PART III / LABOR FORCE ANALYSES

CHAPTER 6 / RECENT AND PROJECTED LABOR FORCE GROWTH IN THE LIGHT OF LONGER-TERM EXPERIENCE

It was shown in Chapter 3 that recent experience, like that in the past, has been marked by a long swing in the growth of population, labor force, and households. It was noted there, however, that the components of change principally responsible were different in the recent period, and reasons were suggested for this. Part II pursued the problem of reconciling recent and past experience with regard to population growth. The present part similarly follows up the swings in labor force growth. Here, as has been noted, the most recent swing is marked by the exceptional behavior of participation rates. The recent disproportionate contribution of participation-rate change to the swing in total labor force growth is the subject of the present chapter; the unusual rise in the rates of older women, the principal topic of the following chapter.

As the Gordon Committee Report [136] pointed out several years ago, research on the dynamics of labor force change has been lacking. Since that time, and partly in response to the Report, some important new work has appeared.[1] However, this research, like the current projections of future labor force, rests almost entirely on data for the period since 1947,[2] reflecting the initiation at that time of regular sample surveys. These surveys have provided a major new source of data, whose potential even now is only beginning to be exploited. But the census data, whose value has been amply demonstrated in several

[1] For example, see the papers and references in [80, 138]. The recently initiated *Manpower Report of the President* provides an annual review of the field and valuable current insights [202].

[2] A notable exception is Stanley Lebergott's work [110].

earlier monographs [12, 52, 106, 116, 126, 173] have not been brought to bear on the current discussion either. The present and following chapters may perhaps indicate the potential relevance of these historical materials to some of the current issues.

This chapter first reviews pertinent aspects of the record of swings in labor force growth. This can be done briefly, since many of these points have been covered before. Then an attempt is made to develop an explanation for recent experience consistent with earlier. Finally, as in the case of fertility, the discussion touches on the implications of the analysis for projections, one of the principal subjects of current controversy.

THE RECORD

The absolute magnitudes of total labor force at decennial or quinquennial intervals since 1870 are plotted in Figure 44. The outstanding feature is the continuous upward trend. Each successive interval in the ninety-five year period registered an increase, and by 1965 the labor force total was over six times the 1870 figure of 12.9 million.

However, while the trend in total labor force was continuously upward, the rate of growth was not constant. This is apparent from the changing slope and mild undulatory movement of the curve in Figure 44. This unevenness can be made more explicit if the successive decade percentage increases themselves are plotted, as in Figure 45. For a number of analytical problems, it is these *changes* in total labor force rather than the stock, that are directly relevant. Hence one should be careful not to infer that the seemingly mild variation in the total stock curve of Figure 44 is of little economic significance.

For most of the period, the general sweep of the curve in Figure 45 is downward, signifying a trend toward a declining rate of growth in labor force. But the movement occurs in a stepwise fashion, rather than smoothly. And—what is of particular significance—these fluctuations are of sizable magnitude. Thus, from its high of 29.3 per cent in 1870–80 to its low of 8.3 in 1930–40, the growth rate of the labor force declined from one decade to the next at a rate averaging around 3.5 percentage points. Of the six actual interdecade changes, however,

FIGURE 44

TOTAL LABOR FORCE, 1870–1965
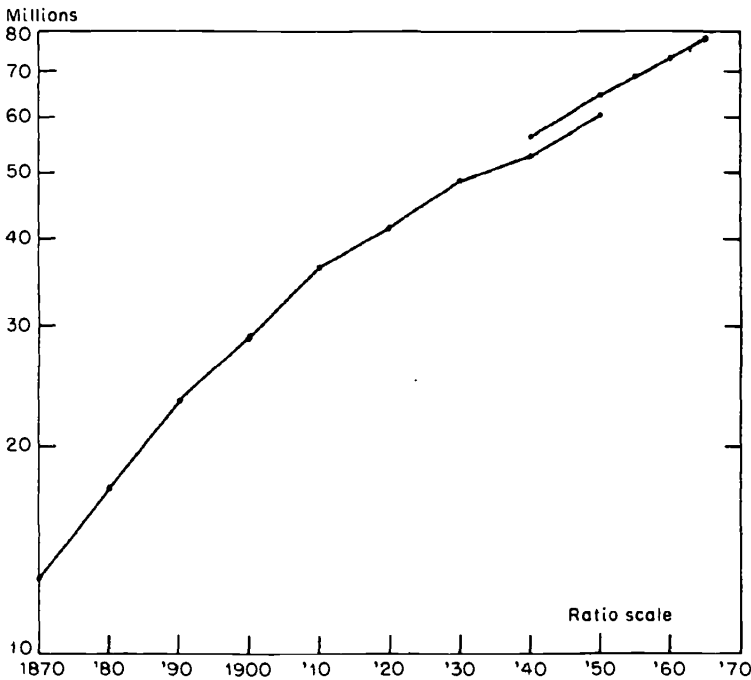
SOURCE: Table E-1.

three showed much higher declines, in the neighborhood of 7 to 9 percentage points, and three showed virtually no decline or even a slight rise. As a result, the mean deviation from the 3.5 average was 4.3 percentage points, higher than the average itself. Moreover, this fluctuation in the decade-to-decade growth rate has continued into the recent period. From 1930–40 to 1940–50, the growth rate per decade rose by 5 percentage points. From 1940–50 to 1950–60, it declined by 3.1 percentage points, and in the most recent quinquennium (1960–65) it has risen again by 2.8 points.

That these swings are not a statistical artifact has already been suggested by several considerations touched on in Part I. First, the swings in labor force growth exhibit a pattern broadly consistent with those in series relating to output, construction, population change,

FIGURE 45

AVERAGE GROWTH RATE OF TOTAL LABOR FORCE: DECENNIALLY, 1870–1950;
QUINQUENNIALLY, 1950–65
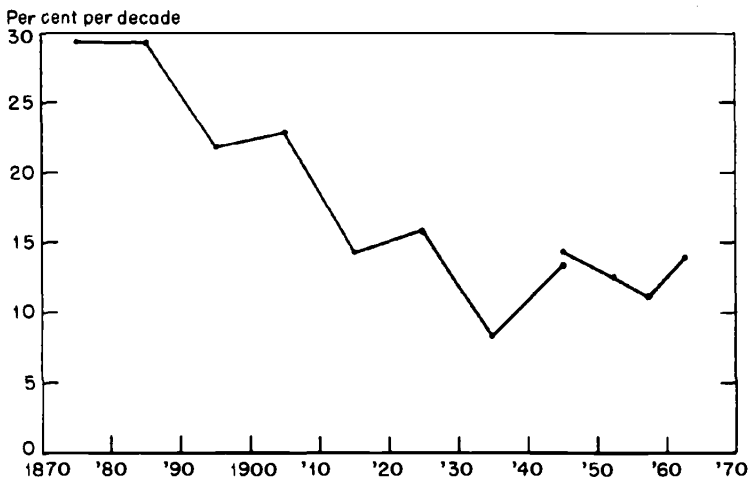
SOURCE: Table A-3, column 1.

and the labor market, most of which are estimated from data entirely
independent of those on labor force. Second, if observations corre-
sponding to decennial census intervals are selected from the entirely
independent annual series on immigration, one obtains a sawtooth
pattern similar to that shown by the labor force data for the period
in which immigration was a significant factor in labor force change
(Figure 1). Third, if instead of the aggregate, one studies the major
industrial components of labor force, the sectors in which the swings
appear are largely the same over time (Figure 8).

Nevertheless, because the historical census data relating to the
labor force or the gainfully occupied are known to contain deficiencies
which affect comparability over time, the specific bearing of these
on the present analysis is considered in Appendix F. The conclusion
reached there is that the defects do not invalidate the inference that
longer-term fluctuations in labor force growth actually did occur.

Labor force growth may be subdivided into several underlying
components, along the lines described in Part I, with a view to identi-
fying the role of each component in the swing in total growth. When

this is done, the following findings emerge (Figure 46). First, prior to the decade of World War I, the swings in total labor force growth were predominantly due to corresponding fluctuations in net immigration. Second, the upsurge in the 1920's was largely produced by the demographic component of aging and mortality, with the other two components contributing relatively little. This movement is of interest because experience since the late 1950's shows some similarity. (This is suggested by the terminal values plotted in Figure 46 and will be

FIGURE 46

AVERAGE GROWTH RATE OF LABOR FORCE BY COMPONENT OF CHANGE:
DECENNIALLY, 1870–1950; QUINQUENNIALLY, 1950–65
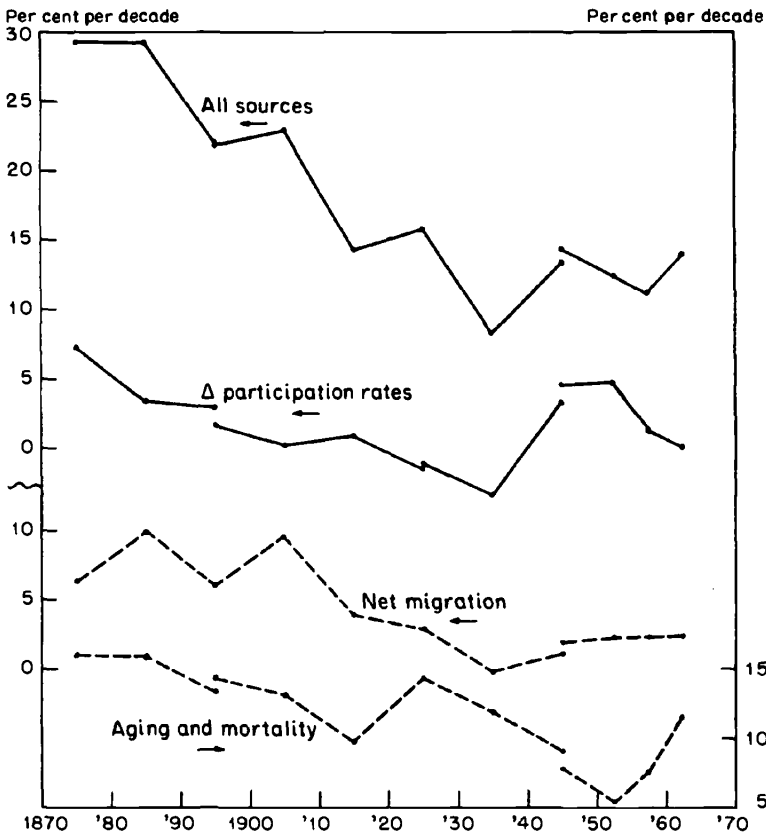
SOURCE: Table A-3.

developed somewhat more fully in the later section on projections.)
By far the most striking movement among the components, however,
and the one of primary interest, is the marked swing in the contribu-
tion of participation-rate change to labor force growth since the 1930's.
It is this movement which is chiefly responsible for the upturn in
labor force growth in the 1940's and its subsequent decline to a trough
in 1955–60. Prior to the 1930's participation-rate change appears to
have played an insignificant role in the swings. (There is even a
suggestion of an inverse movement prior to World War I, but since
the estimates for this period are rather crude, not much confidence can
be placed in this observation.) The startling change in this com-
ponent's role clearly raises the question whether the recent swing in
labor force growth forms a logically consistent part of prior experience.
It is to the analysis of this question that the subsequent section is
principally devoted.

Before turning to this, however, one may ask how the emphasis
here on variability of labor force growth can be reconciled with
Clarence Long's widely known finding on the stability of the age-
standardized labor force participation rate [116, especially Chapter 12].
One point highlighted by the present analytical scheme is that since
participation-rate change is but one component of labor force growth
fluctuations may occur because of movements in other components.
As Figure 46 shows clearly, before World War I labor force pro-
jections based on such stability would have been wide of the mark
unless they anticipated the varying role played by net immigration in
labor force growth [71]. A second point relates to the criterion of
stability.[3] A one-point increase over a decade in an over-all labor
force participation rate of around 50 per cent has a different meaning
depending on whether one's interest is in the labor force stock or
the change therein. With regard to the stock, a one-point change
alters the total by only one-fiftieth. But with regard to the labor
force change, which in this century has averaged about 14 per cent
per decade, a one-point change alters growth by around one-seventh.
To illustrate, if between 1930 and 1940 the age-sex standardized
rate had really been constant at 53.9 instead of declining "only" 1.7

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[3] Lowell Gallaway has conducted a searching examination of this question with
regard to the various component classifications of labor force [74, Appendix A].

points to 52.2, the labor force increase would have been almost 12 per cent, nearly one-half greater than the actual change of slightly over 8 per cent.[4]

EXPLANATION

The Model

The basic elements of the present model are quite simple:

Labor force growth is divided into two components: the first, that arising from the natural increase of the working-age population, is autonomous as regards current swings; the second, that due to the combined contribution of net migration and participation-rate change, is viewed as induced.[5]

The autonomous component depends on demographic processes, age changes and mortality, which shape the natural growth of the working-age population in a given period.

The induced component varies inversely with the unemployment rate. It is seen as comprising adjustment mechanisms for correcting labor market imbalances, mechanisms which are set in motion by changes in unemployment conditions.

The contribution of the autonomous component to labor force growth in any given period is largely predetermined by prior demographic developments, principally natural increase some ten to twenty years earlier. (Unanticipated developments in mortality during a given period could alter the size of this component, but such occurrences tend to be rare in modern experience.) The problem of explaining swings in total labor force growth thus devolves into explanation of the fluctuations in the induced component. The subsequent empirical tests consequently focus on this component. Beyond this, there remains the question of the changing role within the induced component of

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[4] Note that the contribution of participation-rate change to labor force growth is roughly the same as the relative, not absolute, change in the over-all participation rate. Thus, *ceteris paribus*, a decline in the rate from 53.9 to 52.2 reduces labor force growth, not by 1.7, but by 3.2 per cent (1.7 ÷ 53.9).

[5] The analogy with a similar classification of investment in many models of growth and fluctuation is readily apparent. If the present distinction is valid, it would imply need for reconsideration of the typical treatment in these models of population or labor force (the two are often not even differentiated) as an autonomous variable.

migration versus participation-rate change. The present chapter attempts to suggest some pertinent considerations, but no attempt is made to incorporate them formally into the model.

Tests

As simple as the model is, it is not easy to test it empirically.[6] Two tests of the unemployment-induced component relation can, however, be presented.

First, the analysis in Chapter 2 of the causes of pre-World War I swings in immigration may be drawn on since, as has been seen, the swings in labor force growth in this period appear to have been almost entirely produced by immigration movements (Figure 46). The earlier discussion embraced a substantial part of the nineteenth century, since the aim was to judge, if only roughly, whether movements in domestic or foreign conditions were principally responsible for initiating the immigration swings. As for identifying the actual market mechanism to which immigrants were responding, however, the analysis must be confined to the last full swing before World War I, since only for this period are unemployment estimates and other pertinent data available on an annual basis.

In Figure 47, reference cycle averages for the period 1889–1915 are plotted for the growth rate of aggregate production, for both the annual level of the unemployment rate and the change in it as well as for the level of the immigration rate and real wage rate. A close correspondence is apparent, first, between the movement in the output growth rate and the change in unemployment rate (inverted); second, lagging noticeably behind the former association, between

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[6] The basic problem is lack of annual estimates—for unemployment before 1890 and for the components of labor force change throughout the entire period. Lebergott [110] has made annual estimates of the labor force for 1890–1940, but these are derived by interpolation between decade observations. Though his procedure is an ingenious one, the estimates do not provide an adequate basis for developing components of change estimates relevant to the present purpose. His unemployment estimates, which are obtained as the difference between labor force and employment estimates, are less open to objection because the employment estimates reflect at least in part actual experience in each year. Meaningful annual estimates of the components of labor change could be developed for the period from around 1947 onward, when CPS data become available regularly in sufficient detail, but in the present study no attempt has been made to derive such estimates for periods shorter than a quinquennium (the three following 1950).

FIGURE 47

AVERAGE ANNUAL RATE OF CHANGE IN AGGREGATE PRODUCTION (ΔP) AND
UNEMPLOYMENT RATE (ΔU); AND AVERAGE LEVEL OF REAL WAGE RATE (W),
UNEMPLOYMENT RATE (U), AND IMMIGRATION RATE (I): NBER REFERENCE
CYCLES, 1890–1915
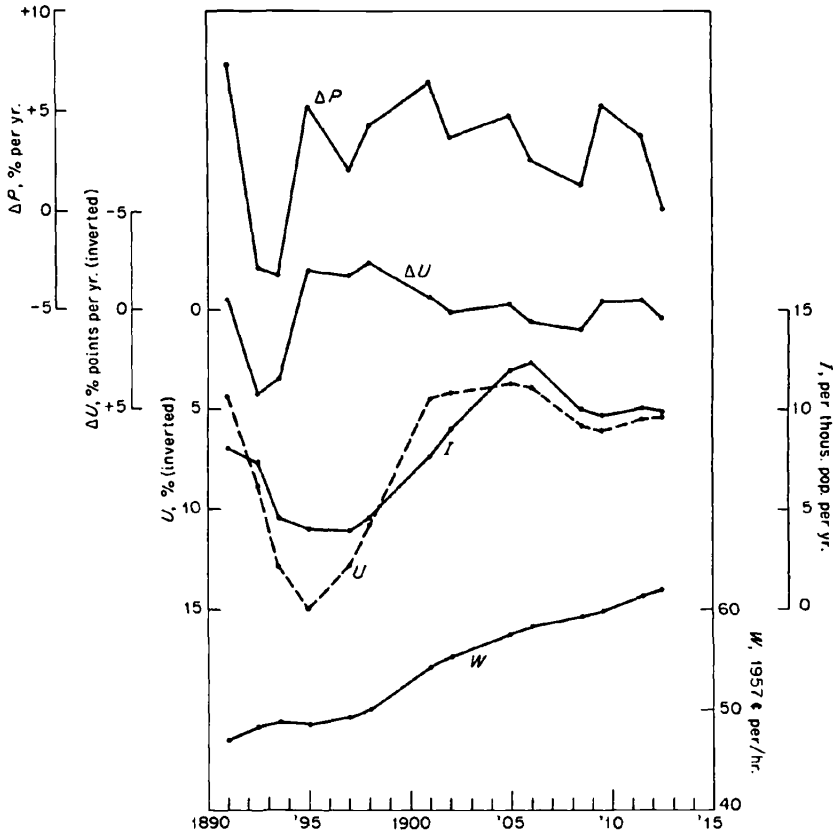
SOURCE: Table E-2 and, for aggregate production (nonperishable commodity
output), Table B-2, series 1 and 3.

the level of the unemployment rate (inverted) and that of the immi-
gration rate. In the latter association, the unemployment rate leads
the immigration rate, a finding consistent with the view suggested by
the model that the induced component of labor force growth is a
function of unemployment conditions.

An alternative possibility, that the immigration rate was respond-

ing to changes in the U.S.-European wage differential, seems less likely. To derive an estimate of the differential would require wage estimates for a number of European countries, a task beyond the scope of this study. But one can see from Figure 47 that the U.S. side of this differential, the wage rate in this country, shows not a swing in absolute level but only retardation and acceleration in the upward trend. (The swing in wages becomes most apparent only when one uses the rate of change in the real-wage rate as in Figure 9.) Unless wage movements in Europe were large and synchronous among the various countries, it seems doubtful that the variations in the wage differential in the course of a long swing could have been large in relation to the average size of the differential. Rather, it seems more plausible, as Lebergott also argues, that while real-wage differentials contributed to establishing the direction and secular level of the flow, the fluctuations in the flow were chiefly governed by variations in the availability of jobs, as reflected in the unemployment rate.[7]

A second and more comprehensive test of the model is possible if the analysis is structured by the periods for which the present

[7] ". . . We find only a limited relationship between changes in [U.S.] nonfarm earnings and migration. The difference between wage levels in the two worlds was always substantial; short-term changes in wages (particularly small ones) made little difference in this ratio of advantage" [110, p. 40].

Harry Jerome's study in the 1920's showed the close association between unemployment conditions and immigration during the regular business cycle [96]. The conclusions of the Immigration Commission, created by Congress in 1907 to study immigration, provide additional support as to the immediate relevance of unemployment conditions to the flow of migrants [211, p. 25]:

"The immediate incentive of the great bulk of present day immigration is the letters of persons in this country to relatives or friends at home. Comparatively few immigrants come without some reasonably definite assurance that employment awaits them, and it is probably that as a rule they know the nature of that employment and the rate of wages."

Another alternative proposed by Kuznets, that the level of the immigration rate was a function of the rate of change in the flow of goods to consumers, is dubious on both conceptual and empirical grounds [103, pp. 32–33]. Kuznets himself recognizes the theoretical difficulty of assuming, in effect, that immigrant decisions were influenced not by the level of U.S. per capita consumption but by additions to the level, though he attempts to escape this problem by arguing that the additions were particularly relevant to lower-income groups [Ibid., pp. 32–33]. In any event, as Hickman points out [90, p. 496, n. 7] the scheme implies an extraordinarily long lag. This is shown in Figure VI-4 where the immigration rate lags behind the rate of change in aggregate production (a close approximation in timing to Kuznets' flow of goods to consumers) by a substantial period.

study has estimated the components of change in labor force growth, *viz.*, decennial intervals 1870 through 1950, and quinquennial thereafter. Lebergott's valuable attempt to rough out the unemployment magnitudes for the part of this period not covered by official estimates makes possible a direct comparison of the unemployment rate and induced component of labor force growth for eleven intervals (eight decennial and three quinquennial) since 1870.

Two series are plotted in the upper panel of Figure 48, the average unemployment rate (inverted) and the contribution of the induced component, net migration plus participation-rate change, to labor force growth in the corresponding interval. While there is some

FIGURE 48

LEVEL AND RATE OF CHANGE OF INDUCED COMPONENT OF LABOR FORCE GROWTH (L_n) AND UNEMPLOYMENT RATE (U): ACTUAL, 1870–1965; AND PROJECTED VALUES OF RATES OF CHANGE, 1965–70
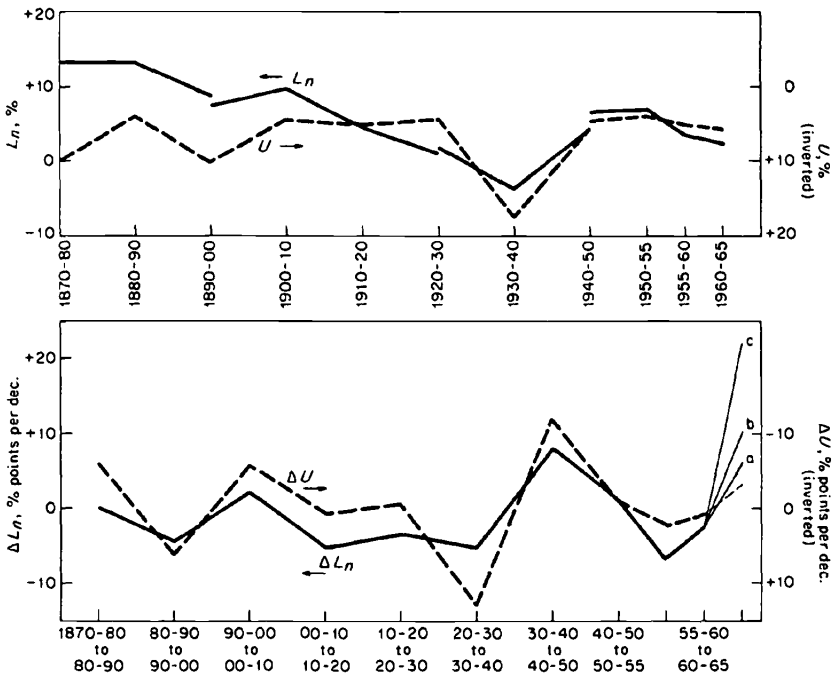
SOURCE: Table E-3.
[a] BLS.   [b] Tella.   [c] Strand-Dernburg.

semblance of similarity in movement, it is obscured by the downward trend in the induced component of labor force growth throughout much of the period. If one follows the procedure adopted in Chapter 4, where a similar problem occurred in the analysis of the birth rate, and plots the first differences in the two series, a striking correspondence emerges (lower panel). Fluctuations in the first differences of the induced component match those in the first differences of the unemployment rate on a one-to-one basis from the beginning of the period down to the present. The amplitudes of the movements in the two series conform less closely. Nevertheless, the extent of agreement is surprising when one considers the crudeness of the unemployment estimates for much of the period, and the uncertainty on the labor force side as to the degree of comparability of the census figures and the shift to the CPS concept after 1940, with its greater sensitivity to marginal groups. Indeed, there are some noteworthy similarities. The expansion phases (designated here according to the beginning date of the phase) fall in the following descending order when ranked according to the rise in the rate of change in the unemployment rate (inverted):

1. 1920–30 to 1930–40
2. 1880–90 to 1890–1900
3. 1900–10 to 1910–20

This is precisely the same order as that obtained when the phases are ranked according to the change in the induced component of labor force growth. Thus, in the upper panel of Figure 48, the mildness in the upswing of the induced component in 1920–30 compared with 1940–50 appears to trace back to differential movements in unemployment conditions. This is in turn perhaps partly attributable to the contrasting behavior of the autonomous component in the two periods—the rise in its contribution to labor force growth in the 1920's and the decline in the 1940's (see Figure 46)—which would have contributed to more rapid tightening of the labor market in the later period.

It is striking too how well recent experience falls in line with the historical pattern. The change in the induced component of labor force growth in the recent period is seen to trace a path much like

the change in the unemployment rate (inverted), with both showing a common upturn in the expansion phase beginning 1950–55 to 1955–60.

On the whole, then, the findings seem consistent with the view that variations during this period in the induced component of labor force growth, which reflects the contributions of net migration and participation-rate change to the labor force, arose in substantial measure from variations in unemployment conditions. The similarity between this model and that developed for explanation of swings in the birth rate will be readily apparent (cf. especially Figure 29 and accompanying text). In the case of the birth rate, however, where a part rather than the total of the working-age population was the subject of analysis (those in family-building ages), it was necessary to introduce an additional explanatory variable indicative of the differential experience of that segment.[8]

Changes Within the Induced Component

There remains the question of the changing importance within the induced component of participation-rate change versus net migration, specifically, the rise in the relative importance of the former in recent decades. It is clear in general where the explanation is to be sought—in the occurrence of secular developments which on balance have operated to raise the relative responsiveness of participation-rate change as an adjustment mechanism. The most obvious, and perhaps sufficient, explanation is restrictive immigration legislation, which has tended to set a ceiling on immigration and also altered its composition. World Wars I and II would of course also be major exogenous events reducing the migration flow in their respective decades.

While these are plausible and probably important factors operating to reduce the importance of immigration, there are nevertheless

[8] This statement implies adoption of the analytical view of swings in the unemployment rate suggested in Chapter 4, footnote 21, as an alternative to that in the text on that page, namely, that the swings be viewed as reflecting the consensus of both aggregate demand and supply forces (though, for the most part, movements in aggregate demand have probably dominated the observed swings in the rate). An analysis of the unemployment rate itself calls for a fully articulated model of swings, a task beyond the scope of this study.

some puzzling aspects which must be recognized. The phrase "tended to set a ceiling" is used advisedly, since the quota laws did not apply to residents of the Western Hemisphere until the Act of October 3, 1965. Why did not immigration from this area, particularly Latin America, rise more noticeably? Some response is evident, notably from Puerto Rico, but also to some extent from Mexico and a few other areas not enjoying the favored political status of Puerto Rico. Possible explanations for the limited response come readily to mind—differences in language and culture, lack of education, financing and transportation difficulties, and so on. The trouble is that such explanations would seem equally if not more applicable to southern and eastern Europe before World War I. Yet means were devised to overcome such obstacles and an immense inflow to the United States from these areas resulted. Why not the same in the case of Latin America?

Another puzzling aspect arises from the fact that while the legislation has a dampening effect on an upswing in immigration, it clearly does not prevent immigration from declining or even becoming negative if conditions warrant. The virtual cessation of net immigration in the 1930's and an actual net outflow in a few years of that decade is illustrative of this. But the net migration component in the last two decades has been remarkably stable and has not shown the responsiveness to weakened employment conditions in the late 1950's evidenced by the participation-rate component (see Figure 46). It might be argued that this shows that the immigration level is substantially below its equilibrium value and that the weakening in the growth of aggregate demand has not been great enough to alter this situation. But the net movement from Puerto Rico, one of the flows included here in the migration component, did in fact drop off sharply. Yet the migration total did not. Why?

There is perhaps a tendency to assume that the study of United States immigration is of little current interest. Yet in the decade 1950–60, net immigration accounted for about one person in five added to the labor force. Clearly there are some important questions in this area that merit fuller study.

To turn to participation-rate change, have there been secular

changes operating to increase the responsiveness of various population groups to market pressures? [9] A number of factors have been suggested as increasing the sensitivity of the female segment of the working age population—the secular decline in fertility and associated reduction in family responsibilities; a shortening of the work week making it easier for married women to accept outside employment; increased education; redistribution of the female population toward urban areas and thus closer proximity to markets for their services. There has also been a secular trend toward more white-collar jobs relative to blue-collar ones, a development which would probably favor domestic females as against immigrants (though the composition of immigration too shows adaptation in this direction [208]). On the other hand, the secular rise in husband's income has presumably worked in the opposite direction. And for the other groups in the population whose labor force attachment is similarly marginal, youths and the elderly population, secular changes have probably worked to reduce their responsiveness. For youths, the principal factor would be the rise in compulsory education. For the elderly, there would be, first, the shift from self-employed status in farming toward employee status in the nonfarm sector, a development that would increase dependence on others for employment, and, secondly, a secular rise in income level which would encourage earlier labor force withdrawal and the formalization of retirement plans.[10]

In the present state of knowledge, the question of whether the forces operating on the domestic population tended on balance to increase or decrease responsiveness to labor market pressures cannot be answered with assurance. Taken in conjunction with legislative and other impediments to foreign supply, however, it seems safe to say that the *relative* responsiveness of the domestic supply was increased. This is sufficient to account for the observed *direction* of shift in recent decades within the induced component of labor force

[9] Long [116] provides an extensive survey and analysis. More recently, Mincer [127, pp. 73–112; 128] has made important contributions relevant to secular trends.

[10] This discussion implies a trend toward an altered sex-age composition of those responding through participation-rate changes, a point which is developed in the following chapter.

growth in the roles of immigration and participation-rate change. Clearly, however, a fuller and quantitative analysis of this problem would be desirable.

PROJECTIONS

In recent discussions of both economic growth and stabilization, the prospective size and composition of the labor force has received increasing attention. Labor force projections are a fundamental point of departure in estimates of future economic growth [11]. A basic problem in public policy efforts to reduce recent unemployment has been the prospective need to create jobs, not only for those currently reported as unemployed but also for those who might enter the labor force as job opportunities expanded [35, pp. 138–140]. The bearing on future labor force growth of the interpretation of past experience offered here is therefore of substantial interest. This section first outlines the method currently used in official labor force projections, and then considers the bearing on these projections of two aspects of the analytical framework used here—the components-of-change technique and long swings.

The most recent projection (1964) indicates that labor force may grow to a total in 1970 of around 86 million; in 1975, almost 94 million; and in 1980, over 101 million [35]. The implied growth rate in each of the three quinquennia from 1965 to 1980 is around 16 per cent or more per decade. In contrast, the rates in each of the three quinquennia prior to 1965 were all less than this figure (Table 9, column 1). Indeed, comparison with the decade changes in this century (Table A-3) shows that the growth projected for 1965–75 is higher than in any corresponding period except 1900–10, the last decade of unobstructed immigration.

Present Method

The procedure underlying the official labor force projections is summarized as follows:

The projections described above represent the authors' best judgment as to the most reasonable pattern of labor force growth to 1980. It must

TABLE 9. LABOR FORCE GROWTH BY COMPONENT OF CHANGE, ACTUAL, 1940–50, AND QUINQUENNIALLY, 1950–65; PROJECTED, QUINQUENNIALLY, 1965–80
(per cent per decade)

	Total Labor Force Growth (1)	All Sources (col. 3 + col. 4) (2)	Contribution of		Partici- pation Rate Change (5)
			Population Growth Due to		
			Aging and Mortality (3)	Net Mi- gration (4)	
1940–50	14.2	9.7	7.8	1.9	4.5
1950–55	12.4	7.7	5.5	2.2	4.8
1955–60	11.1	9.8	7.5	2.3	1.3
1960–65	13.9	13.9	11.5	2.4	0
1965–70	18.6	14.9	13.1	1.8	3.7
1970–75	17.0	15.7	14.0	1.7	1.4
1975–80	15.9	14.5	12.9	1.6	1.5

SOURCE: Appendix Tables A-3, E-3 (1965–70), and B-7 (1970–80).

be stressed that these are long-term projections, reflecting anticipated changes in demographic composition and changes which might occur in the labor force activity of the several age-sex groups in the population.

The general approach was to project labor force participation rates for each age-sex group, to apply these rates to the future population, and thereby to derive total labor force by age and sex. The projections are greatly dependent upon the future size and age structure of the population.

Labor force participation rates for men age 25 to 59 have shown little variation in the postwar period. These were held constant at the average level of 1955–57, when over-all unemployment was about 4 per cent [35, pp. 134–135].

For other age groups where some consistent change in participation rates is apparent, selected social and demographic factors which limit or encourage labor force activities were taken into account. After specifying some of the changes which were assumed in demographic composition of the population and participation rates specific to certain groups, the bearing of unemployment conditions on the projection is explained:

Although there is some interest in a projection of the labor force at very low levels of unemployment—such as 3 per cent—the post-World War II experience from which data for these projections are drawn imposes some constraints.

Therefore, the projections made in this article more nearly represent a 4 per cent unemployment situation. . . . For age groups whose labor-force participation rates have been rising or falling consistently throughout the postwar period, it was assumed that past trends will continue but at a slower rate. These trends, however, were adjusted where it appeared that they might have been dampened in recent years by reduced job opportunities [ibid., pp. 137–138].

An important contrast between the labor force and population projections is apparent. In the latter case, a set of four alternative projections is presented, with a specific disclaimer to the effect that no single set is considered superior. On the other hand, in the case of the labor force projection, only one projection is presented and it is specifically identified as representing the authors' "best judgment." [11] The difference in approach perhaps reflects in part the greater number of specific assumptions that enter into a single labor force projection, and thus the problems of manageability and exposition that variant projections would raise. However, while the development of alternative projections of households poses similar difficulties, an attempt is nevertheless made to present several variants [182, No. 123]. In part, the differing approach in the labor force projection may simply reflect a smaller amount of resources available for such work. In any event, it is clear that while users of the projections may be pleased to have a single "best judgment" projection, there is a real disadvantage in relieving these users of the obligation of weighing basic assumptions so as to choose among alternatives, as is necessary in the case of the population and household projections.

Uses of a Components-of-Change Analysis

It may be suggested that formally incorporating in the labor force projection a components-of-change analysis such as that em-

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[11] A footnote in the report indicates that an alternate projection was prepared; but it is not published, though mention is made of a few of its features.

ployed here would go some way toward meeting this objection.[12] Such a scheme helps both in appraising the projection and in considering alternative possibilities. For example, as has been noted, the current projection for the 1965–80 period seems to imply an unusually high growth rate. However, if a partition analysis by component of change were presented, as in columns 2 through 5 of Table 9, one would see immediately that the unusually high projected rate stems largely from the unusually high growth of the working-age population. Indeed, it is this component which is responsible for the upturn in labor force growth which occurred between 1955–60 and 1960–65. This lends more credence to the projection than if the rise in labor force growth to such a high level were found to be chiefly owing to an upsurge in the contribution of participation-rate change to labor force growth. Viewed against the longer perspective provided by Figure 46, experience in 1960–70 is seen as resembling that in 1920–30, though the size of the current movement is much greater.

The partition analysis further shows, however, that in the 1965–70 quinquennium the projection does imply a substantial rise in the contribution of participation-rate change along with a continued increase in the demographic component. It thus directs attention to the question of whether such a development seems plausible, a question accentuated by reference to the experience of the 1920's, when the rise in the demographic component was accompanied by declines in the others (Figure 46). The partition analysis makes clear too the part which current immigration is playing in labor force growth and thus points to the need for assessment of this factor's likely role. Thus, the components-of-change analysis helps alert users to elements in the projection which are critical to proper evaluation of it.

In addition to defining more sharply such basic issues, the components-of-change analysis readily lends itself to formulation of alternative estimates. The amount of labor force growth due explicitly to population change is identified, and this can in itself be viewed as

[12] Actually, reference is made, in describing the projections, to the contribution of population change to labor force growth among men, women, and youths [35, p. 129]. The proposal here is for a more formal and detailed presentation, and one that provides historical perspective as well. For an earlier discussion along these lines, see [53].

an alternative projection. Indeed, for the most recent quinquennium, 1960–65, a user who adopted this alternative would have been better off than with the official projection. As is shown in Table 9, column 5, in this period participation-rate change actually made, on balance, a zero contribution to labor force growth, whereas the official projection (made in 1962) implied a contribution from this source at a rate equivalent to 1.5 points per decade, and a total growth rate correspondingly higher [193]. This disparity, it may be noted, should not be viewed as implying that the official projection was incorrect, for the projection was explicitly based on the assumption of a lower unemployment rate than actually occurred. An analyst who favored a different projected contribution from participation-rate change might do so on either of two grounds—that the actual unemployment rate might differ from that assumed, or that the sensitivity of participation rates to unemployment changes might be different.

The assumption that the contribution of participation-rate change to labor force growth might be zero, and, hence, that labor force growth would depend on population change alone, is one alternative projection that comes directly out of the components-of-change analysis. But other assumptions could readily be made of the prospective value of the participation-rate change contribution, including the possibility of negative magnitudes.[13] Variant assumptions might be introduced too with regard to the potential contribution of net immigration. In principal, the same is true with regard to the demographic component, the contribution arising from natural increase of the working age population. But the likelihood of a poor projection for this component is small because the principal source of error

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[13] An assumption that participation-rate change, on balance, would contribute zero to labor force growth (or some value other than that projected) does not necessarily imply that no change will occur in participation rates for individual age-sex groups. Actually, in 1960–65 the direction of participation-rate change for almost every age-sex group was correctly anticipated in the official projection. As it turned out, however, the magnitudes involved differed enough so that they summed to a zero rather than net positive addition to labor force growth, as had been anticipated. The judgment about a different aggregate contribution may thus be viewed as merely implying somewhat modified magnitudes of the changes projected for individual age-sex groups. (If a more precise judgment is desired with regard to individual groups, a possible procedure is suggested in the next chapter.)

(aside from data considerations) is unexpected developments in mortality. Indeed, an advantage of the present partition scheme is that, by breaking down the aggregate growth into its underlying components, it displays side-by-side the elements in the projection which are both strongest and weakest.

Recently, the official projections have come under fire for being too low. On the basis of a model estimated for quarterly data for 1947 to 1964, Alfred Tella projects a "full" employment (4 per cent unemployment rate) labor force in 1970 around one million higher than the BLS figure [154, 155]. Strand and Dernburg using a different model and monthly observations from July 1947 to December 1962 (tested through 1963) project a "full employment" 1970 labor force exceeding the BLS level by 3.6 million [49, 150]. The components-of-change analysis proposed here can be used to identify more specifically the differences among several such projections and thus make it easier to appraise their relative merits. Both of the private projections accept the population estimates (including the net migration component) used in the official labor force projection. Thus, assuming a 4 per cent unemployment rate were to materialize, the issue of whether total labor force growth in 1965–70 is likely to be at a rate of 18.6 per cent per decade (BLS), 20.7 per cent (Tella), or 26.6 per cent (Strand-Dernburg), becomes one of whether the net contribution from participation-rate change will be, respectively, 3.7, 5.8, or 11.7 points per decade. When it is realized that according to the estimates made in this study, the highest contribution observed in any preceding period was 4.8 points per decade in 1950–55, some serious doubts are immediately suggested about the realism of the Strand-Dernburg estimate, and even the Tella projection seems rather outsize.[14] The official projection, on the other hand, appears more plausible.

[14] The 1940–45 period witnessed a contribution at a rate higher than 4.8 points, but none of the projections under discussion here assumes wartime conditions, even to the extent of the Vietnamese situation, let alone World War II. In keeping with the reasoning given in Chapter 3, the period selected here for the components-of-change analysis, 1940–50, counterbalances intervals marked by the sharp rise in government expenditure and the subsequent decline to a more nearly postwar "normal."

Relevance of Long-Swings Analysis

To this point, I have tried in this discussion to suggest some of the advantages of explicitly including in the official projections a components-of-change analysis along the lines of that presented here. This proposal is independent of the question of the possible relevance of the long-swings conception to projections, and it is appropriate to turn now to this issue.

Skepticism on this score has been voiced by Edward Denison, who says: "Long-wave analysis tells little about future labor force behavior not shown directly by projections based on the age distribution of the population, school attendance, the retirement age, and so on" [47, p. 532], in other words, by projections developed along the lines of the official one. It is undoubtedly true that mechanical extrapolation of long swings is unwarranted. However, as was observed with regard to similar strictures by Denison relating to the household projections (cf. Chapter 3, footnote 22), if relevant aspects of the swings mechanism are at least partly known, then this approach may contribute useful insights, pertinent at least to appraising a projection, if not to developing an alternative one. The model developed in the preceding section suggests just such a mechanism and may easily be applied to evaluating the alternative projections, official and private.

The model indicates that first differences in the induced component of labor force growth (the sum of the contributions of migration and participation-rate change) are a function of first differences in the average unemployment rate. Appraising the projections to 1970 requires merely: (1) an assumption concerning the average unemployment rate that will prevail in 1965–70, and (2) calculation of the growth in labor force due to the induced component implied by each of the projections. Since all of the projections are tied to an assumed 4 per cent unemployment rate in 1970, it is assumed here that this rate would prevail, on the average, throughout the full quinquennium. The value of the induced component in each projection is obtained simply by adding to the implied contribution of participation-rate change the contribution due to net migration as indicated in the official projection, since as noted, all three projections accept the Census population projections. Thus, one obtains:

Implied Contribution to Labor Force Growth, 1965–70
(percentage per decade), due to

	Participation-Rate Change	Net Migration	Total (Induced Component)
BLS	3.7	1.8	5.5
Tella	5.8	1.8	7.6
Strand-Dernburg	11.7	1.8	13.5

The values in the third column above have been added to Appendix Table E-3 and the first differences, 1960–65 to 1965–70, derived. These are plotted along with the first difference in the unemployment rate, assuming 1965–70 = 4 per cent, in the lower panel of Figure 48 to facilitate comparison with past experience. Reference to this shows that both the Tella and Strand-Dernburg implied projections of the induced component appear exceptionally high if a relationship between the two series of an order of magnitude like that observed historically is assumed likely to persist in the 1965–70 quinquennium. The official projection seems more within the range of plausibility though even it might be viewed as tending toward the high side.

A corollary of the Tella and Strand-Dernburg analyses of recent and prospective labor force growth has been the view that public policy attempts to reach and maintain "full employment" would be seriously handicapped by the need to create jobs both for those now reported as unemployed and for members of a "disguised unemployment group" who were left out or kept out of the labor force by weakened employment conditions, but who would enter the labor force as job opportunities expanded. While my analysis agrees with these studies in its conclusion as to the *direction* in which unemployment variations affect labor force growth, the above finding implies that the *magnitude* of effect suggested by these studies is seriously exaggerated. Thus it adds historical support to a similar conclusion reached by Jacob Mincer in his appraisal of this work [127, pp. 73–112].

SUMMARY

Labor force growth may be divided into several components, that due to: (1) natural growth of the working-age population, (2) net immigration, and (3) participation-rate change. For the analysis of swings

in labor force growth, it is useful to view the first component as autonomous, determined by natural increase some ten to twenty years earlier. The second and third may be grouped together as an induced component, first differences in which are a function of those in the unemployment rate, with the latter viewed as reflecting the net balance of aggregate demand and supply forces.

The marked swing in the contribution to labor force growth of participation-rate change since 1940 appears explicable in terms of two circumstances: (a) variations in labor market tightness operating via the unemployment rate to generate a corresponding movement in the induced component; and (b) a reduction in the responsiveness of foreign relative to domestic labor supply sources, probably due chiefly to legislative and other impediments to immigration. In attempting to appraise labor force projections, both the components-of-change technique and long-swings frameworks seem of value. The current official projection for 1970 has been criticized as being from 1 to 3.6 million too low. My evaluation, however, suggests that the official projection seems more plausible than those put forward by its critics, and that, if anything, it may be on the high rather than low side. Correspondingly, estimates of "disguised unemployment" offered by these critics seem excessive.