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POPULATION, LABOR FORCE, AND  
LONG SWINGS IN ECONOMIC  
GROWTH / THE AMERICAN EXPERIENCE

TO SIMON KUZNETS WHO TAUGHT ME  
THE MEANING OF SOCIAL SCIENCE

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## CHAPTER 1 / INTRODUCTION AND SUMMARY

Since the late 1930's the American economy has been undergoing an immense wave of population growth. One comprehensive study of the postwar economy has characterized this as "perhaps the most unexpected and remarkable social feature of the time . . ." [88, pp. 161-162].<sup>o</sup> Yet, while its important economic impact is widely acknowledged, the reasons for it and the likelihood of its continuation are questions almost completely ignored by economists.<sup>1</sup> Now the movement appears to be slackening. Is this indeed the case? If so, why is this change occurring? How long and how much of a decline is in prospect? Why did the earlier upsurge occur? Is a resurgence likely in the more distant future? These are questions of some urgency.

Actually such waves in population growth are not new in American experience. The historical record, at least in so far as it can be reconstructed, suggests that marked longer-term fluctuations have occurred since at least the first half of the nineteenth century. Indeed, the existence of such movements in various series relating to demographic phenomena, particularly international migration, had been a recurrent source of comment by specialists.<sup>2</sup> Is it possible that the current U.S. wave is but the most recent manifestation of a more widespread and persistent phenomenon?

### EARLIER STUDIES

Unfortunately there has been relatively little intensive research on these movements, even by demographers, so that answers to questions

<sup>o</sup> EDITOR'S NOTE: All numbers in brackets refer to works cited in bibliography.

<sup>1</sup> A noteworthy exception is the work of Joseph S. Davis [43-45].

<sup>2</sup> For example, though his concern was with short-term business cycle fluctuations, the first substantive observation made by Harry Jerome in his study of international migration relates to the "violence of the major fluctuations" [96, p. 33]. The survey of international migration experience in the study by Willcox and Ferenczi points out these movements and provides extensive evidence on them [65, Part I]. Cf. Losch [117] regarding swings in other demographic series.

such as these are not easily obtained. Over the past few decades, however, one promising line of work has gradually developed which associates these waves in demographic variables with economic phenomena. In the United States, the first such efforts came in connection with the pioneering investigations of the long building cycle by Riggleman, Newman, and others.<sup>3</sup> A major step forward occurred in the early forties with Walter Isard's formulation of the concept of the "transport-building cycle" [92, 93]. Isard placed particular emphasis on population migration and saw such movements as entering into this cycle as both cause and effect. He attempted to support this view with evidence from American experience going back to the 1830's. At virtually the same time, Norman J. Silberling presented views similar in some respects to Isard's [145].

In the 1950's, analysis of these population movements became increasingly associated with the newly emerging subject of long swings in economic growth. The latter, in the past variously termed "long cycles," "secondary secular movements," and "trend cycles," have in recent years increasingly received the more distinctive designation "Kuznets cycles," in recognition of Simon Kuznets' pioneering work and continuing contributions in this area. Brinley Thomas' wide-ranging *Migration and Economic Growth* [156] in 1954 gave a major impetus to linking demographic movements to long swings in economic growth. In the same year, Margaret Gordon's study of employment and population growth in California provided evidence at the local level [77]. In Canada, Kenneth A. H. Buckley conducted several pioneering investigations in this vein [24-26]. Kuznets, who had himself pointed at an early date to the apparent association between demographic and economic swings, presented important evidence not only on international migration but on other components of population change as well [102, 103, 107]. Dorothy S. Thomas demonstrated that swings existed in *internal* migration and were associated with similar movements in economic activity [160, 163]. Moses Abramovitz presented evidence that the swings in demographic variables formed a fairly systematic part of movements in output, input, and productivity generally [4, 5].

<sup>3</sup> Moses Abramovitz' recent examination of long swings in construction reviews the relevant literature [1].

The work of these scholars has in turn stimulated further research. Important recent contributions emphasizing demographic phenomena include studies of the United Kingdom by J. Parry Lewis [113], Australia by Allen Kelley [98], Sweden by Maurice Wilkinson [215], Canada by Donald Daly [40], and Japan by Morris Silver [146].

## PURPOSES

The present volume seeks to supplement this literature with a fuller analysis of United States experience than has heretofore been attempted. Descriptively, it seeks to synthesize and extend existing knowledge of the demographic waves; and at the theoretical level, it aims to clarify some of the channels through which economic forces affect demographic magnitudes and are, in turn, affected by them. Its primary purpose, however, is to seek an explanation of the causes and economic effects of the observed demographic swings and thereby to derive new insights into recent experience as well as possible implications for the future.

## SCOPE AND TERMINOLOGY

The period covered extends from the 1820's to the present, though due to data considerations the historical analysis is primarily based on the period since 1870. Recent experience is studied in the light of this longer-term perspective ("recent," unless specifically qualified, refers broadly to the period since 1940). I also attempt to assess implications for the future.

Because the labor force is a central point of contact between economic and demographic factors and because the U.S. Census provides concurrent observations on population and labor force, it has been accorded coordinate stress with population. As the inquiry progressed, it became clear too that there was a need for explicit study of growth in the number of households; however, the fact that this was recognized relatively late, coupled with poorer census coverage for this magnitude, made it impossible to treat it as fully as population and labor force.

These three magnitudes—population, labor force, and households

—and their underlying components are collectively described by the term “demographic variables.” Any such designation is largely arbitrary; it is adopted here because it provides a convenient rubric and because such population-related magnitudes have typically fallen outside the purview of traditional economic analysis.

The present study uses the terms “long swing” and “Kuznets cycle” interchangeably. The latter term has the advantage of minimizing any confusion with other concepts of longer-term fluctuation, such as the Kondratieff concept, but has the disadvantage of suggesting substantial periodicity. Abramovitz has suggested in an unpublished manuscript that such movements be defined as “swings in the level or rate of growth of a variable with a duration longer than normal business cycles but shorter than the very long swings with which Kondratieff, Schumpeter, and others have been concerned. To permit ample room to consider all the possibly relevant evidence, we might set the minimum limit at five years and the maximum at thirty.”

The concern with such movements throughout this study does not imply any precommitment to the view that the long swing is an independent time-series component or that long swings are self-generating, any more than previous NBER studies, such as those by Burns, Kuznets, and Abramovitz, in which this or an equivalent concept has been employed. Given this interest in demographic waves and the growing tendency in the literature to associate these waves with swings in economic growth, it was clear from the start that the exploration of the long-swings concept would be one promising line of inquiry. As is shown in Part I, certain repetitive features of the swings, together with related theoretical considerations, tentatively supported the economic meaningfulness of the concept. Accordingly, it was employed in the interpretations set forth in Part I and subsequent parts. However, a thorough inquiry into the validity of the concept would lead into theoretical and statistical issues ranging beyond the present study's main concern. Moreover, the validity of much of what is said here concerning these relationships does not depend on whether or not there “really” is a long swing. It is possible to view “long swings” simply as a convenient statistical framework for testing the postulated relationships, a framework whose adoption follows naturally from the intermittent nature of the observations on many of the basic magnitudes.

## SOURCES AND METHODS

A scholar interested in quantitative study of an extended historical period is ill-advised to have strong preconceptions about data requirements and statistical methodology. All too soon he will find himself pushed to the brink of despair by the fragmentary nature of the data and by problems of conceptual and statistical comparability. He must be prepared, moreover, to become a producer as well as consumer of historical series.

This study, though plagued with its share of such woes, has been fortunate in a number of respects. With regard to demographic variables, it proved possible to use the historical censuses, especially those since 1870, and the immense wealth of detail contained therein as the principal data base for analysis of the period up to World War II. Use of these materials was greatly facilitated by a number of previous monographs on population and labor force (see the Preface for citation of authors) in which problems of comparability and reliability were carefully investigated and long-term trends analyzed. In the case of economic magnitudes, it was possible to draw extensively on well-known historical studies produced by the National Bureau, such as those by Kuznets, Kendrick, Burns, and Creamer, and to benefit from similar efforts by Gallman, Lebergott, North, and others, which were stimulated by emergence of the "new economic history."

For the recent period, principal reliance for data is shifted to official series produced by the Bureau of the Census, Bureau of Labor Statistics, National Office of Vital Statistics, National Income Division, and other agencies. An especially rich source was the population, labor force, and income data obtained in the Current Population Survey which, since the late forties, has provided information formerly unavailable.

The materials for the recent period were usually combined with the historical data in overlapping fashion in order to piece together the picture for the entire period. The resulting mix of annual, quinquennial, and decennial data, of discontinued and overlapping series, provides a substantial and remarkably consistent basis for reconstruction of historical experience, which in itself is a tribute to the effort and dedication that has gone into the estimation of historical time series. It is, nevertheless, an unwieldy body of data for statistical

manipulation, and only the simplest techniques of analysis have been used. More rigorous and sophisticated methods could probably have been profitably employed—especially if the full content of the eventual data base had been adequately foreseen—and it is to be hoped that the present study may encourage efforts along those lines.

#### ORGANIZATION OF THE VOLUME

Part I presents evidence on the nature of the demographic fluctuations and develops the general conception of their cause-effect connections with swings in economic magnitudes, drawing to some extent on the results of the two subsequent parts. Chapter 2 deals primarily with the historical pattern. With regard to evidence of the swings, it deals chiefly with the period through 1950; with regard to the causal analysis, primarily with the pre-World War I period. Chapter 3 develops further the analytical conception of economic-demographic relationships and following that examines recent experience in the light of the longer-term record as well as the implications of the analysis for future long swings. This chapter contains the fullest discussion of the long-swings issue, both its theoretical aspects and contemporary relevance.

Parts II and III, on population and labor force growth, respectively, go more thoroughly into the causes of the demographic movements, focusing particularly on the nature of, and reasons for, the striking differences between recent and earlier experience. Chapter 4 centers on the reasons why fertility played such an important role in the recent upsurge in population growth, whereas in the pre-World War I period migration was the principal underlying component. Chapter 5 updates and extends this "baby boom" analysis to the recent fertility decline. Chapter 6 seeks to explain the disproportionate part played by participation-rate change in the recent upsurge in labor force growth, and Chapter 7 why this rise was largely concentrated among older women. Chapters 3, 5, 6, and 7 contain sections assessing the bearing of the analysis on official population, labor force, and household projections.

Chapters 2 through 5 have been previously published and are presented here with some style revisions, but virtually no change in sub-

stance. Although minor repetition occurs, the chapters are very largely complementary rather than duplicative. The original articles were divided between two journals with quite different professional audiences: economists, on the one hand, and demographers, on the other.<sup>4</sup> In bringing them together here the full picture may perhaps be more readily seen.

Part IV gives the data underlying the text analysis and details on sources and methods.

## PRINCIPAL CONCLUSIONS

The following summary focuses on the broad issues of the nature of demographic swings and their interrelations with economic conditions. While it incorporates some of the chief findings of the chapters on fertility and labor force, they are subordinated to this more general theme.

Although summarization offers a fresh chance to state the main results in their most succinct form, it inevitably strips an author's findings of the numerous qualifications and reservations with which he has been at pains to clothe them. Moreover, the scope of the present inquiry is such that the potentials for testing are beyond the capacities and resources of a single investigator. Hence, while what follows may convey an air of definiteness, it should be recognized that the statements are in fact more in the nature of hypotheses. While they seem consistent with the data assembled and the analysis attempted here, they are subject to revision and reconsideration as further research accumulates.

### *Some Facts on U.S. Experience*

Pronounced fluctuations usually of some fifteen to twenty-five years' duration in the growth of population, labor force, and households can be traced back at least to the first half of the nineteenth century—though direct data on these variables become increasingly scarce as one moves back in time. The conviction that these swings are not

<sup>4</sup> Earlier versions of Chapters 2 and 5 appeared in *Demography*, Vols. II (1965) and III (1966), respectively; Chapters 3 and 4 in *American Economic Review*, Vols. LVI (1966) and LI (1961), respectively.

merely a product of faulty data or methods is buttressed by several considerations. On the statistical side, they cannot be definitely ascribed to known data deficiencies. Moreover, data on demographic variables from various independent official sources provide complementary support for the swings. On the analytical side, certain repetitive features of successive swings come to light if the data are disaggregated. Thus, in the industrial sphere, the swings appear with high regularity in most of the major subdivisions of the nonagricultural sector, and are especially prominent in construction. Spatially, the swings were centered in nonfarm areas and places undergoing new agricultural settlement. Although not every single city or state necessarily participated in every swing, these swings were widely diffused throughout the nation. Finally, the observations on demographic variables, both with regard to the timing of the swings and certain component characteristics, tend to be reinforced by independent readings on nondemographic magnitudes. Thus, similar swings occurred in the growth of output and capital stock. Likewise, the building cycle, or, more generally, an urban development boom, formed a part of the swings.

In the period since 1940, the demographic movements have exhibited some striking differences from the earlier pattern. Previously the component of change principally responsible for the swings in population, labor force, and households was migration, both external and internal. Recently, the dominant components of change have been, respectively, the birth rate, labor force participation rates (particularly of older women), and household-headship rates,<sup>5</sup> although internal migration too has continued to play a part. Moreover, as long as migration was the dominant component, the three aggregative series moved fairly synchronously. However, since 1940, differences in timing have been emerging, and in the 1960's we seem to be witnessing for the first time an upswing in labor force growth accompanied by a continued downswing in population growth. Clearly, an important question is whether such new developments can be reconciled with past experience.

<sup>5</sup> The household-headship rate is defined, by analogy with the labor force participation rate, as the proportion of the population in a given demographic group (e.g., classified by age and sex) who are household heads.

### *Analytical Viewpoint*

Do the demographic swings initiate swings in economic conditions or vice versa? What are the specific cause-effect mechanisms? The possibilities are clearly varied and a number are considered in the subsequent chapters. The main features of the viewpoint emerging from the study are noted below; I will not, however, attempt to incorporate the detailed mechanisms here but will leave this discussion to the body of the volume.

1. *Causes of demographic swings.* Past swings in immigration and more recent swings in fertility, labor force participation, and household-headship rates appear to have been primarily induced by corresponding variations in economic conditions, that is, in income and employment opportunities in the labor market. This is not to suggest that noneconomic factors have no influence at all on demographic behavior; but when one's purpose is to explain pronounced demographic *fluctuations*, the fact that stands out is that economic conditions also exhibit such movements, whereas noneconomic factors usually change only slowly or irregularly.

At a more fundamental level, the changes in income and employment opportunities and associated responses in demographic variables can be traced back to variations in supply-and-demand conditions. Major surges in the growth of labor demand (especially in the nonfarm sector) are seen as occurring in conjunction with conditions in the growth of labor supply which vary with secular, irregular, and other factors. A swing in the growth rate of aggregate demand is characteristically responsible for initiating the demographic movements, but the nature of the induced response varies with the labor supply conditions under which it occurs.

In analyzing demographic behavior, it is often desirable to focus specifically on the group or groups within the total population responsible for the demographic observations. It is not necessarily true that economic indicators for the population as a whole adequately reflect the circumstances of component groups, and mistaken inferences about economic-demographic relationships have sometimes resulted from failure to take account of this fact. In the present study, special attention is often given to young adults, who make most decisions regarding marriage, family formation, and migration.

2. *Economic effects of demographic swings.* A demographic swing, though initiated by economic conditions, may have important feedback effects on the latter. When household growth in nonfarm areas is noticeably accelerated, this generates new demands, not only for housing but for urban services generally. Conditions are thus created for an urban development boom—new real estate activity and residential construction; new municipal investment in roads, water supply, sewers, and so on; new business investment in electricity, telephones, retailing, and similar activities. The source of accelerated household growth could be a surge in in-migration or a general tendency toward an earlier age of household formation. In either case, there would occur a bunching of commitments by households to new and greater spending, extending over several years as a new home is established and a family started or settled. Thus the rise in household growth would lead to an increase in consumer spending and in private and public investment expenditure. This induced rise in the growth of aggregate demand would help cushion the economy against the usual business cycle and would become exhausted only gradually.<sup>6</sup>

A bunching of long-term spending commitments such as this may be the key to Kuznets cycle phenomena. This applies not only to decisions of households but other spending units as well, though no attempt is made here to examine changes in the population of business or governmental units. The investigation stops short too of exploring financial aspects of the swings as well as possible accelerator-type relationships. Whether Kuznets cycles may be self-generating is left open; no more is claimed than that a plausible mechanism has been identified which once initiated, for whatever reason, might help to sustain the economy over a period longer than the usual business cycle.

3. *Interrelations between long swings and secular development.* This sequence of economic-demographic interactions should be seen in the broader context of long-term economic growth. The secular development process sets the stage for the mechanism's operation, since inherent in it is a major imbalance between the geographic distribution of growth in labor demand and labor supply. The evolution of

<sup>6</sup> An analytical possibility not explored in this study is that higher labor force growth may help sustain high output growth and thereby high induced capital formation.

modern technology and rising per capita income increasingly favors concentration of economic activity in nonfarm areas. At the same time, the initial preponderance of agriculture coupled with relatively high rural natural increase provide a labor supply through natural growth which is disproportionately located in farm areas. In a free market economy the need for population redistribution which results tends to be met by the multiplier-type process described above.

Secular and other changes modify the mechanism's operation over time, with resultant shifts in the characteristics displayed by long swings. The nature of the economic opportunities at an early stage of economic development differs from those at a later stage; hence variations occur over time in the specific industrial and geographic sources of increased labor demand. The potential sources of labor supply shift with the secular decline of agriculture, as well as with developments in transportation and foreign economic conditions which influence the potential responsiveness of domestic and foreign labor sources. Irregular factors, such as educational changes affecting labor quality and immigration restriction, also play a part.

#### *Interpretation of U.S. Experience*

The analytical supposition is thus that an economic boom engenders a swing in demographic conditions through its impact on the labor market, but that the demographic swing in turn has a feedback effect on economic events through accelerated household growth and associated expenditure effects. Secular conditions set the stage for operation of this mechanism and modify its characteristics over time.

To explain the demographic waves actually experienced in the United States, one must add to this analytical conception the relevant real-world labor supply conditions within which the mechanism tended to operate. The principal (but not only) relevant circumstances are: (1) largely or wholly free immigration through the mid-1920's; thereafter a ceiling but no floor; (2) a farm population growing in absolute size until the first decade or so of this century, then leveling off, and since 1940 declining rapidly; (3) a contribution to labor force growth from natural increase which declines with fair regularity from the last half of the nineteenth century to an all-time low in 1940-55, followed by a recent upsurge; (4) for nonfarm persons outside the labor force—

comprising largely youths, older persons, and females—a mixture of secularly changing conditions affecting their propensity to join the labor force, some of which, such as compulsory education and OASDI, operate to reduce entry, and others, particularly in the case of adult women, to encourage entry.

Consider now the typical sequence set in motion by an upswing in the growth of aggregate demand under the labor supply conditions prevailing prior to World War I, that is, free immigration and a large reservoir of farm population in older settled areas. An economic boom, once started, led to a rise in the growth rate of hourly wages and a decline in that of unemployment, signifying a gradual tightening of the labor market. As this progressed, it induced an upsurge in migration from older farm areas and abroad, thus raising the growth rate of population, labor force, and households in the centers of opportunity. With spending money provided by the new jobs, the newly established migrant households in turn generated new demands and investment opportunities—for food, clothing, shelter, and a variety of urban services. The growth in output and investment which this induced—typically, an urban development boom—sustained and prolonged the expansion.

Although the interwar period differed in some respects, the above sketch is roughly descriptive of the mechanism in this period too. The most restrictive immigration legislation was not enacted until the mid-twenties, and the period as a whole was marked by an upswing and subsequent decline in both immigration from abroad and out-migration from farm areas.

The economic boom starting with World War II was the first to be initiated under conditions of sharply restrictive immigration legislation and incipient farm population decline. Furthermore, labor force growth due to natural increase of the working-age population was at an all-time low. (The population of persons aged 15–29 actually declined in absolute number from 1940 to the mid-fifties.) Moreover, younger workers enjoyed an exceptional educational advantage over older workers as a result of rapid acceleration of secondary schooling between 1920 and 1940. Under these conditions a major upswing in the growth of aggregate demand created an unusually strong labor market for younger men. The result was a very rapid growth in their

relative income, accomplished by unusually high upward mobility on the occupational scale and a more rapid increase in wages for young than old workers in given occupations. In turn, this led to a sharp reduction in the average age at which they married, established separate homes, and started families, and led also to expenditure effects associated with new-household formation of the type previously caused by migration. Thus, as in the past, an economic boom induced a rise in population and household growth and an associated urban development boom, but this time through its income effects in the labor market for young persons rather than through migration. At the same time, the labor market adjustments of younger persons, in conjunction with the high over-all demand situation, left open a number of less skilled jobs of both the service and manual variety, thereby encouraging greater labor force growth. The chief beneficiaries of this, through significantly increased labor force participation rates, were older women whose alternative costs in the form of school or small-child care responsibilities were low, though even persons with such responsibilities showed some positive response to the plentiful job opportunities. As before World War II, internal migration also rose in response to the swing in demand, but its quantitative importance was relatively less because of the secular leveling off and decline of the farm population, the principal reservoir for such migration. In short, an economic boom again induced a rise in population, household, and labor force growth, and an associated urban development boom, but its underlying mechanism and the specific demographic responses were substantially different from the past because of the new labor supply conditions under which the boom occurred.

With the waning of the boom in the 1950's, the labor force and household growth rates declined and the population growth rate leveled off. In the first half of the 1960's, as the economy regained momentum, the growth rate of the labor force swung up again. In contrast to past experience, however, the household growth rate continued to decline, and the population growth rate turned down as the birth rate started to drop. Correspondingly, there was little evidence of sizable feedback effects from the demographic side in the form of an urban boom.

This anomalous situation on the demographic side appears to have

arisen, at least in part, from another new development in supply conditions, a sharp upsurge in the growth rate of the young adult population, echoing, with a lag, the baby boom of the forties and early fifties. The surge has pushed up labor force growth, thereby supplying the labor requirements of the new economic boom. It has not, however, raised household growth correspondingly because, compared with labor force entry, household formation tends to occur later and to be spread over a wider age range. Furthermore, this upsurge, by producing a sharp rise in the relative number of young adult workers, has led to a deterioration of their relative income position, and through this to a shift toward deferment of marriage, later household formation, and reduced fertility. A decline in the educational advantage of young over older workers has also contributed to a weakening of the relative labor market position of young adults. Finally, the impact of expanded OASDI coverage in sustaining household growth reached its peak in the fifties and has dropped off since then.

#### *Implications for the Future*

Just as the post-World War II baby boom is currently being echoed in a labor force surge, so too the ongoing fertility decline presages an eventual downturn in labor force growth due to natural increase. Thus, some thirty years following the World War II era, labor supply conditions are in prospect which would repeat at least partly those of the earlier period. This observation points up what may be the distinctive feature setting off post-1940 from earlier experience, namely, the emergence on the labor supply side of a built-in swing of about a generation's duration. The discussion of the 1960's has already indicated why such a swing may not itself generate a corresponding economic swing. Nevertheless, the existence of a natural-increase cycle could conceivably give rise to a distinctive new pattern of population booms, of which post-1940 experience may be illustrative. As long as the dominant feature of labor supply conditions was the potential response through immigration, economic booms tended to induce population booms on a one-to-one basis. When, however, the dominant feature on the labor supply side is a built-in swing due to natural increase with a period of some thirty years' duration, then the impact of an economic boom on population growth depends on the stage of

the labor supply cycle at which it occurs. An economic boom occurring at the ebb stage, such as that of the post-World War II period, would be accompanied by shifts in the relative numbers and income of young persons favorable to increased fertility, higher population and household growth, and the expenditure feedbacks associated therewith. On the other hand, one occurring at the flood stage would be associated with shifts in the relative numbers and income of young persons unfavorable to fertility and a demographic boom. Such, it would seem, may be the situation in the 1960's.

Thus, the experience since 1940 conceivably could be the precursor of a future in which economic booms at certain times may engender surges in population and household growth and associated expenditure feedbacks, and at other times may not, depending on the stage of the natural-increase cycle. Correspondingly, the underlying mechanism, formerly centering on migration, is replaced by one involving fertility and household-headship rate movements arising from shifts in the numbers and income of younger relative to older adults. While there are elements of continuity with the past, post-1940 experience could mark, in a sense, the beginning of a new era.

The weight one attaches to this possibility depends on the importance attributed to the natural-increase cycle in the explanation of events since 1940. While this development is considered to be important in the present study, a number of other causal factors are suggested too. Some of them are of an irregular character, such as developments in education and OASDI. Also specific problems of the timing and magnitude of relationships are only tentatively explored. There is the question too of the likely strength and duration of economic booms if demographic feedbacks are weak or absent. A conservative position perhaps would be that, while migration-dominated population swings may be largely a thing of the past, it is not unlikely that population swings arising from fertility movements, such as that since 1940, may occur again in the future.

#### NEEDS FOR FURTHER RESEARCH

A study such as this increasingly unfolds new and enticing lines of inquiry as it progresses. While the present volume is reasonably com-

plete in its own terms, much more might have been done. Note may be taken of some of the possibilities on the pretext that they represent "needs for further research"; in fact, they catalog some of the shortcomings of the study.

1. It would be preferable to take the nonfarm economy as the primary spatial unit rather than the national economy because this would make it possible to incorporate internal migration into the analysis in a more explicit way.

2. With regard to demographic variables, more intensive study of marriage, household formation, and perhaps mortality along the lines attempted here for fertility would be desirable.

3. With regard to labor market variables, fuller attention to hours and wages is needed. In general, more study of price variables would be desirable to complement the study of the quantity variables which are the main basis of the present analysis. The bearing of the study on income distribution, which is only touched on in the present inquiry, merits explicit investigation.

4. The question of whether economic-demographic interactions tend toward self-generating long swings deserves careful investigation.

5. Comparisons should be made between business-cycle and long-swing patterns with a view to clarifying similarities and differences.

6. The geographic scope could usefully be extended to the regional and local level.

7. Whereas time-series analysis is the basis of this study, it should be possible to develop cross-section tests for a number of the hypotheses.

Despite these and other shortcomings, these essays may help clarify in some small measure a few of the tantalizing problems which have arisen in recent years—the slowdown in the economic growth rate in the 1950's, the baby boom and subsequent fertility decline, the sensitivity of labor force participation to changing employment conditions. To the extent they do, they may demonstrate what is by no means universally accepted: that population is a proper subject for economic analysis and that an understanding of the past may shed useful light on the present and future.

