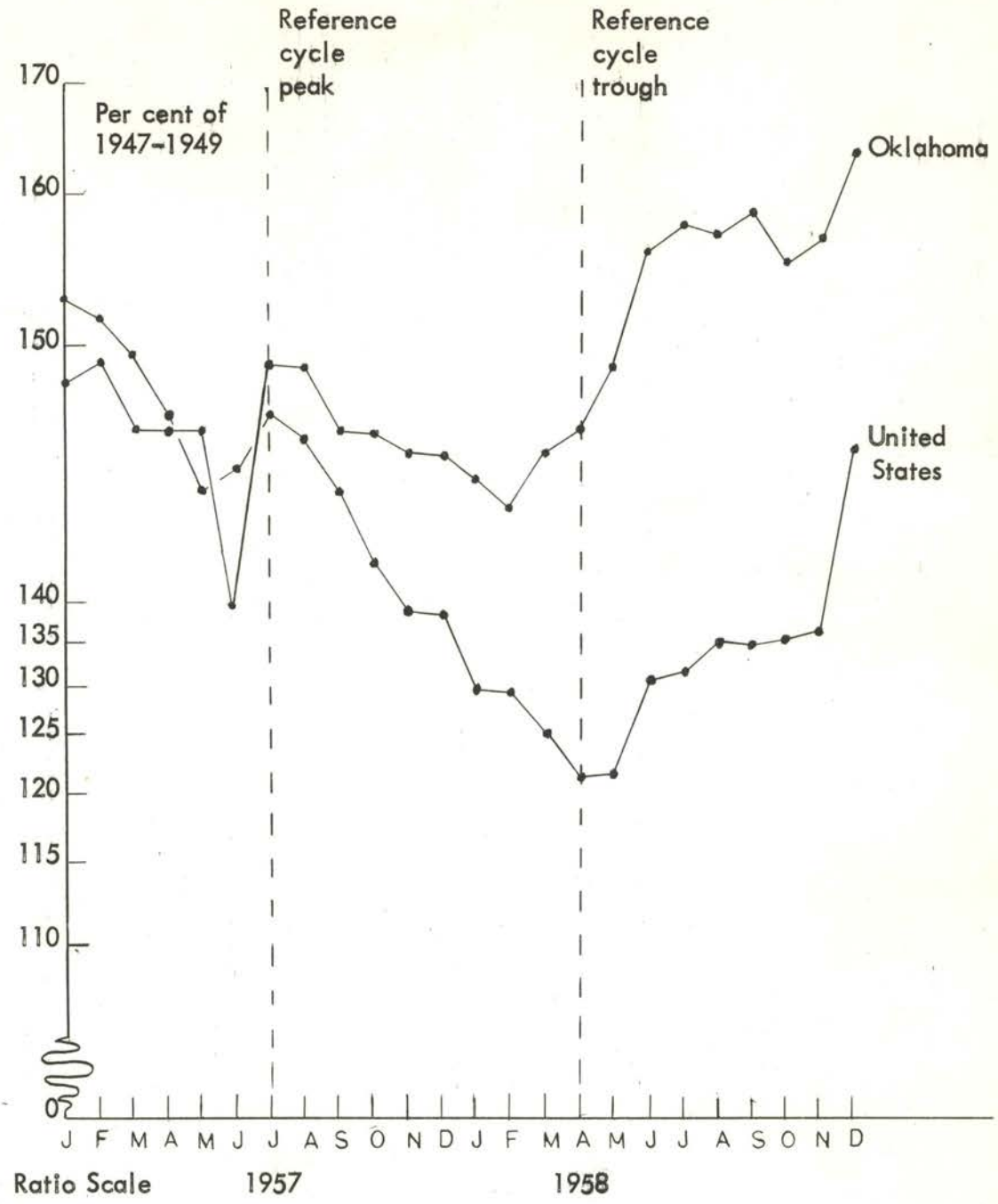

Fig. 2.--Index of General Business Activity for Oklahoma and the United States, 1957-1958

Source: See Appendix

TABLE XII

THE TIMING OF GENERAL INDICATORS OF BUSINESS ACTIVITY IN OKLAHOMA AND THE UNITED STATES, 1956-1958

(In months)

Item	Oklahoma			United States		
	Date			Date		
	Peak	Trough	Duration of decline	Peak	Trough	Duration of decline
Index of general business activity	July, 1957	February, 1958	7	July, 1957	April, 1958	9
Index of industrial production	October, 1957	March, 1958	5	December, 1956	April, 1958	16
Personal income[a]	July, 1957	November, 1957	4	August, 1957	December, 1957	4

[a]State and national data not strictly comparable

Source: See Appendix

XII (Continued)

Item	Lead (+) or lag (-) of Oklahoma from U.S. peak	Lead (+) or lag (-) of Oklahoma from U.S. trough	Duration of U.S. decline less duration of Oklahoma decline
Index of general business activity	0	+2	+ 2
Index of industrial production	-10	+1	+11
Personal income[a]	+ 1	+1	0

[a]State and national data not strictly comparable

Source: See Appendix

TABLE XIII

THE TIMING OF SELECTED INDICATORS OF ACTIVITY IN SECTORS IN OKLAHOMA AND THE UNITED STATES, 1956-1958

(In months)

	Oklahoma			United States		
	Date		Duration of decline	Date		Duration of decline
	Peak	Trough		Peak	Trough	
Agriculture						
Cash receipts from farm marketing	March, 1956	May, 1957	14	February, 1957	June, 1957	4
Manufacturing						
Index of manufacturing production	November, 1957	March, 1958	4	August, 1957	April, 1958	8
Mining						
Index of mineral production	September, 1957	March, 1958	6	March, 1957	May, 1958	14
Contract construction						
Value of total contracts	November, 1956	September, 1957	10	January, 1957	October, 1957	9

Source: See Appendix

XIII (Continued)

	Oklahoma			United States		
	Date		Duration of decline	Date		Duration of decline
	Peak	Trough		Peak	Trough	
Residential	a	a	a	July, 1957	October, 1957	3
Manufacturing	February, 1957	April, 1958	14	a	a	a
Commercial	September, 1956	September, 1957	12	March, 1957	January, 1958	10
Public utility	November, 1956	December, 1957	12	December, 1956	November, 1957	11
Public works	February, 1957	April, 1957	2	January, 1957	September, 1957	8
Retail and wholesale trade						
Retail sales	September, 1956	October, 1957	13	April, 1957	March, 1958	11
Durable[b]	September, 1956	April, 1958	19	March, 1957	March, 1958	12
Non-durable[b]	July, 1957	May, 1958	10	a	a	a
Public utilities						
Freight carloadings	April, 1957	October, 1957	6	February, 1957	June, 1958	16
Finance						
Demand deposits	February, 1957	March, 1958	13	February, 1957	August, 1957	6

[a]Continued rise

[b]Data not strictly comparable

Source: See Appendix

XIII (Continued)

	Oklahoma			United States		
	Date		Duration of decline	Date		Duration of decline
	Peak	Trough		Peak	Trough	
Time deposits	a	a	a	a	a	a
Debits to demand deposits	September, 1957	March, 1958	6	a	a	a
Loans and investments	a	a	a	a	a	a
Other						
New incorporations	May, 1956	June, 1957	13	April, 1957	November, 1957	7
Crude oil production	December, 1956	September, 1958	21	January, 1957	April, 1958	15
Refinery stocks, inverted	c	October, 1956		None	October, 1957	

[a]Continued rise

[c]Continued decline

Source: See Appendix

TABLE XIV

A COMPARISON OF THE TIMING OF SELECTED INDICATORS OF ACTIVITY IN OKLAHOMA AND THE UNITED STATES, 1956-1958

(In months)

	Lead (+) or lag (-) of Oklahoma from U.S. peak	Lead (+) or lag (-) of Oklahoma from U.S. trough	Duration of U.S. decline less duration of Oklahoma decline
Agriculture			
Cash receipts from farm marketing	+11 mo.	+1 mo.	-10 mo.
Manufacturing			
Index of manufacturing production	- 3	+1	+ 4
Mining			
Index of mineral production	- 6	+2	+ 8
Contract construction			
Value of total contracts	+ 2	+1	
Residential	---	---	---
Manufacturing	---	---	---
Commercial	+ 6	+4	- 2
Public utility	+ 1	0	- 1
Public works	- 1	+5	+ 6

Source: See Appendix

XIV (Continued)

	Lead (+) or lag (-) of Oklahoma from U.S. peak	Lead (+) or lag (-) of Oklahoma from U.S. trough	Duration of U.S. decline less duration of Oklahoma decline
Retail and wholesale trade			
Retail sales	+ 7	+ 5	- 6
Durable[b]	+ 6	- 1	- 7
Non-durable[b]	---	---	---
Public utilities			
Freight carloadings	- 2	+ 8	+10
Finance			
Demand deposits	0	- 7	- 7
Time deposits[a]	---	---	---
Debits to demand deposits	---	---	---
Loans and investments[a]	---	---	---
Other			
New incorporations	+11	+ 5	- 6
Crude oil production	+ 1	- 5	- 6
Refinery stocks, inverted[c]	---	+12	---

[a]Continued rise

[b]Data not strictly comparable

[c]Continued decline

Source: See Appendix

Eight of the indicators chosen--cash receipts from farm marketings, demand deposits, indexes of mineral and manufacturing production, value of construction contracts, retail sales, freight carloadings, and new incorporations--showed significant cyclical fluctuations. In seven of the eight series Oklahoma lead and in one of the indicators Oklahoma lagged behind the trough in the series nationally. Four of the series indicated leads in Oklahoma at the peak; three showed lags, and one coincided with the timing of the national series. In duration, data for Oklahoma evidenced shorter declines in three cases, but longer declines in five.

The timing of data for various sectors apparently was not closely related to the rapidity in growth in those sectors. For example, the relative importance of mining in generation of employment and income in Oklahoma has fallen over time. Manufacturing, in contrast, has grown more rapidly than other sectors. In spite of these differences in growth, indicators of activity in both state mining and manufacturing lagged at the peak and lead at the trough of data for the United States.

Timing in Oklahoma also did not appear to be closely connected with the severity of the contraction in sectors nationally. Data for mining, where the contraction in aggregate activity was concentrated, showed a lag of over six months from national peaks for that sector. The same pattern occurred in other such sectors. Thus large differences in timing between Oklahoma and the United States still appeared in industries where the downturn was particularly severe.

Exogeneous factors--changes in weather, the imposition of import quotas, etc.--were probably the most important influences in affecting timing. The pattern of specialization in various industries were also important. Import quotas on oil, for example, had a greater effect on Oklahoma mining simply because Oklahoma

/ces a great deal of that commodity. State manufacturing was also affected ce much of the activity in that sector is concentrated in refining.

These, broadly, were the factors that most strongly affected timing during the contraction. Below is a somewhat more detailed examination of specific causes of the timing of fluctuations in many sectors.

Cash receipts from farm marketings in the state lead the drop in that series for the United States by eleven months--a record equaled only by the eleven month lead in new incorporations. The duration of the decline in Oklahoma was ten months longer than in the rest of the country, but the unusual timing of the series is readily explained:

> The big story in 1957 was the beneficial rains which ended the drought which had been in progress in the Plains States from Nebraska to Texas in 1956. The areas affected included important wheat, cotton, and range lands of Oklahoma . . . . Precipitation over much of the State was approximately twice as much in 1957 as in 1956 . . . . The heavier-than-usual rains from March to June filled the ponds and lakes, replenishing the stock water supplies.[2]

The fall in agricultural receipts, thus, was due to the drought. The trough in the series in May, 1957 was reached after the heavy rains which began in March. The trough in June in the general index of business activity for Oklahoma was reached one month after the trough in agricultural receipts in May.

The peak in the index of mineral production in Oklahoma was reached in September, 1957. Production was probably affected by the oil import quotas imposed in August, 1957. Domestic oil production was stimulated, shortening declines in the industry.

The timing of the index of state mineral production also corresponded closely

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[2] "Oklahoma-1957: Weather Summary," Climatological Data: Annual Summary, LXVII (1957), p. 198.

to the timing of the index of manufacturing production. The peak in manufacturing occurred in November, 1957, two months after the peak in mineral production. The trough in both indexes occurred at the same time--in March, 1958. The correspondence in timing was probably the result of the concentration of refining in Oklahoma manufacturing.

The timing of the peak in demand deposits coincided with the peak nationally. The longer decline in Oklahoma appeared with a seven month lag behind the trough in demand deposits for the rest of the country. In part, this outflow of deposits may have been indicative of a higher level of economic activity in Oklahoma than in other areas. If incomes and prices in Oklahoma, as a result of greater economic activity, were higher relative to incomes and prices in the rest of the United States, the process would result in the transfer of demand deposits to other areas. The demand for products produced in Oklahoma for products manufactured in other areas would remain more or less stable.

In value of construction contracts, the drop in Oklahoma was slightly longer than in the rest of the country. The data for Oklahoma lead at the peak one month and lagged at the trough by the same amount. The timing of the decline in freight carloadings in Oklahoma was significantly shorter than in the rest of the country. The drop was ten months shorter than for the United States and was the result of a two month lag at the peak and an eight month lead at the trough. The timing of drops in new incorporations in Oklahoma appeared to be similar to the timing of the declines in receipts from agricultural marketings. The peak occurred two months after the peak in receipts, and the trough lagged one month behind the trough in that series. The drop in retail sales was only two months longer than nationally, but the

downturn in Oklahoma lead the national peak by seven months and the trough by five.

Employment. Employment data, in contrast to most other series, fell longer in Oklahoma than in other areas. Tables XV and XVI show Oklahoma non-agricultural wage and salary employment declined thirteen months as compared to ten months in the United States. Insured unemployment rose seventeen months longer than in other areas.

In breakdowns by sector, the greatest differences in timing appeared in contract construction: the decline in Oklahoma lasted two months, in other areas it lasted twenty-four. The difference, here, appeared with a thirteen month lag at the peak and a nine month lead at the trough. The drop in Oklahoma might be explained by the extremely bad weather at the time, the recovery occurring due to the high level of public works construction carried on in the state. The decline in public works contracts in Oklahoma lasted only from February to April, 1957. Residential contracts in the state also rose throughout the entire period.

The next largest difference between Oklahoma and the United States in duration of declines, twenty-one months, was in durable manufacturing. The fall in Oklahoma lasted twenty-seven months; nationally, it lasted six. This drop in Oklahoma was associated with cuts in defense spending that were concentrated in transportation equipment--an industry of great importance in Oklahoma durable manufacturing.[3]

The fall in mining, transportation, and public utilities, services, and

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[3]"Defense Setbacks Cut Manufacturing," Oklahoma Labor Market, March, 1958, p. 4.

TABLE XV

THE CHRONOLOGY OF EMPLOYMENT IN OKLAHOMA AND THE UNITED STATES, 1956-1958

(In months)

Item	Oklahoma			United States		
	Date		Duration of decline	Date		Duration of decline
	Peak	Trough		Peak	Trough	
Non-agricultural wage and salary, employment, total	August, 1957	September, 1958	13	July, 1957	May, 1958	10
Manufacturing	July, 1956	August, 1958	25	January, 1957	July, 1958	18
Durable[a]	June, 1956	September, 1958	27	January, 1957	July, 1957	6
Non-durable[a]	c	c	c	July, 1956	July, 1958	24
Mining	March, 1957	August, 1958	17	January, 1957	January, 1958	12
Contract construction	August, 1957	October, 1957	2	July, 1956	July, 1958	24
Wholesale and retail trade	August, 1957	September, 1958	13	July, 1957	May, 1958	10

[a]Data not strictly comparable

[c]Continued decline

Source: See Appendix

XV (Continued)

Item	Oklahoma			United States		
	Date		Duration of decline	Date		Duration of decline
	Peak	Trough		Peak	Trough	
Finance, insurance and real estate	b	b	b	b	b	b
Transportation and public utilities	July, 1957	August, 1958	13	March, 1957	October, 1958	20
Services	August, 1957	July, 1958	10	b	b	b
Government	b	b	b	b	b	b
Insured unemployment, inverted	March, 1956	September, 1958	30	May, 1957	July, 1958	14

[b]Continued rise

Source: See Appendix

TABLE XVI

A COMPARISON OF THE TIMING OF EMPLOYMENT IN OKLAHOMA AND THE UNITED STATES, 1950-1958

(In months)

	Lead (+) or lag (-) of Oklahoma from U.S. peak	Lead (+) or lag (-) of Oklahoma from U.S. trough	Duration of U.S. decline less duration of Oklahoma decline
Non-agricultural wage and salary employment, total	- 1 mo.	- 4 mo.	- 3 mo.
Manufacturing	+ 6	- 1	- 7
Durable[a]	+ 7	-14	-21
Non-durable[a c]	---	---	---
Mining	- 2	- 7	- 5
Contract construction	-18	+ 9	+22
Wholesale and retail trade	- 1	- 4	- 3

[a]Data not strictly comparable

[c]Continued decline

Source: See Appendix

XVI (Continued)

	Lead (+) or lag (-) of Oklahoma from U.S. peak	Lead (+) or lag (-) of Oklahoma from U.S. trough	Duration of U.S. decline less duration of Oklahoma decline
Finance, insurance, and real estate	----	----	----
Transportation and public utilities	- 4	+ 2	+ 7
Services[b]	----	----	----
Government[b]	----	----	----
Insured unemployment, inverted	+14	- 3	-17

[b]Continued rise

Source: See Appendix

wholesale and retail trade in Oklahoma were also rather prolonged: seventeen, thirteen, ten, and thirteen months respectively. With the exception of transportation and public utilities, the fall in employment in each of these sectors was longer than the declines nationally. All except services lagged at peaks. Employment in that sector rose after July, 1958, though in other areas it rose throughout the period. Employment in mining and in wholesale and retail trade lagged behind national indicators at the trough. Employment in public utilities lead.

Employment in services, a labor-intensive sector, evidenced a ten month downturn in Oklahoma as compared to a continued rise nationally. With the exception of manufacturing employment, all industry groups in Oklahoma showed lags at the peak. In all but two cases--contract construction and transportation and public utilities--the longer declines in Oklahoma were the result of lags at troughs.

III. The Magnitude of Fluctuations

General indicators. Since, for the most part, breakdowns of income estimates are available only in yearly form, the data cannot be used to show timing or rates of change. Still, the information provided is useful in showing the size and direction of change in income. The data are presented in Table XVII. For simplicity, figures are computed in terms of their per cent of income in the benchmark year, 1956. Because data before and after the actual onset of the contraction are included, the statistics are not completely indicative of the changes that occurred.

Over-all, Oklahoma seemed to show smaller changes in income than the rest of the United States. The per cent rise in income from participation in production in Oklahoma during 1957 was only .2 per cent greater than in the rest of the

TABLE XVII

THE MAGNITUDE OF FLUCTUATIONS IN INCOME FROM PARTICIPATION IN PRODUCTION[a] IN OKLAHOMA AND THE UNITED STATES, 1956-1958

Item	Oklahoma		United States		Per cent change in U.S. less per cent change in Oklahoma	Per cent change in U.S. less per cent change in Oklahoma
	1957 as a per cent of 1956	1958 as a per cent of 1956	1957 as a per cent of 1956	1958 as a per cent of 1956	1956 to 1957	1956 to 1958
Income from participation in production	106.3%	111.4%	106.1%	105.2%	- .2%	- 6.1%
Agriculture	123.3	229.8	100.6	118.7	-22.7	-111.1
Mining	102.5	98.9	106.0	93.9	+ 3.5	- 5.0
Contract construction	112.6	120.1	112.2	112.7	- .4	- 7.4
Manufacturing	101.2	97.2	104.8	99.9	+ 3.6	+ 2.7
Wholesale and retail trade	99.8	102.4	102.6	105.2	+ 5.4	+ 2.8
Finance, insurance, and real estate	117.4	125.7	114.4	121.4	+ 4.0	- 4.3
Public utilities	104.1	105.7	104.6	103.8	+ .5	- 1.9
Services	110.0	85.5	109.4	92.0	- .6	+ 6.5
Government	110.5	121.0	108.4	119.0	- 2.1	- 3.0

[a]Personal income less income from property or transfer payments

Source: See Appendix

country. In 1958 the rise in Oklahoma was 6.1 per cent greater than in the United States as a whole. Probably the most striking change was the rapid rise of income in the agricultural sector in Oklahoma during 1958: it was 229.8 per cent of income in 1956 and was 22.7 per cent greater than the rise elsewhere. This increase, as noted before, was the result of the drought-breaking rains in the spring and summer of 1957.[4]

Increases in government outlays supplemented the rise in agricultural income. The rise in this sector was 2.1 per cent greater than for the United States in 1957 and 3.0 per cent greater in 1958. The upturn in income in Oklahoma from mining and contract construction was also important but only during 1958. The increases in income in these sectors during that year were 5.0 per cent and 7.4 per cent larger than elsewhere. The more rapid rise in income in these sectors was probably due to the imposition of import quotas and the rise in government outlays for construction.

Monthly series in conjunction with the available yearly data on income give a somewhat clearer idea of the rates of change in data and exact magnitude of the fluctuations. Some monthly indicators of the over-all pattern of fluctuation are presented in Table XVIII.

The University of Oklahoma index of general business activity confirms the pattern shown previously. The fluctuation in Oklahoma was 12.7 per cent less and declines in the index proceeded 1.2 per cent more slowly than for the United States. The index of industrial production showed a 3.7 per cent smaller decline yet fell approximately 1.2 per cent more rapidly than for the country as a whole. Personal

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[4]See above, p. 66.

TABLE XVIII

THE AMPLITUDE OF THE DECLINE IN GENERAL INDICATORS OF BUSINESS ACTIVITY IN OKLAHOMA AND THE UNITED STATES, 1956-1958

	Oklahoma		United States			
	Per cent change from series peak to series trough	Average rate of change per month	Per cent change from series peak to series trough	Average rate of change per month	Per cent change of U.S. less per cent change in Oklahoma	Average rate of change of U.S. less average rate of change in Oklahoma
General index of business activity	- 4.0%	-0.6%	-16.7%	-1.8%	+12.7%	+1.2%
Index of industrial production	-10.6	-2.1	-14.2	- .9	+ 3.7	-1.2
Personal income	- 1.3	- .3	- 1.0	- .2	- .3	- .1

Source: See Appendix

income data gave a contrary picture: in this case, the declines in Oklahoma were somewhat larger--.3 and .1 per cent--than for the United States as a whole.[5]

Selected indicators of business activity. A closer examination of the data in Table XIX emphasizes some changes in several sectors. As in the case of the timing of the fluctuations, the differences between Oklahoma and the United States in magnitude of changes in activity did not appear to be closely related to secular trend or to the magnitude of fluctuations in aggregate activity. For instance, in spite of the secular growth in manufacturing and the decline in mining in Oklahoma, both sectors experienced less severe percentage declines than nationally. The contraction in aggregate activity did not apparently affect agriculture too greatly, yet appeared to be concentrated in mining. Still, there were wide differences in the magnitude of drops in mining and agriculture in the state as compared to the declines in these sectors nationally. Once again, most of the divergences in fluctuations in sectors should be attributed to random factors--particularly in agriculture.

In agriculture, a large difference in fluctuations appeared between Oklahoma and the rest of the nation in receipts from farm marketings. The downturn in Oklahoma was rather large, 18.5 per cent, and the changes fairly rapid--1.3 per cent per month. Nationally the peak-to-trough fluctuation was only 2.5 per cent at a rate of 0.6 per cent. But the timing of the drought was such that most of the declines in Oklahoma agriculture had occurred before the onset of the contraction.

Another large difference in magnitude of fluctuation between Oklahoma and the United States was in construction contracts. Again, the fall in Oklahoma was

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[5]However, the data are not strictly comparable.

TABLE XIX

THE AMPLITUDE OF THE DECLINE OF SELECTED INDICATORS OF ACTIVITY IN SECTORS IN OKLAHOMA AND THE UNITED STATES, 1956-1958

Item	Oklahoma		United States			
	Per cent change from series peak to trough	Average rate of change per month	Per cent change from series peak to trough	Average rate of change per month	Per cent change of U.S. less per cent change in Oklahoma	Average rate of change of U.S. less average rate of change in Oklahoma
Agriculture						
Cash receipts from farm marketings	-10.3%	-1.3%	- 2.5%	-0.6%	- 16.0%	- .7%
Manufacturing						
Index of manufacturing production	-10.6	-2.6	-12.9	-1.6	+ 2.3	- 1.0
Mining						
Index of mineral production	-13.7	-2.3	-16.2	-1.3	+ 4.5	- 1.0
Contract construction						
Value of total contracts	-18.1	-1.0	- 2.7	-0.3	- 15.4	- 1.3
Residential	+38.7	+1.6	- 1.5	-0.5	+ 40.2	+ 2.1
Manufacturing	-90.6	-6.5	+67.6	+5.3	-158.2	-10.3
Commercial	-67.3	-3.6	- 6.9	-0.6	- 61.3	- 3.0
Public utility	-70.1	-5.3	-23.4	-2.1	- 46.7	- 3.7
Public works	- 4.3	-2.2	- 3.7	-0.5	- 0.6	- 1.7

Source: See Appendix

XIX (Continued)

Item	Oklahoma: Per cent change from series peak to trough	Oklahoma: Average rate of change per month	United States: Per cent change from series peak to trough	United States: Average rate of change per month	Per cent change of U.S. less per cent change in Oklahoma	Average rate of change of U.S. less average rate of change in Oklahoma
Retail and wholesale trade						
Retail sales[a]	- 9.0	-0.7	- 1.1	-0.2	- 7.9	-0.5
Durable[a]	-28.1	-1.4	- 8.0	-0.7	-20.1	-0.7
Non-durable[a]	- 3.0	-0.3	+13.6	+0.6	-16.6	-0.9
Public utilities						
Freight carloadings	- 5.0	-0.8	-30.2	-3.0	+25.2	+2.2
Finance						
Demand deposits	- 2.6	-0.2	- 0.5	---	- 2.1	-0.2
Time deposits	+22.5	+0.9	+23.0	+1.0	- 0.5	-0.1
Debits to demand deposits	- 5.1	-0.8	+10.7	+0.4	+15.8	-1.2
Loans and investments	+10.8	+0.4	+11.6	+0.5	- 0.8	-0.1
Other						
New incorporations	-32.1	-2.5	- 2.2	-0.3	-29.9	-2.2
Crude oil production	- 8.3	-0.4	- 5.0	-0.3	- 3.3	-0.1
Refinery stocks, inverted	+15.4	+0.6	+ 8.3	+0.6	+ 7.1	---

[a]Data not strictly comparable

Source: See Appendix

larger--15.4 per cent--and the drop was 1.5 per cent faster. Even greater differences in fluctuations appeared between components of sub-categories in that series. Manufacturing contracts in Oklahoma, as an extreme example, declined 90.5 per cent at 6.5 per cent per month. Nationally, they rose 158.2 per cent at a rate of 10.3 per cent per month.

Though they cannot be explained completely, some part of these variations possibly could be attributed to the "tightness" of credit in Oklahoma vis-a-vis the rest of the nation. Demand deposits in the state fell 2.1 per cent more; time deposits rose 0.5 per cent less, and loans and investments still rose by a small amount --0.8 per cent. New long-term financing such as in Oklahoma construction, as a result, was appreciably altered.

Variation in the fluctuations in other indicators appeared to be somewhat less important than in agricultural receipts and construction contracts. Differences in the magnitude of change in indexes of manufacturing and mining production were rather small, but the fall in retail sales in Oklahoma was more pronounced than it was nationally. The drop in total sales in the state was 7.9 per cent greater, and the rate of change in sales was 0.5 per cent faster. Though the data do not directly confirm the conclusion, the greater fall in Oklahoma retail sales perhaps could be attributed to the decline in agricultural incomes during the drought and the resulting drop in retail sales particularly in rural areas.

Rates of change in economic indicators for Oklahoma, in addition, seemed to be somewhat higher than in the rest of the nation. With only two major exceptions--in loans and investments and freight carloadings--the average rates of change in the state were larger. Even in the case of the exceptions, the rates of decline

were not much slower--only 0.5 per cent and 2.2 per cent.

Wide differences in the magnitude of fluctuations also appeared, ranging in the case of Oklahoma from -90.6 to +32.5 per cent. Some values almost as extreme-- +67.1 to -30.2 per cent--showed in national data. The wider divergence in magnitude and the faster rates of change probably indicated the greater influence of exogeneous factors in the fluctuations of these time series. For example, the large variation in receipts from farm marketings occurred as a result of changes in weather, and the changes in the index of mining production were related to the imposition of import quotas on oil.

Employment. Employment data shown in Table XX suggest the downswing in Oklahoma employment was somewhat smaller and slower than in the rest of the country. The drop in total employment was 0.9 per cent smaller and the average rate of decline was 0.1 per cent slower than the decline nationally. Unemployment data for Oklahoma demonstrated a 6.8 per cent greater increase than the comparable national series. The rate of increase was considerably slower, proceeding at 1.8 per cent per month, 1.5 per cent slower than in the rest of the country.

To some extent, both employment and unemployment figures tended to confirm the previous conclusion that the unemployment arose from persons entering the labor force rather than those previously employed and laid-off as a result of the downturn. The slow and rather small decrease in employment was indicative of gradual secular movements rather than large and rapid cyclical changes. Thus the high degree of unemployment in Oklahoma was the residue of the large amounts of frictional unemployment caused by a shrinking population relative to the rest of the nation.

TABLE XX

THE AMPLITUDE OF THE DECLINE IN EMPLOYMENT IN OKLAHOMA AND THE UNITED STATES, 1956-1958

Item	Oklahoma		United States			Average rate of change of U.S. less average rate of change in Oklahoma
	Per cent change from series peak to trough	Average rate of change per month	Per cent change from series peak to trough	Average rate of change per month	Per cent change of U.S. less per cent change in Oklahoma	
Non-agricultural wage and salary employment, total	-2.1%	-0.2%	- 3.0%	-0.3%	+0.9%	+0.1%
Manufacturing[a]	-9.6	-0.4	- 8.3	-0.5	-1.3	+0.1
Durable[a]	-8.9	-0.3	-11.6	-0.7	+2.7	+0.4
Non-durable[a]	-3.0[b]	-0.1[b]	- 4.5	-0.2	+1.5	+0.1
Mining	-9.0	-0.3	-12.6	-0.6	+3.6	+0.3
Contract construction	-1.0	-0.5	-10.8	-0.4	+9.8	-0.1

[a]Data not strictly comparable

[b]From January, 1957 to December, 1958

Source: See Appendix

Item	Oklahoma: Per cent change from series peak to trough	Oklahoma: Average rate of change per month	United States: Per cent change from series peak to trough	United States: Average rate of change per month	Per cent change of U.S. less per cent change in Oklahoma	Average rate of change of U.S. less average rate of change in Oklahoma
Wholesale and retail trade	- 1.2	-1.0	- 1.3	-0.1	+0.1	---
Finance, insurance, and real estate	+ 2.7[b]	+0.1[b]	+ 2.6[b]	+0.1[b]	-0.1	---
Transportation and public utilities	- 4.2	-0.3	- 0.7	---	-3.5	---
Services	- 3.1	-0.3	+ 3.1[b]	+0.1[b]	-6.2	-0.4
Government	+ 3.6[b]	+0.2[b]	+ 6.9[b]	+0.3[b]	-3.3	-0.1
Insured unemployment, inverted	-52.6	-1.8	-45.8	-3.3	-6.8	+1.5

[b]From January, 1957 to December, 1958

Source: See Appendix

By far, the greatest stability was in construction where employment fell 9.8 per cent less than employment nationally; the rate of change was 0.1 per cent faster. This stability was in direct contrast to the decline in the value of construction contracts, mentioned previously, which was relatively long and, at the same time, rather large. In part, this difference could be expected since employment characteristically lags considerably behind production and since contracts showing new construction activity would likely be much more volatile than the employment in all construction activity.

Employment in mining and in wholesale and retail trade also reflected greater than usual stability. In mining, employment in Oklahoma declined 3.6 per cent less, falling at a rate 0.1 per cent slower than nationally. The behavior of state employment in mining, most likely, was due to the effects of both the Suez crisis and new "voluntary" import quotas in the oil industry. The smaller rate of decline probably was produced by the early downturn after the crisis ended and the subsequent long drops occurring until the recession was underway. The imposition of new quotas, however, tended to prevent large cuts in production and confined the downturns in employment to rather small amounts. Employment for the United States in wholesale and retail trade, in the meantime, showed a decline slightly larger, 0.1 per cent, and a rate of change approximately equal to the fluctuations in Oklahoma.

All other sectors showed decreases that were greater than those elsewhere and, with the exception of finance, insurance, and real estate, the differences were rather large. In that sector, the rise in Oklahoma was only 0.1 per cent less though the rates of change were equal--0.1 per cent per month.

In manufacturing, the decreases nationally and in Oklahoma were rather

large, but differences between the two were less pronounced. The difference between the declines was 1.3 per cent, yet the rates of change in Oklahoma were slower by 0.1 per cent due, of course, to a longer period of decrease--seven months. Since the data for durable and non-durable manufacturing are not strictly comparable with the series for total employment in manufacturing and partly as a result of differences in timing, data for durable and non-durable manufacturing employment showed less pronounced declines for Oklahoma. In durable manufacturing, the difference was 2.7 per cent in terms of magnitude and 0.4 per cent in terms of rates of change. In non-durable manufacturing, the difference was 1.5 per cent and 0.4 per cent respectively.

To some extent, the results indicating a greater relative fall in Oklahoma manufacturing employment could be attributed partly to the early peak and consequent greater declines after the Suez affair. A smaller drop in employment, indicated by breakdowns of the total, however, appeared to be a more plausible conclusion since the drop in the index of Oklahoma manufacturing production showed smaller declines in manufacturing than occurred nationally. A smaller fall in Oklahoma, in turn, would seem likely since, as was previously shown, durable manufacturing, where the fluctuations in employment were the greatest, employed proportionally less of the total in manufacturing in Oklahoma than elsewhere.

In transportation and public utilities, services, and government, the fluctuation in Oklahoma employment was relatively greater than in the rest of the country. In services, the discrepancy between the areas was greatest--6.2 per cent with an average rate of change 0.4 per cent slower than nationally; Oklahoma employment in this sector had declined 3.1 per cent, as it rose 3.1 per cent in the

country as a whole.

The differences in this labor-intensive sector could be, perhaps, best explained as a reflection of the decline in Oklahoma population. If Oklahoma is over-populated relative to other areas in the United States, economic activity will tend to be concentrated in labor-intensive sectors. As Oklahoma loses population relative to the rest of the country, labor-intensive sectors--other things equal--will find their costs shifting upward more than in other lines of economic activity. More capital-intensive methods will be applied, and employment over time will rise (fall) at a slower (faster) rate than in other sectors. This process may be accelerated by downturns in economic activity as employers are forced to cut costs or restrict the addition of new workers.

The differences in the changes in employment in transportation and public utilities and in government were less striking than in services. Employment in transportation and public utilities fell 3.5 per cent more in Oklahoma. Employment in government fell 3.3 per cent more in the state. In transportation and public utilities the difference in average rates of change was about zero, both areas changing at a rate of 0.3 per cent per month. In government, the difference was small--0.1 per cent. The greater decline in public utilities would, in part, be attributed to the fact that activity in investment in some parts of this sector may be interest-elastic, and Oklahoma, as was noted previously, appeared from all indications to suffer from somewhat more stringent credit restrictions than the rest of the nation. Changes in government employment, of course, are primarily the result of exogenous forces, yet the apparent discrepancy between increases in Oklahoma and in the rest of the country could be the result of a bias in the data. As it is known,

federal employment, over time, has increased at a more rapid rate than employment by state and local governments. Increases in federal employment concentrated primarily in the District of Columbia could produce state data that would show a slower increase, in almost all cases, than that occurring nationally.

IV. Summary

Most data generally seem to point to a shorter and less severe decline in Oklahoma than in the rest of the nation. The pattern of timing at the peak was scattered, though data in Oklahoma showed some tendency to lead. Most indicators at the trough showed the same tendency.

The downturn in Oklahoma also did not appear to be strongly related to the strength of contractions in sectors nationally nor to the secular trend in economic activity in the state. Both mining and manufacturing, for example, were industry groups in which much of the contraction in aggregate activity was concentrated. In Oklahoma, these sectors had suffered contractions, that, on one hand, had been less severe and, on the other, more severe than in the rest of the country.

Manufacturing in Oklahoma, in addition, was one of the more rapidly growing sectors both in terms of income and employment. Yet income from participation in production in Oklahoma manufacturing during the contraction grew less rapidly than did income in manufacturing in the United States. Mining, in contrast, had suffered declines over time in its relative share of employment and income, but income in this area grew more rapidly than in other sectors in 1957-1958.

Often, though, the downturn in Oklahoma appeared to be centered in labor-intensive sectors such as services rather than so much in mining, manufacturing, or construction. This fact was apparently related to declining population in Oklahoma

relative to the United States.

Of all factors, exogenous forces were undoubtedly important in preventing large declines in the state. The recovery of agriculture prior to the onset of the recession tended to provide a cushion against deflationary trends and served, along with the Suez crisis and the imposition of import quotas, to produce earlier peaks in some sectors, scatter the timing of the downturns, and mitigate the cumulative effects of the recession.

The specialization of economic activity was another important contributory factor in affecting the pattern of contraction. The greater importance of government outlays in the state acted as a major factor in creating stability during the downswing, and the smaller importance of manufacturing in Oklahoma lessened the contractionary forces in that sector.

CHAPTER V

SOME TENTATIVE RECOMMENDATIONS AND CONCLUSIONS

This final section represents an attempt to present an over-all summary of the findings of this study. The discussion will also endeavor to point out some further areas of needed research.

The investigation would indicate wide differences between Oklahoma and the rest of the nation did occur in the contraction. The divergences in timing and magnitude of fluctuations in agriculture appeared to be the widest and most important. The differences in movements in mining, in oil production, and in manufacturing were also significant. The contractions in other sectors appeared, to a great extent, to be related to declines in these three sectors.

The pattern of the downswing was affected by specialization of economic activity in the state in these industries. This conclusion supports Kidner's ideas that the location and specialization of industry will significantly affect the path of declines.[1] Still, there was little evidence, in this case, to confirm the idea that the contraction was strongly related to the economic growth in various industries. This finding corroborated Neff and Weifenbach's conclusions.[2] Hanna's hypothesis that low-income areas seem to suffer more severely from downswings in activity was also not confirmed: during the contraction the downswing in a low-income area,

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[1] See above, pp. 4-5. [2] Ibid.

Oklahoma, was less severe than in most other areas.[3]

To completely resolve these varying conclusions is beyond the scope of the present study. But it should be pointed out the differing results, to a great extent, may have been caused by the exogenous factors that were so important in determining the course of the downturns. Factors such as the drought and the imposition of import quotas on oil were significant in producing the pattern of events during the contraction and similar factors may have been equally important in other cases. Moreover, such forces probably become even more important the smaller the geographical area studied. This result is produced by the operation of the law of large numbers: if the number of events varies directly with the size of an area, then the larger the area, the larger the number of independent random events, and the greater the chance a random event will be offset by an event that is exactly opposite in effect.

In addition to erratic factors, some of the differences in conclusions can probably be traced to a lack of comprehensive, timely, and truly comparable data concerning regional economic activity. Many series are published yearly or quarterly when monthly figures are often necessary for an accurate analysis of cyclical fluctuations. Since it is possible that significantly different kinds of cyclical fluctuations may occur in areas within a state, more varied geographical breakdowns are needed to precisely determine the pattern of cycles. Data by county or by city are necessary for this purpose. The value of current series is also sometimes damaged by the fact they are not directly comparable to other available information. Explicit analysis concerning differences in collection, computation, and adjustment of statistics need

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[3]See above, pp. 5-6.

to be supplied. Of all the deficiencies in data, however, those in income are perhaps the most conspicuous. Yearly or even monthly estimates of personal income that are available are highly inadequate. Measures comparable to gross national product or national income would be helpful not only in measuring and controlling regional cyclical fluctuations but in other programs such as those for the promotion of economic development. The computation of these income statistics, though, may be difficult and expensive, yet the benefits derived in guiding programs of stabilization and development may be substantial.

Until better data are available, more promising tools of analysis such as regression techniques cannot be too successfully applied to the problems of regional cycles. Exact determinations of timing or magnitude of fluctuations cannot be made. Government policies, as they apply to state and local activity, must be based on inadequate and perhaps inaccurate knowledge.

The burden of the task of further exploration of the problems of regional cycles, consequently, must lie with expansions of the data-gathering and research activities of governments, private organizations, and universities. In the final analysis, it is only with continued expansions of knowledge of regional economies that a more accurate explanation of the business cycle can be made and more intelligent government policies, on state and local as well as national levels, can be obtained.

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APPENDIX

NOTES ON SOURCES AND METHODOLOGY

I. The Method of Adjustment

A time series for economic data contains movements classified as irregular, seasonal, cyclical, and secular changes. Irregular movements are usually movements associated with non-recurring, random disturbances such as those due to sudden changes in weather. Seasonal variations, as a rule, are predictable movements due to institutional or natural factors usually occurring within a period of a year. Cyclical changes are recurring but not periodic changes taking place within a period longer than one year. Secular movements are those involving the long run tendencies toward increase or decrease in the time series.

Since the major interest, here, is in the cyclical component it would seem necessary to remove irregular, seasonal and secular movements in the data. But when the series used are numerous and the time period under consideration is short, the simplest method of adjustment is by means of a moving average. Otherwise, at least ten years of back figures in each series usually must be collected in order that seasonal indexes can be constructed and curves fitted for secular trend. Such a laborious process, in this case, would be virtually impossible since so many series are considered.

The moving average therefore represents a useful, though less elegant

alternative to this method. If a twelve month average is selected, the data may be smoothed to eliminate seasonal and irregular fluctuations. At the same time, however, some cyclical movements may be removed, and no secular changes are eliminated. The smoothing of series by moving averages, in addition, results in an upward bias in downward movements and, conversely, a downward bias in upward movements.[1]

Since this thesis deals primarily with the contractionary phase of the business cycle, the method, therefore, somewhat overestimates the stability of adjusted data and alters the timing of indicators at turning points. These errors, however, are not too important. The data were primarily designed to compare the relative changes in state and national series and not to show the absolute magnitude and exact timing of movements.

A somewhat more serious difficulty is involved in the inclusion of secular components in the adjusted series. The study attempts, basically, to analyze the cyclical, not the secular effects of regional economic activity. Once secular components are added, the analytical dimension of the problem involved is widely expanded. The secular influence is likely to add some small upward bias to the data. In the case of Oklahoma this bias may be greater since, from all indications, the rate of long-run growth has been higher than in the rest of the country.

Even then, it could be argued that the matter of secular influence is largely irrelevant. It is of little immediate concern to the policy-maker whether drops in employment and income are more the result of cyclical rather than secular forces. Secular changes also cannot be too important within the relatively short period that

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[1]The reader may confirm this by constructing a moving average based on rising or falling data.

is studied. Moreover, the magnitude of secular influence is roughly taken into consideration by the means of benchmark data chosen for various sectors.

II. The Selection of Turning Points

Even with the best possible data and methods of adjustment, some problems of interpretation would still appear that are difficult to resolve no matter how the data are handled. One ubiquitous problem is that of identifying peaks or troughs when successive monthly or quarterly figures are the same. There would appear to be no *a priori* reason for the choice of one or the other, so the nearer figure to the National Bureau of Economic Research reference cycle peak or trough was arbitrarily chosen.

Related to this question, is the question of which of two alternative peaks or troughs would be chosen when data fall then rise once again or *vice versa*. The criterion here, it should be confessed, was largely subjective, the choice depending on the degree of previous variation in the data and the amount of the change upward or downward before or after each potential peak or trough. Borderline cases, again, depended on which figure was nearer to reference cycle dates.

III. Sources and Construction of Data

The sources of each series for Oklahoma and the United States are presented in Table XXI on the following pages. Explanatory comments are added in the Table, and most of the series are more fully discussed in each publication.

The computation of the indexes of industrial production and general business activity for Oklahoma, though, is not fully described in *The Oklahoma Business*

TABLE XXI

SOURCES OF STATISTICAL INFORMATION

Series	Sources: Oklahoma	Sources: United States	Comment[a]
Bank rates on business loans	--	1)	Quarterly series, average of nineteen large cities
Cash receipts from farm marketings	4)	4)	
Consumer price index	--	1)	Bureau of Labor Statistics series; 1947-1949 equals 100
Crude oil production	6)	4)	
Debits to demand deposits	6)	1)	1) total all reporting centers, excludes interbank and U.S. government accounts; 6) total thirty Oklahoma cities
Demand deposits	6)	1)	Both less interbank and U.S. government deposits and cash items in the process of collection
Demand deposits and currency outside banks	--	1)	Seasonally adjusted, excludes interbank and U.S. government accounts and cash items in the process of collection
Freight carloadings	6)	4)	Both exclude less than car lot loadings

[a]Unless otherwise noted all series were adjusted by means of a twelve-month moving average.

XXI (Continued)

Series	Sources: Oklahoma	Sources: United States	Comment[a]
General index of business activity	6)	6)	Both seasonally adjusted; 1947-1949 equals 100
Gross national product	---	2), 3)	Constant dollars, 1954 equals 100; seasonally adjusted quarterly totals at annual rates
Index of industrial production	6)	1)	Both seasonally adjusted; 1947-1949 equals 100
Index of manufacturing production	6)	1)	Both seasonally adjusted; 1947-1949 equals 100
Index of mineral production	6)	1)	Both seasonally adjusted; 1947-1949 equals 100
Insured unemployment	7)	3)	
Loans and investments	6)	1)	
New incorporations	6)	4)	
Non-agricultural wage and salary employments	7)	5)	7) durable and non-durable manufacturing are based on first quarter, 1957 benchmarks; all other data are based on 1953 revised estimates
Personal income	6)	2), 3)	
Personal income per capita	3)	3)	
Retail sales	6)	4)	
Time deposits	6)	1)	

[a]Unless otherwise noted all series were adjusted by means of a twelve-month moving average.

XXI (Continued)

Sources

Series	Oklahoma	United States	Comment[a]
Value of construction contracts	6)	3)	

Symbols

1) - Federal Reserve Bulletin
2) - U.S. Income and Output (1958)
3) - Survey of Current Business
4) - Business Statistics: 1959 Biennial Edition
5) - Employment and Earnings
6) - The Oklahoma Business Bulletin
7) - Oklahoma Labor Market

[a]Unless otherwise noted all series were adjusted by means of a twelve-month moving average.

Bulletin where the data are published. Some aspects concerning the compilation of these indexes, consequently, are treated below.

According to personal conversations and correspondence with Warren E. Moeller of the University of Oklahoma Bureau of Business Research, the index of general business activity for Oklahoma corresponds in composition and weighting of the McGraw-Hill index for national activity published in Business Week. Components include series for agriculture, minerals, construction, manufacturing, wholesale and retail trade, finance, transportation (freight carloadings), utilities, services, and communications. The index of industrial production for Oklahoma has a weight of 64.0 for minerals and 36.0 for manufacturing. Individual components include a 45.7 weight for crude oil production, 16.6 for natural gas production, 11.6 for crude runs to stills, 9.7 for electricity production, 5.4 for printing and publishing. Items with weights less than 5.0 include: lead and zinc production, coal production, meat packing, wheat grindings, machinery production, food processing, stone, clay, and glass production, rubber, and cotton ginning. Employment data are generally used to update benchmark figures derived from the United States Census of Manufacturing.

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