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CHAPTER 10

The Past as Prologue

The Structure of a Quantitative Projection

IN this concluding chapter, we attempt to assay prospects for the future on the basis of past trends in population, national product, and capital formation and financing. This is not done in the belief that the primary justification for establishing and analyzing the record of the past lies in the power of prediction that such analysis may bestow—if by prediction one means quantitative estimates of likely future trends. A prior aim of such knowledge is to enrich current generations with the experience of their predecessors and, aside from the direct value of such enrichment of understanding, a vital practical purpose is to contribute to a more intelligent response to current problems. Even if the emergence of such problems cannot be predicted, once they emerge, familiarity with analogous situations in the past should lead to more considered responses than those made in ignorance of the past record and with a view of each current situation as something new under the sun. To be sure, there is an element of implicit prediction in recognizing that a current problem had a counterpart in the past, for such recognition implies similarities in consequences of alternative responses. But this is quite different from a quantitative prediction of trends, in which an explicit forecast, no matter how crude, is made of a specific situation, and probable prospects and problems are inferred.

I stress this point because, with the development of statistical data and of quantitative analysis of economic processes, it has become technically possible to make quantitative projections, extrapolations, and forecasts. Once a statistical bridge from the past has been constructed to provide the take-off point, the very ease with which the relatively simple mathematical operations can be performed tempts the in-

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vestigator to use his analysis as a direct basis for quantitative projections. Indeed, we considered that approach as a possible use of the empirical findings of this study to gauge future prospects. However, we did not follow it, and our reasons for refraining are stated explicitly below because they may have some relevance to other projections made in recent years.¹

The essence of a projection is the transfer into the future of some orderly pattern found in the past, with or without modification. The procedure is essentially the same, whatever the series we work with: the birth, death, or net immigration rates used in population projections; the rates of growth of national product per capita, per member of the labor force, or per manhour used in national product extrapolations; the proportion of capital formation to national product, or the capital stock-output ratios used in capital formation projections; the movements of the shares of various types of capital and of shares of various industrial users connected with the apportionment of national product among industries used in projecting components of capital formation; the shares of external and internal financing and of various types of the former used in the projection of trends in financing. The first prerequisite of the procedure is to find some orderly pattern in the past and its explanation—its association with otherwise known, relatively invariant, characteristics of nature or man. Without a modicum of orderly pattern in the past, nothing systematic can be extrapolated into the future.

All this is obvious enough, but it should also be clear from the discussion in the preceding chapters that such an orderly pattern, linked by explanatory hypotheses to some basic, relatively invariant, characteristics of natural and social processes, cannot be established easily. In particular, the possibilities of testing the persistence of these patterns under varying conditions are limited; and in the attempt to support empirically found patterns by explanatory hypotheses, it is rarely possible, in the present state of our knowledge, to assign to such explanatory links empirical coefficients that would necessarily produce the specific trend rates or secular proportions found. For lack of adequate testing and of specific explanation, some major features of the orderly pattern may be sufficiently in doubt to overshadow any apparently precise quantitative projections.

¹ Some of the general arguments in this section have been discussed in greater detail in Simon Kuznets, "Concepts and Assumptions in Long-Term Projections of National Product," *Long-Range Economic Projection* (Studies in Income and Wealth, Vol. 16, Princeton for NBER, 1954), pp. 9-38.

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The argument just advanced can be easily illustrated. Some widely used current projections begin with the finding that, since 1870 or 1880, gross national product in constant prices per worker grew at the rate of, say, 2 per cent per year, and was accompanied by a relatively constant proportion of gross capital formation to gross national product of, say, somewhat over 20 per cent. This pattern of rate of growth in per worker product and of a stable gross capital formation proportion is then projected into the future. But in what sense was the rate of growth in per worker product persistent? We know, from the analysis in the present study and others, that not only the annual but also the decadal rate of growth varied; that the movement of the rate revealed long swings; and that because the adjustment for the long swings necessitated the use of two-decade or three-decade averages, the purely statistical persistence of the underlying long-term rate could hardly be tested by the two or two and a half swings in the record back to the 1870's. All these statements apply to the gross capital formation proportion also. Thus there is no statistical basis for claiming a high degree of invariance or persistence in the specific rate of growth or in the specific capital formation proportion: the sample is much too small to permit only a narrow margin of error. Nor is there an analytical basis that can assure us that persistent factors determined an annual rate of growth of per worker product of 2 per cent rather than 2.5 or 1.5 per cent. This is not to argue that analysis of the past and empirical findings are not useful for quantitative projections—if there is a compelling reason for making the projections. It merely emphasizes that the major point of the findings and of the analysis in the preceding chapters is to warn against too facile an extrapolation of past rates, either averaged over a long period or taken from a relatively brief recent period. For if the long-term movements, even when averaged to cancel the business cycles, are a compound of long swings and of underlying trend lines, the rate of the trend lines and their retardation must be carefully established, and the phases of the long swings that would affect the period covered by the projection must be diagnosed, before a reasonable projection is possible. Thus, a projection of the long-term movements over the next twenty-five to thirty years would have to be a compound of projections of the long swings and of the underlying secular rates. For the latter, we would have to decide whether the retardation in the rate of secular growth in per worker product observed in the averages for the two or two and a half successive long swings should be carried

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into the future. For the long swings, we would have to judge whether or not the movement since World War II is an upward phase of a long swing, to be succeeded by a downward phase, and then in turn by an upward phase—all within the next twenty-five to thirty years.

One obvious implication of these remarks is that the evaluation of empirical and analytical findings for the purpose of extrapolating them into the future is in itself a major task. Moreover, conceiving the extrapolation as a projection of average rates, without close examination of the variety of experience from which these averages have been derived, is a crude and possibly dangerous oversimplification. Since any useful projection involves extrapolating a large number of variables—population, labor force, national product, capital formation, industrial structure, foreign trade, basic price relations, and more—the task of evaluating the findings for the past, of assaying the nature of the orderly patterns that were found, *in close reference to the purposes of the projection that would determine the time scope and character of some of the basic assumptions involved*, becomes formidable indeed. It is not one that can be undertaken in a short postscript to this study, which is essentially and primarily concerned with establishing the long-term record of the past, and providing analytical support for some of the findings.

There is a related consideration in envisaging the task of effective quantitative projection. Extrapolation from the past into the future is inevitably based on a double assumption: (1) that the factors that produced the orderly pattern being extrapolated show no signs of disappearing; (2) that the other forces, which in the past could have produced a major change in the orderly pattern and yet did not, were quite varied and substantial, and that new disturbances in the future may likewise leave the extrapolated pattern unaffected (or modified only within specified margins). So far, we have discussed the difficulties of establishing the orderly pattern and of identifying the factors under (1). But the assumption under (2) has been only implicit in our discussion.

Put explicitly, the comment calls for an analysis of the range of conditions under which the orderly pattern was established and presumably persisted. To illustrate: our economy has been growing at x per cent per decade, when measured in terms of, say, national product per worker, and let us assume that we know the specific patterns that persisted over the last eight to nine decades. But during those decades, extending back to the 1870's, the country was not the battlefield of

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a major war, certainly not of a war employing atomic weapons. This particular disturbance or condition was not within the range of disturbances or changing conditions under which the economy persisted in growing at x per cent per decade; nor was there any war or other disturbance in that period of our past approaching the magnitude of an atomic holocaust in its possible effects on the economy. For this obvious reason all existing projections are explicitly conditioned on the absence of atomic war. If such a stupendous disturbance had occurred in the decades back to the 1870's, and if, in spite of it, the x per cent rate of growth per decade in product per worker had been attained, such a limiting condition would not be stipulated in current projections.

The case illustrated by the example is a rather simple one—simple, because we need not examine the decades back to 1870 to be sure that no disturbance approaching the magnitude of an all-out atomic war was among the conditions under which the growth pattern of the economy was attained. But many less obvious and hence more difficult questions arise. Does the cold war of the last fifteen years, if continued for the next two to three decades, constitute a condition for which there is no real analogue within the last eighty or ninety years? And if so, is it likely to modify beyond recognition any projection from the past? What about the rate of technological change already influencing the economy? What about the growing strength of certain organizational elements in economic life—large business corporations, large and strong unions, an increasingly larger government sector? Can we find for all these disturbances and conditions analogues in the past, which did not prevent the past patterns from emerging, so that we can say that their persistence into the future is not likely to invalidate the projection, or at worst will only modify it in ascertainable directions and magnitudes?

Clearly, a serious quantitative projection involves (in addition to an evaluation of the precise character of the orderly pattern found in the past, in reference to the goal and purposes of the projection) a scrutiny of the variable conditions in the past within which the systematic patterns were found, in reference to the new conditions and disturbances that, judging by signs already present, may prevail in the future. Two consequences follow from this second aspect of the logical structure of quantitative (and all) projections. First, all projections are necessarily conditional rather than absolute, in that they are presented as significant, not under any and all circumstances, but only if some

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disturbances much larger than those in the observable past are ruled out. These large disturbances or catastrophes removed by declaration may be not only the rather unlikely ones, such as planetary cataclysms that would shatter well-established generalizations in the natural sciences, but also the more probable ones, in the realm of human and international affairs. Second, it follows that careful attention to impending changes is required—an assessment of events whose shadows are already upon us. It is indispensable, if the past is to be examined to see whether conditions and disturbances that did occur and were compatible with the orderly pattern found are comparable with those that are likely in the forecastable future.

This second part of the task of making a considered quantitative projection only reinforces the comment above—that it cannot be carried through effectively as a mere postscript to a study like the present one. The results of the study—both our empirical findings and the analytical hypotheses—are raw material for many possible quantitative projections, differing in period of coverage and in emphasis on the various aspects of the economy. Even if the purpose were defined as projecting trends in capital formation and financing, the task would require not only the quantitative projection of population, national product, and industrial structure, but also a host of assumptions based upon a large volume of additional data relating to the current changes foreshadowing future conditions and disturbances. This, then, is a big and separate task to which the present study, one may hope, makes a major contribution, but for which—to use technical terminology—the study is a necessary but not sufficient condition.

Conditions for the Future

To paraphrase the preceding comments: The present study provides a storehouse of findings indispensable for a quantitative projection into the future; but such a projection also involves a series of choices and judgments, which, together with evaluation of the current events that presage the future, is a further and separate step. Whether such a step should be taken depends upon the specific, intended uses of the projection, which would determine its character, and upon a subsequent judgment of the feasibility of the desired prediction on the basis of the findings of this and other studies.

Such seemingly negative comment is forced upon us by the recognition of the requirements of a considered quantitative projection. Yet we should be able to advance toward a projection by noting some cur-

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rent events that suggest the future and may constitute the major conditions under which the past patterns, if projected, could be assumed to operate. In stating these conditions, we will in fact be doing, in a crude and tentative fashion, what would have to be done in detail for a considered projection with the use of all available evidence. The statements that follow, unlike the findings buttressed by empirical evidence and analytical hypotheses in the preceding chapters, are selected broad judgments. Yet they refer to events that are conspicuous and undeniable.

The selection is guided by two criteria. First, we are concerned with conditions that have an apparent bearing upon the topic of interest here—the prospects of demand for and supply of capital. Second, we have in mind a period extending over the next two and a half to three decades—to the mid- or late 1980's—and are therefore concerned with presently observable conditions that seem lasting enough to warrant extrapolation into that longer future. The conditions thus selected for brief mention are: (1) growth of population; (2) changes in science and technology; (3) the position of this country in the concert of nations; (4) the task of governments; (5) savings patterns of the private sector; (6) changes in financing.

GROWTH OF POPULATION

Increase in population is of obvious bearing upon future trends in national product and capital formation. More people mean additional demand for consumer goods and, during the period of formation of family units, increased demand for residential construction. Addition to the number of working-age people means a rise in the labor force ready to man the economic system and waiting to be equipped with capital. For much of the period we have in mind, the future members of the new family units and the future entrants into the labor force are already with us. The infants born today or a year or two ago will, barring catastrophes of the magnitude that we rule out of consideration, be with us and in their early twenties in the quinquennium from 1981 to 1985. With cataclysms removed by assumption, the quantitatively major factor that will affect population numbers over the next thirty years is the birth rate; and for the consumption and capital demanding aspects of population growth, even the birth rate will be of major importance only toward the end of the period, i.e., in the late 1980's.

Some relevant estimates are given in Table 75. The population pro-

12. 1970	203.69	7.6	30.26	24.9	37.75	4.3	19.68	5.1	21.39	13.3
13. 1975	220.59	8.3	36.10	19.3	38.28	1.4	22.19	12.8	24.60	15.0
EXTRAPOLATIONS										
14. 1980	237.1	(7.5)	37.54	(4.0)	42.11	(10.0)	25.07	(13.0)		
15. 1985	253.7	(7.0)	38.10	(1.5)	46.74	(11.0)	27.58	(10.0)		
16. 1990	272.7	(7.5)	41.15	(8.0)						

B. TOTAL PERCENTAGE GROWTH OVER THIRTY-YEAR PERIODS

PERIOD	Total Population (1)	SELECTED AGE GROUPS			
		20-29 Years (2)	10-19 Years (3)	5-9 Years (4)	
PROJECTIONS AND EXTRAPOLATIONS					
17. 1960-1990	54.1	91.0			
18. 1955-1985	54.4	73.9	91.8		60.8
PAST					
19. 1920-1950	42.6	29.2	8.3		15.8
20. 1910-1940	43.2	31.6	32.5		9.4
21. 1900-1930	61.6	49.4	50.6		42.2
22. 1890-1920	67.9	60.8	47.7		50.6
23. 1880-1910	83.4	88.0	69.3		50.6

For an explanation of the figures in parentheses, see note to lines 14 to 16.

(Notes on following page)

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NOTES TO TABLE 75

SOURCE: Entries for cols. 1, 3, 5, 7, and 9, lines 1 to 8 are from *Historical Statistics of the United States, 1789-1945* (1949), and *Continuation to 1952, and 1954*, Series B-13, and B-83 through B-86. The entries are for the specific census dates; and no adjustment is made for slight differences in the intercensal intervals in reducing the percentage rates of change to quinquennial units.

Entries for cols. 1, 3, 5, 7, and 9, lines 9 to 13, are from *Current Population Reports*, Series P-25, No. 123 (October 1955) and No. 160 (August 9, 1957). The projection used is Series A, based on the assumption that the 1950-1953 fertility rates remain constant throughout the projection period. The population figures are for July 1 of the given year; and the figures for population under 5 years old are unadjusted for net census undercount. The absolute change from one date to the next as shown in the October 1955 release was assumed to apply to the series excluding armed forces overseas shown in the August 9, 1957 release.

Entries for cols. 1, 3, 5, and 7, lines 14 to 16, are derived by applying the estimated percentage rates of growth shown in parentheses in cols. 2, 4, 6, and 8. The percentage in col. 8, line 14, is based on a rough relation of the percentages in col. 8 to those in col. 10 with a lag of five years; that in col. 8, line 15, is a rough approximation. The percentages in col. 6 are based on those in col. 8, with an appropriate lag; the percentages in col. 4 are based on those in col. 6, again with an appropriate lag. Finally, the percentages in col. 2, lines 14 to 16, are assumed to repeat the pattern in the preceding quinquennia, but not to duplicate the high increase from 1970 to 1975.

jection to 1975 used here, released by the Bureau of the Census in August 1957, assumes that the birth rates of 1950-1953 will continue to 1975 and makes rather conservative assumptions about death rates. Judged by more recent reports, the projection appears to be on the moderate side. Thus, as of January 1, 1958, population excluding armed forces overseas is set at 171.97 million.² This leaves only a 4.94 million increase over the two and a half years to mid-1960, if the total of 176.91 million shown in line 10, column 1 is to be attained, compared with a rise of 7.67 million over the two and a half years from mid-1955 to January 1, 1958. But even as derived on the basis of the conservative assumptions used in Table 75, prospective population growth reveals some striking aspects.

If the rates of growth of total population up to 1990 assumed here are realized, the rise over the three decades, 1960-1990, or 1955-1985, will be about 54 per cent. This is larger than the rise from 1920 to 1950 or from 1910 to 1940; it is somewhat below that from 1900 to 1930; and is distinctly below that from 1890 to 1920 or from 1880 to 1910.

More relevant in the present connection, and more striking, are the

² See *Current Population Reports*, Bureau of the Census, May 14, 1958, Series P-25, No. 176.

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prospective increases in the group 20 through 29 years—the ages when most people enter the labor force, and form new family units. The projected rise of this group from 1955 to 1985 is almost 74 per cent, far higher than that from 1920 to 1950, from 1910 to 1940, from 1900 to 1930, or even from 1890 to 1920. It is exceeded only by the rise from 1880 to 1910, the decades when unrestricted immigration was contributing particularly to this working-age group. The projected rise from 1960 to 1990 is even greater, 91 per cent, and greater than that for any thirty-year span since 1880. Clearly, we are faced during the next thirty years with an exceedingly high relative addition to the age group that makes the largest contribution to new family units and provides the greatest number of new entrants into the labor force.

The rises in prospect for the population groups aged 10 through 19 and 5 through 9 are equally striking. These groups, of course, call particularly upon the services of our educational system. The projected rise from 1955 to 1985 in the 10 through 19 age group is almost 92 per cent, higher than the rise for any thirty-year period since 1880; and that for the group aged 5 through 9 is 61 per cent, also well above any rise during the last three-quarters of the century. With the growth rates in these groups from 1920 to 1950 and from 1910 to 1940 being only small fractions of the impending rise, and the trend in age-specific school attendance rates also likely to rise further, the prospective demand to be made upon an important part of the country's productive system will be unprecedented.

Table 75 was prepared and the above comments written in early 1958. The Bureau of the Census has since published a new set of illustrative projections of population, taking into account the birth rates in recent years, which were much higher than expected. These new projections are utilized in Table 76 and, as in Table 75, it is assumed that throughout the period of projection the recent birth rates continue—in this case, the rates prevailing in 1955–1957 (i.e., Series II). Rather than replace the older estimates in Table 75 by the more recent series, I am showing both, if only to reveal how sharply projections differ when extrapolations are based on the experience of different sets of recent years.

The rates of population growth shown by the new projections only reinforce the conclusions already stated. The projected rate of growth of total population over the next thirty years is higher than that of any thirty-year period since 1890. Only for 1880–1910, when increase in our numbers was so appreciably aided by large net immigration, is

TABLE 76

RECENT REVISIONS IN POPULATION PROJECTIONS FOR SELECTED AGE GROUPS, INCLUDING ARMED FORCES OVERSEAS, 1960-1990

YEAR	A. VOLUMES AND PERCENTAGE CHANGES PER QUINQUENNium										
	SELECTED AGE GROUPS										
	Total Population		20-29 Years		10-19 Years		5-9 Years		Under 5 Years		
	Millions (1)	% Change Per Quin- quennium (2)	Millions (3)	% Change Per Quin- quennium (4)	Millions (5)	% Change Per Quin- quennium (6)	Millions (7)	% Change Per Quin- quennium (8)	Millions (9)	% Change Per Quin- quennium (10)	
1. 1955 (July 1)	165.27		22.53		24.53		17.15		18.30		
					CENSUS ESTIMATES						
					PROJECTIONS (CENSUS)						
2. 1960	180.13	9.0	22.26	-1.2	30.62	24.8	19.16	11.7	19.99	9.2	
3. 1965	195.75	8.7	24.96	12.1	36.48	19.1	20.84	8.8	21.24	6.3	
4. 1970	213.81	9.2	30.98	24.1	40.16	10.1	22.09	6.0	24.19	13.9	
5. 1975	235.25	10.0	36.79	18.7	43.08	7.3	25.03	13.3	28.11	16.2	
6. 1980	259.98	10.5	40.44	9.9	47.27	9.7	28.94	15.6	31.99	13.8	
					EXTRAPOLATIONS						
7. 1985	283.38	(9.0)	43.31	(7.1)	54.12	(14.5)	32.85	(13.5)			
8. 1990	310.30	(9.5)	47.34	(9.3)	61.91	(14.4)					
					B. TOTAL PERCENTAGE GROWTH OVER THIRTY-YEAR PERIODS						
					SELECTED AGE GROUPS						
PERIOD	Total Population (1)		20-29 Years (2)		10-19 Years (3)		5-9 Years (4)				
9. 1960-1990	72.3		112.7		102.2		91.5				
10. 1955-1985	71.5		92.2		120.6						

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NOTES TO TABLE 76

For an explanation of the figures in parentheses, see note to lines 7 and 8.

SOURCE: The census data and projections are from M. Zitter and J. S. Siegel, "Illustrative Projections of the Population of the United States, by Age and Sex, 1960-1980," *Current Population Reports*, Series P-25, No. 187, November 10, 1958. The projection used is Series II, based on the assumption that fertility will remain constant at the 1955-1957 level throughout the projection period.

Entries for cols. 1, 3, 5, and 7, lines 7 and 8, are derived by applying the estimated percentage rates of growth shown in parentheses in cols. 2, 4, 6, and 8. The percentages in col. 4, lines 7 and 8, are based on the rates in col. 6, a decade earlier. The percentages in col. 6, lines 7 and 8, are based on the rates in cols. 8 and 10, a decade earlier. The percentage in col. 8, line 7, is based on the rate in col. 10, a quinquennium earlier. The percentages in col. 2, lines 7 and 8, are assumed to repeat the pattern in the preceding quinquennia, and allow for a trough in the long swing in line 7, twenty years after the trough in the rate of growth shown in line 3.

the rate higher. The projected rates of population growth in the age groups 5 through 9, 10 through 19, and 20 through 29 are even more striking.

Finally, the projected quinquennial rates of change reveal clear signs of a prospective long swing in the important age groups distinguished. Thus, the projection indicates a decline from 1955 to 1960 in the 20 through 29 age group, reflecting the declining birth rate of the 1930's; then the rise resumes, reaching a peak in the quinquennium of 1965-1970, to be followed by another downward phase. In the younger age groups there are similar swings, but naturally with earlier timing. Hence (insofar as the projections are valid), the extraordinarily high rate of secular growth in the age groups from 5 through 19 will be accompanied by a marked long swing. Whatever our inference from these high rates of increase in numbers of school-age youth and of new family makers and new entrants into the labor force concerning the prospective demand for capital in the next two and a half or three decades, we must keep in mind that the population projections suggest long swings that will modify that demand in any one quinquennium or decade.

CHANGES IN SCIENCE AND TECHNOLOGY

In these days of atomic energy, man-made satellites, electronic devices, and other products of burgeoning scientific discovery and technological change, there is little need to stress their urgent effects on present trends in economic product and on the demand for capital. Perhaps less in the focus of public attention is the magnitude of the prospective

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trend in technological change and its possible impact on the demand for capital.

Our concern here is the potential technological change over the next twenty-five to thirty years, which may differ from the realized change if resources, capital, or entrepreneurial ability are not sufficient. By its nature, the concept of potential technological change is difficult to define precisely, let alone measure. Yet it is extremely useful, for it points to the fact that of the large flow of technological change offered, as it were, to society—even if much of it is not thoroughly tested—only a part is embodied in the productive structure, mainly because of limitations of capital and of entrepreneurial ability.

If potential technological change cannot be precisely defined, it may seem inconsistent to argue that all signs point to an acceleration in the rate of additions to that potential in the coming decades. Yet such signs are fairly prominent and should be noted, for they would have to be evaluated in any considered economic projection.

We begin with the developments in science which, since the late nineteenth century, have been increasingly the dominant source of inventions and major technological changes affecting economic production and consumption. We are witnessing a high rate of additions to scientific work and discovery, resulting in general from two factors. The first is the cumulative impact of the natural science disciplines upon each other, the higher level of attainment in physics giving impetus to chemistry, that in chemistry affecting physics, and so on down the line. There is a similar reciprocal reinforcing effect in the development of pure theory and of technical capacity for experimentation. Advances in experimental method and results, conditioned in part by the general rise in the productive powers of society, permit tests and experiments that lead to reconsideration and revision of theory, which in turn lead to new experiments demanding higher levels of technical performance. The interdisciplinary character of basic research in the natural sciences has advanced rapidly in the past few decades, and advances have been equally rapid in the relation between theoretical work and what might be called experimental and applied technology. This stimulating interdependence may become increasingly effective in the decades to come, accelerating the rate of additions to tested useful knowledge.

Second, the number of scientific workers at various levels has increased enormously throughout the world—and in this connection we must consider the whole world, for science is a transnational complex,

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available (with some exceptions) to all who have the means to apply it. Even without recourse to figures, we may assume that the number of qualified workers in the field has increased at an exceptionally high rate, considering the increasing number of economically advanced countries that have recognized and emphasized the value of scientific work.

As the pace of scientific research has quickened, greater emphasis has been placed upon the translation of scientific discoveries into practical technological research and application, and a larger flow of resources has been channeled into that development. Indeed, it is sometimes not easy to draw the line between discovery and application, pure and applied research. This does not mean that the transition from the scientific discovery to the practical development is easy, and there are the further steps through the pilot plant to economical and effective mass production of new goods, and their continual improvement. We may reasonably argue that the wider recognition of the value of research and adaptive activity for economic progress and performance has led to the allocation of a rapidly increasing volume of resources to that activity, and that the prospects for the immediate future indicate a much greater addition to input directed toward it.

Of course, greater input of resources is not necessarily assurance of greater output of discovery and new technology ready to be absorbed, on a mass production basis, by the economy's productive system. Yet it would be surprising if this were not the result. Even if the return per unit of such input were somewhat lower than in the past, the huge rise in the input might mean an acceleration in the rate of potential technological change. The impression is particularly strengthened if we recognize that we are at the beginning of another revolution in the supply of industrial power. In the past such revolutions had far-reaching consequences that radically affected the productive structure of the economy—consequences that extended over decades. Steam power, the basis of the modern industrial economy, was introduced in the 1780's, and it was not until the 1880's that its revolutionary impact on the advanced countries of the world began to subside. The introduction of electric power in the last quarter of the nineteenth century, followed by the internal combustion engine, resulted in a series of changes that are still continuing—though at a much slower pace. It seems certain that the development of nonmilitary applications of nuclear physics, of electronics in automation and communications will have an immense impact upon the productive system. These and ad-

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vances in other fields—rocketry, the biological sciences (promising new sources of cheap food), solar energy (promising unlimited power), and many more—may well dominate the economy of the next two or three decades.

If the rate of additions to potential technological change is likely to be high in the next three decades, it should give momentum to the demand for capital funds (as well as for entrepreneurial ability, private and public). The demand will be not only for resources needed for work on the new inventions and products to the point where economical mass production becomes feasible. The resources needed will be far larger when the basic capital equipment required to satisfy prospective demand is installed, because we can assume that the demand will follow the pattern typical of all successful new products and processes. In the past, the development of new sources of power and its uses, alone, brought to our economy prodigious tasks of capital investment for land transportation—to choose one example. Besides the investment for procuring, refining, and harnessing the raw materials for producing power (coal, oil, water), there was the even greater need of capital to build, equip, and service railroads, electric power plants and power carrying channels, internal combustion motor vehicles and the associated networks of roads, bridges, ferries, and tunnels. There is little reason to assume that the situation will be different, except possibly in degree, in the future. Any major technological change that involves the harnessing of new sources of power, the utilizing of a new complex of natural resources for widespread use, or the creation of new consumer goods with wide markets demands a large framework of material capital equipment that can effectively produce the new power and channel it into useful ends, carry the new sequence of operations with but little input of direct labor, or turn out the new products effectively and cheaply. With increasing volumes of power and larger outputs projected, the economies of scale may set the optimum-size unit at quite a high level, and the resulting indivisibility of initial investment may mean high capital-output ratios for the new producing units, at least in the early years of operation. Thus, if we assume a high rate of potential technological change, the first presumption is of a high rate of demand for capital—unless detailed investigation produces concrete evidence to qualify or invalidate such a presumption.

Of course, technological changes have a ramifying influence. They not only set up new industries and new sectors in the economy, but

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also affect the established ones—in different ways. Some older industries may be adversely affected if the new technology produces better and effectively competing substitutes; others may be positively stimulated if the changes provide an additional market. The new technology may create demand by some older industries for additional capital, because a new development may, besides providing the basis for an entirely new industry, also serve as a useful addition to the capital equipment of an old industry. New technology may reduce the demand by other established industries for capital, if increases in efficiency outrun the possible rise in the market for the products. Any considered analysis of these effects must specify the likely new technological changes, and then infer their possible effects on the established sectors of the industrial system. All one can say here is that in the past the net effect of new technological changes has been to increase both total output and demand for capital for the economy as a whole, and the greater the rate of technological change, the greater the rise in output and in net demand for capital. While the statement can be nothing more than crude conjecture, it is most reasonable to assume that a projected high rate of potential technological change means a high projected rate of demand for capital—net of any contractions on the part of industries competitively and adversely affected by the new technology.

All this has obvious bearing upon the capital-output ratios. We have already commented upon the variability of those ratios even over long periods, and the difficulty of agreeing upon purely statistical projections into the future to derive amounts of capital formation presumably required by any given projected basket of final goods. But past records do suggest that revolutionary changes in power production result in rises in capital-output ratios, first, because of their high level in the power and closely related industries themselves, and then because of the effect of the extension of the use of power to other industries (manufacturing and agriculture, for example). If the next two or three decades witness a power revolution, it is not unlikely that there will be consequent pressures for raising the capital-output ratios, and these pressures can be responded to without a slowing down in the rate of growth of final output only if the additional savings are forthcoming. It should be emphasized that the capital-output ratios can be raised by a slower growth of output, the denominator of the fraction. If the newly emerging power industries, with their high demands for capital per unit of product (at least in the initial stages),

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claim a large part of the limited volume of nationwide capital formation, the rise in the capital-output ratio must be accompanied by a slowing down in the rate of growth of final output (i.e., of national product).

POSITION OF THIS COUNTRY IN THE CONCERT OF NATIONS

In dealing with prospects for the future in the position of this country among other nations, we face a realm of human affairs in which changes seem to have been fast, furious, and unpredictable. It would be a hardy prognosticator indeed who, looking back three decades (to the late 1920's), could assure himself that a fairly thorough and even highly imaginative study of the situation then would have enabled him to foresee the shifts on the international scene that have taken place. He would have had to project the emergence and collapse of Nazi Germany; the scope and impact of the Second World War; the broad consequences of the Stalinist regime in the Soviet Union; the collapse of the overseas empires of Western Europe; the formation of more than twenty new independent national states; the spread of Communism to mainland China; the extension of Soviet power to Eastern and part of Central Europe; and so on, through a long list of changes, some only now in the making. With such a retrospective look, one may well ask whether there is any sense in attempting a projection in this field of low visibility.

Yet, unless we make reasonably realistic assumptions concerning prospects in international relations, everything else, grounded upon consideration of domestic factors alone, will be left hanging in the air. For clearly, problems arising in the relations between this country and others are likely to dominate the scene for decades to come. If we exclude the contingency of a major world war, it should be possible at least to secure guidance for thought by considering the general trends on the international scene and their probable impact on this country's economy, viewing these trends, both current and prospective, against a broader historical perspective.

That perspective can best be suggested if we look at the modern historical process as one dominated by the spread of the industrial system in a world of sovereign—legally independent—national units, with widely differing natural and historical heritages. The industrial system is a complex of economic and social processes based on the increasing use of technology provided by modern science, and after its birth at the end of the eighteenth century in Great Britain it spread

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to other European countries (western, central, and northern), to the North American continent, to some other offshoots of Western Europe across the seas, to Japan, and most recently to Russia, an eastern offshoot of European civilization. The efforts to introduce it into China, India, and other underdeveloped countries dominate the current scene. The spread of this system, in turn a changing complex reflecting progress in modern technology, and the parallel, if not necessarily simultaneous, spread of the ideas of national independence and national attainments to much of the world would go far to explain the shifts in international relations that have occurred since the early nineteenth century.

The mechanism of the spread, and the relations among the national units involved in it—peaceful flows of goods, men, and capital, or the more warlike types of contact ranging from pressure to outright conflict, or imitation and reaction—already subjects of a vast literature, could be dealt with in detail. But for our purpose, two general features of this process of spread deserve mention.

The first is the inevitable transitoriness of economic leadership. No single nation can retain economic leadership indefinitely, for the simple reason that if industrialization begins in country X—giving it the advantage of leadership—and then spreads to country Y, the shift to Y means a loss of relative (if not absolute) advantage for X. Thus, if the industrial system spreads at all—if industrialization occurs not only in the pioneer state (Great Britain), but also in follower states (United States, Germany, and so on)—its inception in the latter with the higher rates of growth that the newly industrialized nations attain means, *ipso facto*, reduction in the relative superiority of the pioneer state. This conclusion is particularly clear in terms of percentage rates of growth. The quickening of those rates in modern times is part and parcel of the shift from the pre-industrial to the industrial pattern of economic performance, and no country can maintain such quickening for any length of time, relative to other countries that may join in the spread of the industrial system at later dates.

The second general feature to be noted is the increasing diversity of social structure into which the industrial system is fitted, as it spreads from the country of origin to other parts of the world. The system is most likely to spread first to countries whose historical heritage is closest to that of the pioneer country, for this similarity of heritage is likely to make for closer ties and for greater ease in adopting the socially conditioned new ways. Even so, the very fact that the

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next group of countries are followers will mean that the industrial system is set up within a modified policy and social framework. It is hardly an accident that the United States and Germany were the originators of the protective tariff system and developed corporate structures and economic organizations somewhat different from those in Great Britain. As the system spreads further, it is adopted by countries with a historical background and social structure quite different from those of the pioneer and immediate follower nations. In this sense both Japan and particularly the Soviet Union are, at present, at the end of the line that stretches back to Great Britain; and if China and India manage industrialization, the accompanying social and political structures, in both their internal and external aspects, may be quite different from anything observed so far.

These broad generalizations are advanced because they seem to illuminate much of the recent historical past, and explain the increased international tensions—a compound result of the increasing number of large advanced economies and of the greater divergence in their social and political structures. They also may be useful as a background against which to interpret the obvious changes in the international position of the United States, and to consider the prospective demands upon our economy that these changes and their probable continuation into the future are likely to make.

Of the inferences that can be drawn from the recent trends, viewed against the wider background just suggested, three seem particularly relevant here. First, there is little evidence that the increased international tension, with an apparent division of the world into three camps, two of which are contending for the allegiance of the third, will subside in the foreseeable future. No such relaxation has been observed since World War II or, for that matter, since the 1930's. The forces that generate the tension—the contrast between growth in power and failure of commensurate growth in human welfare within the authoritarian countries, and the gap between aspirations and achievements in the underdeveloped countries of the world—show no signs of abatement. Indeed, a sober and critical estimate of probabilities suggests that the strains are increasing, and that the free part of the world for which this country at present bears the responsibility of leadership may suffer further disturbing losses and shifts in power.

Second, the emergence of this country as a leader has meant continuing claims upon our economy: in the form of outlay for security purposes (much of which in the past was, in a sense, carried for us by

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other countries then in a leading position); unilateral transfers in the form of economic or military aid; or capital flows abroad under public or private auspices. Given the political structure of the world, no developed country can escape such claims, unless it disregards its security altogether or places the responsibility for it on other shoulders. Since neither alternative is open to a major power like the United States, it is only realistic to assume that such claims will continue and may become a larger proportion of the nation's total product, a point to which we shall return in discussing the prospective role of governments. Of course, there is still another alternative—sacrificing part of the independence of sovereignty by closer union with other countries having similar external problems. While one hesitates to consider this possibility in the present discussion, a more imaginative view of the longer-term implications of this country's position in the world might place heavy emphasis upon it.

Third, the purely economic claims and flows originating in international relations are likely to remain a moderate part of the total nonconsumption claims upon the country's national product. Free movement of private capital investment abroad is not likely to rise relative to governmental loans, grants in aid, military assistance, and especially security expenditures. This is partly a result of political tensions in many capital-hungry countries. Those tensions accompany the continuous search for a social and political organization that can resolve the gap between aspirations and attainments without imposing authoritarianism. It is partly a result of the political cleavages among the more advanced countries of the world. It also results from current technological changes, which exact such pressures on our domestic markets for private capital funds that little is left to flow abroad except to finance indispensable raw material supplies and branch plants.

THE TASK OF GOVERNMENTS

The secular rise in the share of the government sector in national product and in capital formation has been widely discussed. The two questions suggested in the present connection are, first, whether that rise is likely to continue over the next two or three decades; and second, if it does continue, how it will affect the prospective demand for or supply of capital.

The first question is partially answered by the comments just made. Insofar as government activities are affected by the country's international position, the continuation or even rise of the high share of

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the government sector in the economy is likely. A full answer would depend upon a careful weighing of the many pressures for larger government expenditures on goods—whether at federal or state and local levels—relative to the expected growth of the total national product upon which such government expenditures draw.

The experience of the post-World War II decade and some current projections of government expenditures suggest that the prospect may be for a continuing high share of claims by governments upon the country's gross national product. If we take the latter for the recent decade, from 1948 through 1957, excluding the first two postwar years, and calculate the percentage growth of the product (in 1957 prices) from the first quinquennium (1948–1952) to the second (1953–1957), the rate per year is 3.8 per cent. This is somewhat lower than the rate of 4.4 per cent for the post-World War I decade of 1920 through 1929, although that rate may be somewhat exaggerated by a different mixture of business cycle phases.³ As a measure of the draft that the governments made upon the gross national product for purposes of consumption, we take government purchases of commodities and services, excluding nonmilitary public construction because the latter represents capital formation.⁴ If, then, we calculate the annual percentage share of the draft by governments for consumption, so defined, in gross national product, the arithmetic mean of the shares is 15.1 per cent for 1948–1952 and 17.9 per cent for 1953–1957, which can be compared with 5.7 per cent for 1929.⁵ The significant point is that although the second of the two quinquennia was dominated by an economy-minded administration in Washington, and although the share of federal expenditures in national product did decline after

³ The 1948–1957 totals are from the *Economic Report of the President*, January 1958, Table F-2, p. 118; those for 1920–1929 are Variant III, from the present report, Table R-2.

Inclusion of 1958 only reduces the rate of growth in the post-World War II period. Gross national product (in 1958 prices) grew from 1949–1953 to 1954–1958 at the rate of 3.2 per cent per year (see *Economic Report of the President*, January 1959, Table D-2, p. 140).

⁴ A further deduction should be made for producers' equipment (nonmilitary) purchased by governments; but no data are available for these years. The item, however, is small relative to the totals involved.

⁵ The calculation is based on totals in current prices, but it would not be significantly different for those in constant prices. For the underlying data, see *Economic Report of the President*, January 1958, Tables F-1, p. 117; and F-32, p. 152.

For 1958 the share of the draft by governments for consumption was 17.7 per cent, slightly higher than the 17.3 per cent for 1953–1957 based on comparable data (see *Economic Report of the President*, January 1959, Table D-1, p. 139, and Table D-32, p. 176).

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1953, the rise in the share of state and local expenditures offset that decline; and even in 1957 the share of total government purchases for consumption was three times as high as in 1929. Thus, over the 1948–1957 decade, the relative burden of claims for government consumption continued to be high and even rose somewhat.

That continued high levels of the share of national product claimed by government consumption may prevail in the future is suggested in the recent projection by a panel of the Special Studies Project (in Report IV) of the Rockefeller Brothers Fund.⁶ That projection extends to 1967 only, and presents a range of government expenditures from low to high. Even the low projected increase in government purchases of goods (in 1957 dollars) is from \$86 billion in 1957 to \$127 billion in 1967, or at the rate of 4 per cent per year. (If we use the high projection of gross national product, and assume the same ratio of government purchases of goods and services to gross national product as in the low projection, the rise is from \$86 billion in 1957 to about \$141 billion in 1967, or at the rate of over 5 per cent per year.) This 4 per cent rate is somewhat higher than the rate of growth of gross national product observed from 1948–1952 to 1953–1957; and if the latter rate persists, the share of government expenditures in gross national product will rise. To be sure, the projection allows for a rise in the share of capital formation within total government purchases of commodities and services; but, on the other hand, the low range projection here is compared with a rate of growth of national product that may well be above the long-term secular level.

It is not unrealistic to assume that the draft by the government sector for current consumption, and not for the purpose of providing capital for the needs already mentioned in discussing population growth and technological change, may remain at the current high levels of its share in gross national product—and may even rise somewhat. This draft, together with private consumption, constitutes a deduction to be made from national product to derive capital formation as a residual, and it thus constitutes also a draft upon the savings of the nation. Hence, a continued high proportional level of government purchases of goods and services for current consumption means, other conditions being equal, that much lower a share for savings and capital formation.

For the problems of savings and capital formation, the high share

⁶ *The Challenge to America: Its Economic and Social Aspects* (Rockefeller Brothers Fund, Inc., 1958), p. 71.

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of governments in national product and the wider role that governments have been forced to play in the economy and society of recent decades have other implications. Indeed, the mere quantitative weight of the government sector may be less important than the mechanism by which governments secure their share, and the complex of relations among economic groups in the community which the governments may be affecting, often by design, in the process. For example, given one and the same percentage share of government consumption in national product, covering it by proceeds of progressive taxes may have effects on saving and investment in the private sector vastly different from the effects of covering it by sales taxes or deficit financing. The quantitative rise in government activities relative to the rest of the economy, moreover, increases the weight of effects of government policies in securing their share, and carrying through redistributive transfers in the process. Finally, governments can perform additional and important economic functions and, in recent decades, have been pressed into performing them.

The wide field for review thus opened can hardly be surveyed here. But for the problem at hand it is essential to note that, within recent decades, the governments of this country have assumed major responsibility for full employment and economic stability—to an extent unknown in the past; that the increased volume of government expenditures, which involved a rising ratio of taxes to national product, was accompanied by an increasing weight of progressive taxes in the total tax structure; and that the responsibility for full employment, coupled with a pressure for larger government expenditures, for higher consumption levels, and for increased private capital formation, was associated with a marked inflationary trend in the economy.

These changes since the mid-1930's are so conspicuous and well known that they hardly need documentation, and their effect on the consumption and savings patterns of the private sector will be touched upon below. But it may be relevant to observe here, while we are discussing the share and role of governments, that the changes just noted are neither accidental nor capricious assumption by governments of additional responsibilities in the economic sphere, nor can their assumption be viewed as results of ignorance or of narrow interests. On the contrary, the assumption of these additional responsibilities, as well as the broad way in which policy has been shaped, are rooted in powerful underlying factors. The acceptance of responsibility for full employ-

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ment has been forced by the recognition that government action can and hence must minimize the failure to use resources fully, which the unassisted operation of the private sector can bring about. The increased progressivity of the tax burden and the generally egalitarian trends in our government policy reflect a changed social view of the value of high incomes and large personal savings. They reflect also a different view of the equity of leaving low income groups at a relatively low level in the scale in times when future economic advancement for them may be threatened by external dangers. Clearly, the growing needs of governments for current consumption and capital formation, combined with the aspirations of households for higher levels of living and the needs of the business sector for more capital goods, are likely to generate inflationary trends—if none of the claimant groups can be forced into a position where a shrinking market will lead to a reduction in prices. The burden of the adjustment in these conditions is then carried by those who lose in the attempt to keep their monetary gains commensurate with the real gains in the economy. All these comments are relevant because they indicate that the forces behind recent changes in the role of governments are fairly deep seated. In considering their implications for the savings patterns of the private sector, therefore, we cannot assume that the higher share and the greater role of governments will not continue, at least in the foreseeable future.

SAVINGS PATTERNS OF THE PRIVATE SECTOR

The preceding comments suggest that, because of a larger growth of population in certain strategic age groups, an accelerated rate of potential technological change, and continued pressure upon the economy resulting from international tensions, the prospective demand for capital and the demand by the government sector for current consumption are likely to be large. Whether the continued demand for both will claim a rising proportion of the total projected product is a question that cannot be answered here with assurance. Its considered exploration calls for a detailed analysis of the factors and conditions only briefly noted above. Whatever the probable answer, the demand for capital proportionate to output is not likely to drop, and we may now ask whether the savings patterns in the private sector suggest savings proportions that will match the prospective demand for capital. We are concerned with the private sector alone because, as already indicated, the government sector is not likely to have net savings in the

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long-term prospect. Indeed, it may be forced to draw upon savings in the private sector.

Much of the discussion in the preceding chapters is applicable here, and three major trends may be stressed. First, the net savings proportion in net national product has, on the whole, declined. This movement is not incompatible with the constant proportion of personal savings to disposable income of individuals and households, because the proportion of disposable income to national product has declined with the rise in the share of direct taxes. Second, capital consumption charges have increased as a proportion of both net and gross national product, contributing to the relative long-term constancy in the gross savings proportion to gross national product. Third, the share of the government sector in gross savings has declined since the 1930's; the share of the corporate sector must have increased in the long run; and the share of individuals and households must have declined. The share of gross private savings in gross private product may have been constant in the long run; but the contribution of corporations must have increased, while that of individuals and households declined (even if the proportion of personal savings to disposable income—both numerator and denominator net or gross of depreciation on individually owned residential housing—is assumed to have remained constant). All these trends are particularly pronounced in the long run since 1870, and for totals in constant prices; they must be qualified for shorter periods, and for totals in current prices, when prices rise significantly. But the trends are sufficiently grounded in long-established patterns of consumer behavior and in factors affecting the structure of capital formation to warrant attention in thinking of the future.

Concerning the savings of individuals and households, we would be inclined to argue that, at best, their ratio to disposable income will remain at the moderate levels that have prevailed in recent years; and that, if the ratio of disposable income to gross private product declines, the ratio of personal savings, even including depreciation on individually owned residential housing, may decline. This prospect is quite compatible with a substantial rise in real income per capita. To use some recent data: per capita disposable income, in 1958 prices, rose from an average of \$1,225 for 1939–1941 to an average of \$1,688 for 1948–1957, or 38 per cent in slightly more than twelve years.⁷ But the ratio of personal savings to disposable income averaged 7.2 per cent in 1939–1941 and 6.8 per cent in 1948–1957 (Table 77). To be sure, the

⁷ See *Economic Report of the President*, January 1959, Table D-14, p. 155.

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TABLE 77

STRUCTURE OF GROSS SAVINGS IN RELATION TO GROSS PRODUCT,
1948-1957 DECADE COMPARED WITH SELECTED PERIODS, 1929-1958
(per cent)

Ratios of:	1929	1939- 1941	1948- 1952	1953- 1957	1948- 1957	1958
1. Total savings to GNP	16.0	12.9	15.6	14.8	15.2	12.6
2. Government surplus (+) or deficit (-) to GNP	1.0	-2.0	1.1	-0.2	0.5	-2.3
3. Gross private savings to GNP	15.0	14.9	14.5	15.0	14.8	14.9
4. GPP to GNP	95.9	92.1	92.3	91.3	91.8	90.6
5. Gross private savings to GPP	15.7	16.2	15.7	16.5	16.1	16.4
6. Corporate profits before taxes to GPP	10.1	9.7	12.7	11.0	11.8	9.2
7. Taxes to corporate profits before taxes	13.9	35.9	46.8	51.9	49.4	51.1
8. Corporate profits after taxes to GPP	8.7	5.9	6.8	5.3	6.0	4.5
9. Dividends to corporate profits after taxes	66.7	72.4	46.2	57.1	51.6	69.5
10. Undistributed corporate profits to GPP	2.9	1.7	3.7	2.3	3.0	1.4
11. Capital consumption charges to GPP	8.6	8.6	7.1	8.8	8.0	10.0
12. Gross business profits before taxes to GPP	18.7	18.3	19.9	19.8	19.8	19.2
13. Gross business savings to GPP, lines 10 + 11	11.5	10.3	10.8	11.1	10.9	11.4
14. Personal income to GPP	85.7	84.9	86.5	86.4	86.4	89.3
15. Personal taxes to personal income	3.0	3.3	10.4	11.9	11.2	12.2
16. Disposable income to GPP	83.0	82.1	77.5	76.2	76.8	78.5
17. Personal savings to disposable income	5.1	7.2	6.4	7.1	6.8	6.4
18. Personal savings to GPP	4.2	5.8	5.0	5.4	5.2	5.0
19. Gross private savings to GPP, lines 13 + 18, or line 5	15.7	16.2	15.7	16.5	16.1	16.4

Because of rounding, detail will not necessarily add to total.

All entries are arithmetic means of percentages calculated separately for each year.
GNP = gross national product; GPP = gross private product.

SOURCE: See *Economic Report of the President*, January 1959, Appendix Tables D-1, D-3, D-9, D-10, D-13, D-16, and D-56.

Total savings, defined in accordance with the Department of Commerce practice, include gross private domestic investment plus net exports of goods and services. Personal savings are net.

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latter was higher than the 5.1 per cent ratio for 1929, but 1929 was in many ways an exceptional year; and the Department of Commerce personal savings estimates for that year may be too low.⁸ The ratio of personal savings to personal income was 4.9 per cent in 1929, 6.8 per cent in 1939–1941, 6.0 per cent in 1948–1957, and 5.6 per cent in 1958 (see Table 77).

Several reasons can be adduced for expecting rather low ratios of personal savings to personal and disposable income in the future. First, this country's economy is geared to rising consumption, and our institutions and patterns of social behavior encourage higher consumption per capita. It is unrealistic to assume that these well-established institutions and patterns will be radically changed in the foreseeable future: they have become more rather than less effective in recent decades. Second, technological change at high levels will have an impact on consumer wants just as it will on the demand for capital goods. Third, full employment policy, progressive taxation and, to some extent, rising prices have made for a less unequal distribution of disposable income, which—other conditions remaining the same—contributes to a lower rate of personal savings; and these conditions are likely to prevail in the future. Finally, and perhaps most important of all: if international tensions persist and there is a continued sense of insecurity about the future—not about the economic future (which might make for greater savings propensities) but about life in general in the face of external dangers—the climate will not be favorable for more than a limited accumulation of savings. For savings are essentially a stake in the economic future, and such stakes become less important when noneconomic factors make the future uncertain.

As to the contribution of corporations to the savings of the private sector, the data in Table 77 suggest the limits that may be expected. The decade 1948–1957 was one of strong demand for capital, high levels of demand for consumer goods, and relatively high profits in private business. Yet gross business savings, i.e., undistributed profits plus capital consumption charges, averaged 10.9 per cent of gross private product, somewhat less than in 1929 and somewhat more than in

⁸ Goldsmith's estimates, for a comparable concept, i.e., excluding consumers' durable goods, yield a much higher ratio of savings to disposable income for 1929 (and other years). Furthermore, the personal savings figures used here and in Table 77 are net, while for our purposes they should be gross of depreciation on residential housing owned by individuals (with a corresponding addition to personal and disposable income), and net of depreciation on housing owned by corporations. Unfortunately, no such annual estimates are readily available.

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1939–1941—the latter being years of substantial unemployment and slack in the economy. These savings were not proportionately low because of high dividend disbursements relative to corporate profits after taxes: the percentage of 51.6 in 1948–1957 was lower than that in either 1929 or 1939–1941. Savings were limited partly because capital consumption charges based on original cost were, particularly during 1948–1952, on the low side; and partly because, although corporate profits before taxes in 1948–1957 were somewhat higher relative to gross private product than in 1929 and in 1939–1941, they were, after taxes, distinctly below the 1929 relative level and about the same as that in 1939–1941.

Thus, there was no perceptible rise in the ratio of gross business savings to gross private product in a decade of strong demand for capital funds, compared with earlier periods in which the demand was not strong; nor was there much of a rise in the personal savings proportion to gross private product. As a result, the ratio of total gross private savings to gross private product in 1948–1957 was only slightly higher than that in 1929 (although an upward correction of the personal savings estimate for 1929 might mean a decline from that year), and was about equal to that in 1939–1941. We cannot conclude from this comparison that gross private savings generated were not sufficient, and that the recent inflationary trends were in fact the consequence of insufficient savings. For, as repeatedly indicated in the earlier chapters, we cannot infer imbalances between *ex ante* supply of and demand for savings from *ex post facto* measures of savings and capital formation proportions. But the evidence certainly is consistent with the view that during the 1948–1957 decade a combination of high-level demand for consumer goods and continued high levels of government drafts for current consumption might have kept private savings and capital formation below the proportion required to increase productivity sufficiently to offset inflationary pressures. Unless in the next few years the private sector can generate savings and capital formation in a greater proportion to a rising private product, the pressure of the demand for goods upon the supply of savings will persist.

CHANGES IN FINANCING

In the discussion so far no attention has been directed toward trends in financing. But some conjectures concerning likely trends in financing can be inferred from the comments above. In brief, they amount to a continuation of the trends discussed in Chapters 5 and 6: a moderate

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rise in the share of internal financing in the business sector; a continued high level and perhaps further rise in the share of external financing in the residential real estate sector; and continuance of external financing in the government sector. And there are no grounds for assuming that, in the channeling of external funds, the share of financial intermediaries, particularly those in the insurance sector, will not continue to rise—given continuance of the trend toward greater equality in the size-distribution of disposable income and a larger proportion of personal savings arising in the lower income groups.

These inferences hardly touch upon the major problems in the area of credit and financing, in response to which changes may occur in financial institutions and in policies bearing upon prospective trends. The preceding discussion has indicated the vastly increased importance of governments and of business corporations in total gross financing. Of total gross savings in Table 77 (understated because they exclude capital formation by governments via public construction), corporate retention plus government surplus or deficit accounts for more than two-thirds. Furthermore, savings of individuals have been increasingly channeled through financial intermediaries. In other words, the whole process of decision concerning the placement of savings has become increasingly depersonalized: it is either in the hands of financial intermediaries, or of business corporations via gross retention, or directly subject to action by governments.

The problem arises how the process of decision is affected by the traditionally conceived instruments of the financial markets via the interest rates, or of the banking system, or of the central bank. There is little question that, despite the rapid adjustment of financial institutions to changing conditions—or perhaps because of such rapid adjustment—there is an acute need to reassess the operation of the financial system, and reconsider the roles of its instruments of adaptation to the changing patterns of savings in the economy. How do interest rates affect saving by individuals or other units, and channel the available savings into capital uses with different periods of pay-off? How does the growth of financial intermediaries, other than commercial banks, affect the relation between central bank policies and the financial stability and growth of a country? How does the large proportion of total savings originating in gross retention by corporations affect the supply of funds to alternative uses? How much of gross retention becomes available for investment in new channels, not set by the corporation's own past experience in a given field? All these questions are

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clearly made more acute by the large price rises since World War II, with their distorting effects on the comparative economic returns to various groups of the population, and on the supply of productive factors to what are, from the standpoint of society, the more important uses.

Recognition of all these problems will not, of course, tell us much about likely trends in the structure of financing. The broad movements in those trends will be laid down by major technological changes, government drafts, and the persisting patterns of individual and corporate savings. But given the problems and earnest groping toward their solution, some changes should result both in measures intended to regulate and shape the behavior of financial institutions and in the policies pursued by them (also perhaps even in the identity of the institutions). These changes may well affect the trends in the distribution of external financing among types of financial intermediaries and among groups of capital users, the differential prices of various types of external financing, and the distribution of the latter among various types of loan instruments.

Concluding Comments

The above treatment of conditions for the future, far too brief and dogmatic, may carry a sense of firmer conviction than is intended. The discussion reflects conclusions suggested by the record of this country's economy—an economy geared for a long-run rise to increasingly high levels of consumption per capita, and one in which savings and capital formation, though large and sustained, nevertheless have been kept within moderate proportional limits by the secularly high propensity to consume. It is also an economy in which the recently increasing diversion of product to current consumption by governments, combined with high levels of consumer demand, has limited capital formation and savings proportions and brought about, under conditions of full employment, rising price levels which have persisted even through the 1958 recession. Against this background, consideration of the prospective large rise in population numbers—particularly of new family makers, entrants into the labor force, and of the school-age groups—the prospective acceleration of potential technological change and the prospect of continued international competition and strain suggest the following prospects. First, the demand for capital over the coming two and a half to three decades is likely to be large. Second,

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drains upon the national product for current consumption by governments will continue to be proportionately sizable and may well rise. Third, high levels of consumption and the high secular propensity to consume by individuals and households are likely to continue. Fourth, under the circumstances, the supply of voluntary savings may not be adequate. Finally, inflationary pressures may well continue, with the result that part of the savings needed for capital formation and government consumption will be extracted through this particular mechanism. Yet, extrapolation of inflationary pressures over the next thirty years raises a specter of intolerable consequences, making the policy solutions adopted critically important; and those solutions, in turn, will affect the structure and pattern of financial intermediaries and their role in financing.

In addition to this broad set of prospects for the twenty-five- to thirty-year period as a whole, we should note probable modifications that may be part of the long swings. There are clear signs of long swings in the time pattern of the rates of population growth. We may now be in a downward phase of the long swing, reflecting the currently low rate of family formation and additions to the labor force resulting from the low birth rates of the 1930's. But there may be factors other than demographic. The international political situation is subject to swings and perturbations of its own—and these cannot but affect our country's economy. There are also swings in the pendulum of political leadership at home.

In ending the discussion we must repeat that the prospects just summarized are judgments, and we may well have given too much weight to current events and problems, and too little to the uncertainties of the long-term future. Above all, a major condition for the future is the international situation, which in these days affects even such seemingly domestic factors as the rate of potential technological change made possible by scientific discovery, and the population's propensity to consume and to save. But prognostication of international relations requires far more knowledge of what is happening abroad, or is likely to happen, than I can claim. In particular, little in the present study contributes to our knowledge of trends in the authoritarian economies, or of their stages of development, or of their possible effects on the position and tasks of this country's economy within the next two or three decades. There may well be shifts, particularly within the Soviet Union, that might lead to relaxation of international competition and

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tension—although it is difficult for a casual observer to discern and evaluate them.

These qualifications, and many others that could be cited, are real. But they should not lead to a denial of the value of orderly speculation on the prospects for the future. The problems suggested are grave enough to warrant much greater attention to the longer-term view than seems to be given it in current projections, and to justify the testing and refining of these speculations in the more considered and careful projection suggested as the next step to which this and other studies can contribute the indispensable materials. Indeed, the one major justification of such hazardous intellectual operations lies in the possibility that they may reveal the magnitude of the problems and generate policies that might limit their impact, if not forestall them altogether. All historical trends—past or prospective—are contingencies, rather than paths that society took or must follow inexorably. Nothing that has happened was inevitable, and nothing in the present outlook is inevitable. But the contingencies must be clearly seen if they are to be acted upon wisely, and a considered long-term projection could not but help us see the paths and choices before us. This additional, if still uncertain, knowledge may lead to a more intelligent response to the challenging prospects for the future.