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PART II

Reports on
Selected
Research
Programs

STUDIES IN
THE NATIONAL
INCOME ACCOUNTS

In this Annual Report, half a dozen of the National Bureau's major projects are classified under the heading "National Income, Consumption, and Capital Formation." It is well known that ever since the founding of the National Bureau in 1920, an important part of its research effort has been devoted to national income studies. The official income and product accounts of the United States could hardly be so well developed and of such great effect had it not been for the pioneering work of the Bureau's research staff. A continuing stimulus to improvements in economic accounts is also provided by the NBER-sponsored Conference on Research in Income and Wealth, which has now added over thirty volumes to the literature on the subject.

Development and improvement of economic accounts is a never-ending task. Since the first national income estimates were prepared by Sir William Petty in 1665, there have been gradual improvements in concepts, definitions, data availability, estimating methodology, and structuring of the accounting framework. The present generation of income specialists in the United States, it seems to me, is making major forward thrusts in two directions. The first of these is an elaboration of the basic national income accounts to include sector capital accounts and balance sheets, as well as the deconsolidation of the production account, by industry, to show inter-industry sales and purchase relations. In recent years, the work of National Bureau researchers has advanced each of these areas. The report of the Bureau-sponsored National

NOTE: I am indebted to Jennifer Rowley for statistical assistance in preparing this report.

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Accounts Review Committee strongly recommended integration of the several sets of accounts. Now Richard and Nancy Ruggles are developing an integrated system of economic accounts to accommodate the several sets of accounts that have developed separately, and will relate their work to parallel efforts by the Statistical Office of the United Nations in its current revision of the Standard System of National Accounts. Just as important, the Ruggleses are working in cooperation with the Office of Business Economics in the U.S. Department of Commerce, since their work will have a maximum continuing impact only as it affects the structure and content of the official economic accounts (see their report in Part IV).

The other major area of work—the one I am currently engaged in—involves redefining significant aggregates and components of the accounts to make them more useful for analysis, implementing the concepts statistically, and analyzing the new estimates. Economic accounts inevitably reflect the interests and theoretical predilections of each generation. A generation ago, when national income statistics were first being put into their modern accounting mold by Stone and Meade in the United Kingdom, with guidance from Keynes, interest centered on economic fluctuations and the theory of income determination. National product was defined largely with reference to market activity, and the key investment component was taken to comprise chiefly business investment.

In part reflecting the usefulness of income theory and of economic accounts as background for countercyclical policy formulation, there has been a shift of interest in recent years more to problems of economic growth and development. In studying the growth of a given economy, or comparing levels, structure, and growth of different economies, it is apparent that major types of nonmarket production must be considered in addition to the restricted national product measures. There has been scattered work on various types of nonmarket productive activity not now included in the official estimates. I am trying to develop systematically imputed incomes for all the major categories of this type so as to obtain orders of magnitude and of temporal changes in relation to GNP.

Also since World War II, economists have been taking a broader view of investment as the central element in economic growth. Increasingly, we view investment as comprising not only business capital outlays but also household and government expenditures for structures, equipment, and inventories; intangible outlays for research and development, education and training, health, and mobility; even the costs of rearing children to working age. Considerable research is going on in each of these areas. Currently at the National Bureau, Thomas Juster is continuing his work on household capital formation, and Gary Becker and Victor Fuchs are pushing forward research on education and health investment.

But no one has been looking at *total* investment, which I would define as all outlays that enhance future output- and income-producing capacity. My work involves pulling together and developing estimates for all types of investment or "quasi-investment" by sector, and analyzing the new total saving and investment functions that emerge from the expanded definitions. The over-all view is important since each type of investment competes for the limited resources released by gross saving. To each should be applied the principles governing efficient use of investment funds.

This work on total investment and the expansion of imputations has inevitably involved me independently in some restructuring of the U.S. national income accounts—particularly the setting up of separate current and saving-investment accounts for each sector. But it is not my assignment to go further and link in with financing accounts and balance sheets, as will the Ruggleses.

I shall now briefly summarize some of the estimates of order of magnitude which have thus far emerged from my study, and indicate plans for additional work. Limitations of space prevent me from developing further the

concepts, or detailing here the sources and methods of estimation.

ADDITIONAL IMPUTATIONS

As estimated by the Department of Commerce, GNP already includes a number of types of imputed incomes, shown in Table II-1. These comprised 8.6 per cent of the total in 1929 and 7.3 per cent in 1965. The drop in the ratio chiefly reflects the relative decline of the farm economy and of its production for own use. But the several activities for which the Commerce Department prepares imputations were selected more or less arbitrarily, for admittedly pragmatic reasons. What happens when imputations are expanded to cover all major nonmarket economic activities? The first and biggest conceptual problem one faces in endeavoring to answer this question is to define economic activity. As a rough first approximation, one may define it as activity undertaken primarily for the sake of obtaining the resulting income or product, in contrast to noneconomic activity, such as play, which is pursued primarily for its own sake.

The first group of additional imputations shown in the table is required to make the GNP consistent with the expanded investment concept, introduced earlier. The largest item is the estimated gross rental value of capital goods owned by the nonbusiness sectors. This involved estimating the net stock of durable goods owned by households, nonprofit institutions, and governments as a basis for imputing a net interest charge and

TABLE II-1
IMPUTED VALUES IN U.S. GROSS NATIONAL PRODUCT, OFFICIAL AND
SELECTED EXPERIMENTAL IMPUTATIONS

	1929		1965	
	Billions of Dollars	Percentage of Official GNP	Billions of Dollars	Percentage of Official GNP
Market GNP (excluding imputations)	94.2	91.4	631.6	92.7
Official imputations, total	8.9	8.6	49.6	7.3
Space rental value	5.9	5.7	39.4	5.8
Financial services	1.3	1.3	7.8	1.1
Farm consumption	1.1	1.1	.2	.03
Payments in kind	.6	.6	2.2	.3
Official GNP	103.1	100.0	681.2	100.0
Imputations for consistency with total investment, total	22.6	21.9	210.4	30.9
Business investments charged to current expense	2.5	2.4	26.2	3.9
Student compensation	5.7	5.5	65.1	9.6
Rentals on capital goods				
Households and institutions	10.8	10.5	71.3	10.5
Governments	3.5	3.4	47.8	7.0
Other imputations, total	48.0	46.6	174.8	25.7
Housewives' services	44.5	43.2	144.4	21.2
Volunteer labor	.9	.9	14.2	2.1
Consumption charged to business expense	2.6	2.5	16.2	2.4

SOURCE: Department of Commerce and National Bureau of Economic Research.

estimating depreciation annually. Repair and maintenance cost is already included in the official estimates. Our procedure merely extends uniformly the principle already applied by the Commerce Department to owner-occupied houses.

Compensation for schoolwork was estimated by imputing to students 14 years of age and over the average earnings of persons in the same age-sex-color groupings with the same attained educational levels. Not only is imputed student compensation the largest part of educational investment but it has risen markedly relative to national product.

Business investments charged to current expense include the small tool and other tangible capital outlays included in GNP by the Commerce Department prior to the 1965 conceptual revision. But the major portion of the category represents intangible investments, primarily research and development and employee training. Estimates of the latter item are rough, but data on business-financed R & D are relatively good since 1953. Because of the intangibles, the category as a whole has risen markedly since 1929 as a portion of GNP. Taken as a whole, the imputations just discussed rose from about 22 per cent of GNP in 1929 to more than 30 per cent in 1965.

The several further types of imputed incomes shown in the table can be estimated only with large probable margins of error. Consumption charged to business expense includes "expense-account living," welfare services for employees, and entertainment financed by advertising. The data on volunteer labor services are fragmentary, but it is hoped that a recent Labor Department survey will provide a benchmark in this area.

By far the largest category of unpaid work is housewives' services. A surprisingly large amount of scattered data exists with respect to time spent on various types of housework, to which we have imputed the average compensation in the market place for similar work. But we have not yet included all types of housework in the estimates, nor the unpaid work performed by household members other than housewives. Expansion of the category may result in substantially reducing its relative decline, which now reflects chiefly the increasing labor force participation of women.

We have refrained from summing the additional imputations at this stage, since they are incomplete as well as preliminary. Also, there are possible offsets to the imputations, such as commutation costs and other work-connected expenses now included in "final" consumption expenditures.

It is apparent, however, that the tentative imputations presented here would enlarge GNP in 1965 to more than one trillion dollars, over 50 per cent above the official estimate of $681 billion. Significance should not be attached to the apparent decline in the relative importance of the additional imputations as a whole, in view of their still incomplete coverage.

TOTAL INVESTMENT

There are three main points that stand out with respect to our total investment estimates for the economy as a whole, as compared with the official estimates, even though our estimates are still preliminary. They are much higher; they have grown in relation to GNP; and they have shown less cyclical amplitude of fluctuation. In comparing total investment with GNP we use the official GNP adjusted for consistency with the new investment estimates, as noted above. We shall look first at each of the major investment categories shown in Table II-2, noting briefly the concepts and quality of the estimates.

Purchases of structures and durable equipment by households and governments are actually Commerce Department estimates, reclassified into separate capital accounts for each of the nonbusiness sectors. When purchases of residential units for owner occupancy are counted as part of household investment, tangible investments of the nonbusiness sectors somewhat exceed those made by business, and have grown a little faster since 1929. Aggregate tangible investment, however, has grown only slightly in relation to adjusted GNP.

The relative increase in total investment has been due chiefly to marked growth in the three major types of intangible investment. The largest relative increase has come in research and development, estimates for which are reasonably good.

The largest class of intangible investment, education and training, has increased more than 50 per cent faster than GNP since 1929, and now absorbs almost as much money as all durable equipment. Estimates of formal education costs are firmly based, but data on worker training leave much to be desired.

Medical and health outlays have also increased by almost 50 per cent more than GNP. The estimates for this category are reasonably good, but the difficulty lies in determining how much of medical and health outlay represents investment. Income-producing capacity has been greatly enhanced by increased longevity, reduced time lost from illness, and possibly by increased vitality. But some health expenditure may be called maintenance. Not knowing how to draw the dividing line, we have included all medical and health expenditure in the table.

Mobility costs are relatively small and, judging from rough estimates, have not risen in relation to GNP. Yet there can be no doubt that expenditures for geographical and occupational mobility have raised personal

TABLE II-2
TOTAL TANGIBLE AND INTANGIBLE INVESTMENTS IN RELATION TO
ADJUSTED U.S. GROSS NATIONAL PRODUCT

	1929		1965	
	Billions of Dollars	Percentage of GNP	Billions of Dollars	Percentage of GNP
Gross tangible domestic investment		23.5		24.8
Structures	11.5	9.1	75.2	8.4
Durable equipment	15.7	12.5	131.2	14.7
Change in inventories	2.4	1.9	15.0	1.7
Net foreign investment	0.8	0.6	4.2	0.5
Intangible investment		13.9		22.0
Education and training	11.0	8.8	120.6	13.5
Medical and health	3.7	3.0	38.9	4.4
Research and development	0.3	0.2	21.0	2.4
Mobility costs	2.4	1.9	15.7	1.8
Rearing costs (households)	9.8	7.8	54.2	6.0
Total gross investment				
Including rearing costs	57.6	45.8	475.8	53.4
Excluding rearing costs	47.8	38.0	421.6	47.4
GNP adjusted for consistency with total investment estimates	125.7	100.0	891.6	100.0
Addendum, official estimates				
Gross investment	17.0	16.5	110.7	16.3
GNP	103.1	100.0	681.2	100.0

SOURCE: Department of Commerce and National Bureau of Economic Research.
NOTE: Detail may not add to totals due to rounding.

TABLE II-3
DISPOSABLE RECEIPTS AND EXPENDITURES, CURRENT AND CAPITAL,
BY SECTOR OF THE U.S. ECONOMY

	1929			1965		
	Billions of Dollars	Percentage of Adjusted GNP	Percentage of Sector Revenue	Billions of Dollars	Percentage of Adjusted GNP	Percentage of Sector Revenue
Gross disposable personal income[a]	98.9	78.7	100.0	602.7	67.6	100.0
Current consumption expenditures	62.2		62.9	332.3		55.1
Total investment	34.6	27.6	35.0	260.6	29.2	43.2
Net financial investment	2.1		2.1	9.8		1.6
Gross business retained income[a]	12.7	10.1	100.0	100.5	11.3	100.0
Total investment	15.7	12.5	123.7	107.8	12.1	107.3
Net financial investment	−3.0		−23.7	−7.3		−7.3
Gross government receipts[a]	13.0	10.4	100.0	187.2	21.0	100.0
Current purchases	5.6		42.7	80.7		43.1
Total investment	6.5	5.2	49.8	103.2	11.6	55.2
Net financial investment	1.0		7.5	3.2		1.7
Net foreign transfers	0.4	0.3		2.8	0.3	
Net exports	1.1	0.9		7.0	0.8	
Net foreign claims	−0.8	−0.6		−4.2	−0.5	
Total income	125.0	99.4		893.2	100.2	
Statistical discrepancy	0.7	0.6		−1.6	−0.2	
Total GNP, adjusted	125.7	100.0		891.6	100.0	

SOURCE: Department of Commerce and National Bureau of Economic Research.
NOTE: Detail may not add to totals due to rounding; percentages are based on more detail than shown.
[a] Gross of capital consumption, but net of transfers to other sectors.

incomes and contributed to economic growth —thus meriting the label of investment.

More controversial is the suggestion for including the costs of rearing children to working age as investment.[1] But one may look at total investment with or without "tangible human investment," according to taste.

Exclusive of rearing cost, total gross investment has grown from less than 40 per cent to almost 50 per cent of adjusted GNP between 1929 and 1965. In other words, as real income per capita has risen, the tendency

has been for individuals and organizations to increase the percentage of gross income allocated to forward-looking outlays. Including rearing costs, more than half of GNP in recent years has been devoted to gross investment. The 1965 total of around $475 billion is more than four times the Commerce Department estimate of $111 billion, which represents 15 per cent of official GNP (see Table II-2).

It should be kept in mind that our estimates are *gross* of capital consumption. It is possible that our subsequent *net* investment estimates will represent a smaller proportion of NNP, and a smaller multiple of the Commerce net investment estimates, since much of the investment we have added to the

[1] See John W. Kendrick, "Restructuring the National Income Accounts for Investment and Growth Analysis," *Statistisk Tidskrift,* Stockholm, 1966:5.

official estimates comprises relatively short-lived capital.

In terms of sectors, as shown in Table II-3, total gross investments by business, households and nonprofit institutions, and net foreign investment have not varied much in relation to GNP in years of high-level activity. All of the increase has come in the public sector. But attention needs to be paid also to the effect on each sector's investment of change in its gross disposable income. We then see that the relative increase in public investment was largely due to a doubling of public revenues in relation to GNP, although in the government sector gross investment also increased somewhat as a proportion of revenue. The gross disposable income of households and institutions, in contrast, declined from 79 to 68 per cent of GNP from 1929 to 1965, but this was offset by an increase in the investment proportion of disposable income from 35 to 43 per cent. In the case of business, gross retained income comprised a fairly stable proportion of GNP in good years, despite the increase in income taxes, and the proportion of total investment to gross retained income showed no pronounced trend, though there was a decline from 124 per cent to 107 per cent between 1929 and 1965.

In all post-World War II recession years, intangible investments continued to rise, more than offsetting drops in tangible investment, except in 1949. Between 1929 and 1933, intangible investment fell by one-third, compared with a decline of 80 per cent in tangible investment. In 1938, intangible investment was the same as in 1937, while tangible investment fell by more than 20 per cent.

FUTURE WORK

The total gross investment estimates are only the first phase of the project. In the next, the current, phase we are estimating retirements and gross stocks of tangible and intangible capital; also depreciation, net investment, and net stocks of capital—all in several variant forms depending on assumptions about useful lives and depreciation formulas. The complete set of estimates opens up endless analytical vistas—particularly with regard to the possibility of developing saving, investment, and production functions based on the new concepts and estimates.

With regard to the imputations, we are trying to improve our estimates, especially for housewives' services, and extend them to include other unpaid household work, as well as to experiment with imputations for the opportunity cost of leisure time, following up a suggestion of Gary Becker's. When completed, our estimates may help provide new insights into the magnitude and growth of aggregates and the associated changes in structure by type of income, type of product, and sector of origin.

In regard to future related projects in the economic accounts area, several may be suggested. We badly need sample household surveys to collect data on hours worked at home by housewives and other family members, by type, and on volunteer labor outside the home. This might well be tied into broader surveys on the allocation of time, generally, by type of activity.

We also need surveys of companies to determine the magnitude of tangible and intangible investments and consumption-type outlays that are charged to current expense.

More broadly, much more work is needed on capital accounts, by sector, and the related balance sheets and wealth estimates. This would involve an expansion and updating of the pioneering work of Raymond Goldsmith. In particular, revaluation accounts are needed to provide the link between net investment and the changes in balance sheet items. Estimates of capital gains and losses, realized and unrealized, will represent important new information for analyzing economic decision-making.

In conclusion, I am convinced that in the future, as in the past, the National Bureau has an important role to play in the progressive development of national accounts by developing new concepts, structures, and estimates, and in the analysis of the estimates we help to produce.

JOHN W. KENDRICK

RESEARCH IN LABOR FORCE AND IN UNEMPLOYMENT

I. THE LABOR FORCE

The aggregate labor force participation rate, i.e., the percentage of the population that is either employed or seeking employment, has been called a "great constant of economic life." While this characterization draws attention to the secular stability in the over-all proportion of the population in the labor force, it abstracts from the persistent diversity of trends in different age-sex subgroups of the population. The growth of labor force rates of women and the decline in rates of older men and of male school-age youth tend to cancel numerically. But the resulting compositional change pervasively affects the nature of supply and demand behavior in labor markets, as well as our reading of that behavior in the reported statistics of employment and unemployment.

The causes of differential trends are manifold. Research at the National Bureau has contributed to a partial elucidation of these causes.[1] Our current research is aimed at a more complete understanding of the important long-term developments, of short-term changes, and of the consequences of both.

While the facts about long-term trends are evident, the record of short-term variation in the labor force is less clear. There is no doubt that the labor force responds positively to major changes in demand such as were caused by the two World Wars. The question whether and in what way the labor force responds to cyclical fluctuations of the usual variety remained obscure until quite recently.

A growing number of recent studies, based on an increasingly ample statistical record, concur in asserting that the labor force conforms positively even to the relatively mild business cycles that have been characteristic of the past two decades. This relationship is difficult to observe in the aggregate because it is a net effect of two opposing tendencies whose relative strength and timing are likely to vary among different population groups. The negative tendency (the so-called income effect) is illustrated by "additional" workers entering the labor force to bolster family income in a recession. The positive tendency (the substitution effect) is exemplified by "discouraged" unemployed workers giving up the apparently hopeless job search and withdrawing from the labor market in a recession.

The part of our research program at the National Bureau which focuses on short-term variation in the labor force was designed to explore the validity and nature of the alleged cyclical patterns. A review of the evidence was prompted by doubts arising from methodologies employed in the recent literature on this subject.[2] But we were also interested in probing into additional aspects of short-term labor force behavior.

The following is a brief summary of our findings to date, and of research in progress. Some of the findings were reported previously; others represent tentative conclusions based on unfinished research, or mere hypotheses which help in guiding it:

1. The net procyclical conformity of the labor force during recent business cycles is corroborated. This statement refers to fluctuations of the labor force in some, but not all, population groups around their own long-term trends. The net relationship, however, is neither as strong nor as dependable as some other studies have claimed. To illustrate: A demand-induced expansion of employment

[1] Clarence D. Long, *The Labor Force Under Changing Income and Employment,* Princeton University Press for NBER, 1958; Jacob Mincer, "Labor Force Participation of Married Women," in *Aspects of Labor Economics,* Princeton for NBER, 1962; Richard A. Easterlin, *Population, Labor Force, and Long Swings in Economic Growth,* NBER, forthcoming.

[2] The issues are discussed at length in the author's "Labor Force Participation and Unemployment: A Review of Recent Evidence," published in *Prosperity and Unemployment,* Gordon and Gordon, eds., New York, 1966.

at the rate of 5 per cent is likely to be associated with a rate of expansion of the labor force, net of trends, of about 1 per cent on the average.

2. The sensitivity of the labor force to changing demand varies among different population groups. In particular, it is inversely related to the degree of labor force attachment. Women, school-age youth, and retirement-age adults are the sensitive segments of the labor force. Married women among all women and students among all youths exhibit the weakest labor force attachment and the strongest labor force sensitivity.

3. The segments of the population characterized by a weak attachment to the labor force are precisely the groups whose relative importance has grown in the population and, much more so, in the labor force. The exception is the older male group, whose attachment to the labor force has been declining. Between 1948 and 1965, the labor force share of women and of youth under 25 years of age grew from 41 per cent to 52 per cent. The share of married women in the female labor force grew from 41 per cent to 58 per cent, and the share of students in the young labor force grew from 15 per cent to 33 per cent during the same period. It is noteworthy, in connection with the latter statistic, that strong inflows into classrooms during recent periods were not significantly matched by corresponding outflows from the labor force, as used to be true in the past. In consequence, the rate of decline in labor force participation of young people was weaker than expected on the basis of the rate of increase in school enrollment. The major effect of enrollment trends was the conversion of full-time labor force into a part-time, intermittent, seasonal, and cyclically more sensitive labor force.

Together with the increasing proportion of married women in the labor force and the decreasing degree of labor force attachment of older males, these trends in labor force composition imply an over-all trend toward an increasingly sensitive, variable, and flexible labor force. Perhaps this is the reason

why the sensitivity is more easily observed now than in the past. If so, it is worth noting that average labor force response coefficients calculated from a longer period are likely to underestimate the strength of current responses.

4. Expansion of the labor force in response to increased demand is only one of many forms of adjustment of labor supply to increased labor demand. Alternative sources of effective manpower expansion are absorption of the unemployed, increases in hours of work, interindustry and geographic mobility of labor toward centers of growing demand, movements of capital toward pools of labor, job training of inexperienced workers, and job redesign. All these forms of supply adjustment occur at the same time, but the relative importance of each varies across population groups, over the business cycle, and under various conditions.

The empirical record suggests that reduction in unemployment is an important source of employment expansion in the initial phase of a business upswing, diminishing in importance as labor markets tighten and pools of unemployment shrink. As the expansion continues, employment increases are fed relatively more by labor force additions, mainly of women and of the more loosely attached segments of the male labor force. Moreover, movements from agriculture and from industrial and geographic sectors of lesser growth accelerate when labor markets are particularly tight, as was true during the past year and during the Korean War.

5. To the extent that the size of the labor force is variable, it responds not only to cyclical shifts in demand but also to a variety of other incentives or pressures: changes in retirement and social security provisions, unemployment insurance, tax laws, costs and attractiveness of schooling, minimum wage laws, all can and do affect the supply of labor in some degree, even in the short term.

There is evidence that the downward trend in labor force rates of older people was accelerated by increases in levels of benefit payments and by extensions of coverage. The

liberalization of social security provisions which enable beneficiaries to earn without full reduction in pensions has a double effect: it strengthens the incentives of some to retire, accept benefits, and reduce participation in the labor force, but it induces others to return from complete retirement to intermittent work, without the need to give up benefits. The result of both effects is growth in discretionary labor force participation of older people which contributes to the cyclical sensitivity of the labor force.

There are some indications that unemployment compensation tends to encourage the average level of labor force participation over the cycle. But it is also likely to reduce or create lags in "added worker" behavior during recessions. Its role in cyclical and seasonal behavior is being investigated.

As distinguished from effects on employment, the direction of effects of minimum wages on labor force participation cannot be determined a priori; the attraction of a higher wage in the sector covered by the minimum wage may or may not offset the decreased probability of finding employment. The data seem to suggest that an increase in the minimum wage reduces the labor force of women and of teen-agers, but a more detailed investigation is required. Note that the effects of minimum wages on unemployment are either reduced or magnified, depending on whether labor force responses are negative or positive.

6. Pronounced changes in the demand for military manpower, such as recently experienced, exert both a compositional and an aggregative effect on the labor force.[3] Even if aggregate demand in the civilian economy were to remain unchanged, a transfer (by draft) of, say, half a million men from the civilian to the military sector actually increases the size of the total labor force (i.e., including the military). This is because

reductions in (civilian) supply, given demand, have the same effect as increases in demand, given supply: in both cases labor markets tighten, resulting in an induced expansion of the labor force. Moreover, aggregate demand in the civilian economy is likely to increase and with it the derived demand for labor in industries which produce military supplies. Thus, in effect, most of the expansion of military manpower during the past year (and during the Korean War) constituted a *net addition* to total labor force expansion.

The compositional effect follows because manpower transferred from the civilian to the military sector is drawn quickly and directly from the specific population group of young males. Since the labor force of adult males is not sensitive, the big compositional effect is a larger than usual increase in female and teen-age labor force participation. These effects were quite conspicuous in the labor force developments of the past year.

There is some indication that the compositional effects of military manpower expansion are magnified by draft deferment policies because such policies contribute to an acceleration of school enrollment trends. Male labor force growth is reduced and pressure on the remaining labor force is increased.

7. Regional patterns of labor force behavior are of interest in their own right, as well as for the light they can shed on analytical work which attempts to estimate behavior relations, such as labor supply functions, from regional data.

It appears that labor force sensitivity to the business cycle is less pronounced in "depressed" areas than in areas where unemployment is usually relatively low. As mentioned before, reduction in unemployment is an important source of employment expansion when and *where* unemployment is high. Also, interregional migration tends to move toward areas with low unemployment and accelerates in periods of prosperity, thereby accentuating the apparent differential labor force sensitivity. In turn, these patterns can explain the observed phenomenon that interregional differences in unemployment

[3] Some evidence was presented in the paper "Short-Run Elasticity of Labor Supply," December 1966, to be published in the *Proceedings of the Nineteenth Annual Meeting,* Industrial Relations Research Association.

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rates tend to widen in business downswings and to shrink in upswings.

8. The differential strength of the income effect ("added worker" behavior) in the short and in the long run and across different population groups is not clear. It calls for conceptual and empirical resolution. Work on this issue is in progress.

II. UNEMPLOYMENT

The level and changes in aggregate unemployment have often been used as measures of capacity utilization of the economy, as indexes of its cyclical position, and as indexes of aggregate demand for labor. Specific numerical values have been adopted, at times, as targets or criteria of economic policy. As with all such oversimplifications, they are useful up to a point. How far is the point beyond which analysis and policy can go astray? The answer to this important question requires a sufficient knowledge of the nature and meaning of the observed incidence and composition of unemployment. Progress in such knowledge is being achieved largely as a result of the continuing statistical programs of the Current Population Survey. Increased public concern with the problems of unemployment during the past decade prompted a growth in analytical efforts in this field. But much remains to be learned. We hope that some of the numerous gaps in this area of knowledge will be filled in our research.

Some of this research is directly related to the research on the labor force. The bulk of it deals with the general topic of the structure of unemployment: the distribution, as distinguished from the level, of unemployment among different population groups in the labor force.

IMPLICATIONS OF LABOR
FORCE BEHAVIOR

Some insights into the meaning of levels and of changes in unemployment follow directly from the findings about the labor force. These findings underscore and explain the fact that changes in unemployment are not a mirror image of fluctuations in employment. A few major implications of labor force behavior and some issues for research to which they give rise are:

1. The stronger the sensitivity of the labor force, the smaller the amplitude and the less regular the cyclical pattern of unemployment. When the labor force is decomposed into sex and age groups, it appears that the cyclical amplitude and conformity of unemployment rates are inversely related to rates of labor force participation. This suggests that the unemployment rate of the insensitive segments of the labor force (such as of adult males) is a better cyclical index than the aggregate rate. It also suggests that growth of discretionary labor force participation has played a part in the observed flattening of unemployment rate amplitudes during the past decade.

2. The fact that the labor force shrinks in recessions has been interpreted to mean that underutilization of capacity is understated by the unemployment index. This "hidden unemployment," supposed to consist of labor force dropouts in times of slack, emerges in the form of increased labor force participation as soon as the economy resumes its expansion. Some indirect estimates of hidden unemployment, based on estimates of cyclical labor force variation, assumed magnitudes of several million people in the early sixties.

Whether this hidden unemployment represents an underutilization problem as much as does "visible unemployment" is a question of some importance. The fact that hidden unemployment, as calculated from statistical regressions, is wholly concentrated in the so-called secondary labor force suggests an alternative, though not mutually exclusive interpretation: in the main, labor force variation need not represent the disappearance and reappearance of "discouraged" workers. It may reflect decisions of new entrants and of some of the secondary workers as to when conditions are best for them to enter or leave the labor market. The optimal time to be in the labor market is when job opportunities are favorable. BLS survey data on the unem-

ployed and on nonparticipants in the labor force will make it possible to obtain some direct evidence pertinent to these alternative interpretations.

3. New entrants and re-entrants into the labor force usually experience a high incidence of transitional unemployment before they find a job. In population groups where labor force turnover is high, this kind of unemployment constitutes a major fraction of observed unemployment. Recent BLS surveys of the unemployed indicate that labor force turnover accounts for the bulk of teen-age unemployment most of the time and for as much as half of female unemployment in time of prosperity. In the tight labor markets of 1966 this source of unemployment accounted for more than a half of aggregate unemployment.

These findings suggest one explanation of an apparent upward drift in the aggregate unemployment rate during the past decades, variously estimated as amounting to between 0.7 and 1.0 percentage points. The drift has been interpreted as a growth in "structural" unemployment, denoting growing technological displacement and growing difficulties in matching jobs and workers in labor markets. However, the empirical basis for this interpretation remains meager and insecure. The growth of discretionary labor force participation provides an alternative, but again not mutually exclusive, interpretation of this upward drift: the updrift in unemployment rates was strongest in the teen-age labor force, milder among females, and not clearly significant in the adult male labor force. Related evidence in favor of this interpretation is shown by a decomposition of the unemployed into insured and uninsured. Two decades ago, less than half of the unemployed were not insured. Currently, despite the extensions of coverage, about two-thirds of the unemployed are not insured. A similar (estimated) decomposition of the labor force reveals no secular updrift in the unemployment rate of the covered labor force, but a strong one in the unemployment rate of the uncovered segment. The latter contains, by

definition, the unemployed new entrants and re-entrants.

4. The surveys of unemployed reveal that unemployment of labor force entrants and re-entrants, and of those who quit one job to search for another, is not cyclically sensitive. The insensitivity is due to two opposing factors: entries, re-entries, and quits increase in upswings, but the incidence and duration of their unemployment diminishes. The fact that these components of aggregate unemployment can be empirically isolated makes it possible to estimate a margin below which further expansion of aggregate demand is unlikely to reduce the aggregate unemployment rate. Such an estimate requires, in addition, an assessment of the magnitude of seasonal unemployment in unemployment originating by layoff. Research on these possibilities is progressing, and some international comparisons may become feasible. The suggested hypothesis is that international differences in unemployment rates reflect not only differences in statistical practices, and in strength of aggregate demand, but also differences in the labor force, its composition and behavior.

THE STRUCTURE OF UNEMPLOYMENT

The differential incidence or structure of unemployment is largely of a permanent nature, though some cyclical variation in it is also discernible. The inverse relation between unemployment and labor force attachment contributes to the understanding of the uneven incidence of unemployment across different population groups. In addition to labor force behavior, many other factors influence these differentials.

An important element in our study of the unemployment structure is the relation between human capital, i.e., education and skill level, and unemployment experience. Differences in costs and returns of employer and worker investments in hiring, training, acquiring experience, and obtaining information lead to differential patterns of layoff, quit, and unemployment duration. These differ-

ences are observable most clearly in groups classified by occupation and schooling. They are also important in understanding unemployment differentials in classifications of the population by age, sex, race, industry, and other characteristics. Additional causal factors come to the fore in the analyses of such classifications. A few illustrations of this research follow:

1. *Skill Differentials.* To an apparently minor extent, unemployment rates differ among occupations because occupations differ in the distribution of their employees by industry and because industries differ in unemployment rates. The occupational differentials remain pronounced within industries.

At least two hypotheses have been advanced to explain skill differentials in unemployment rates within an industry: (1) Occupations differ in the amount of investment by employers in hiring, training, and experience of employees; and the higher the amount of such specific investment, the lower the unemployment rate. (2) Occupations differ in the extent to which labor in them is substitutable for other fixed factors of production (such as physical plant and equipment). Thus during periods in which the demand for the output of an industry is falling, employment declines to a greater extent in occupations which are least complementary with the fixed factors.

While the two hypotheses are not mutually exclusive, some discrimination between them may be feasible. Strictly speaking, the investment hypothesis predicts a negative relation between skill level and layoff rate (to the extent that skill is, in part, produced by employer investments), as well as a negative relation between skill level and quit rate (to the extent that workers invest in specific skills). However, the complementarity hypothesis implies primarily a negative relation with layoff rates, not with quit rates. So far, research on turnover and job mobility data of the BLS and CPS indicates that both negative relations hold.

In further work on this question, decennial Census of Population data of 1940,

1950, and 1960 have been subjected to multiple regression analysis of unemployment rates in close to one hundred male occupations. These regressions are an attempt to measure the relative importance of schooling and of other proximate factors, such as age, marital status, and race, in the observed interoccupational differentials in unemployment. Since schooling, by itself, does not reflect employer investment in worker skills, further questions must be raised about the information this variable conveys in the empirical analyses.

2. *Age Differentials.* Because of strong educational trends, older workers are less educated than younger ones, which, in part, affects the comparative unemployment incidence. But, even at a given education level, the unemployment rates by age are U-shaped. They are very high for teen-agers, decrease rapidly to a minimum, and begin to rise slowly at the 45–54 age bracket. The U-shape results from two systematic tendencies: turnover and separation rates decrease with age, while unemployment duration increases with age. Both tendencies are more pronounced at the upper than at the lower levels of skill.

Given the educational level, differences in unemployment experience by age can be considered a net effect of several opposing forces. Lesser job mobility and older "vintage" of education are disadvantageous to the older worker, while greater experience and higher average level of native ability (for a fixed level of schooling) are favorable factors. Some of these separate effects have been ascertained, and further research is in process.

Unemployment rates of teen-age youth are significantly influenced by school enrollment trends, by changes in the level and coverage of minimum wages, and by draft policies. The effects of minimum wages have been stronger for school dropouts and for males than for students and for females. The increases in minimum wages as well as the draft may have accelerated the decline in labor force participation as well as the increases in school enrollment. The interplay of these factors contributed to the pronounced upward

trend in teen-age unemployment during the past decade.

3. *Duration of Unemployment.* Duration of unemployment is inversely related to skill level, but the differences are much smaller than among the unemployment rates. Differential separation and labor force entry rates seem to be more important than differential re-employment probability in explaining skill differentials in unemployment. Moreover, the differential duration is partly due to the fact that the fraction of unemployed which does not change jobs is larger at lower levels of skill.

Re-employment probabilities decrease with length of unemployment regardless of the stage in the cycle. It is not clear, however, whether this reflects only a progressive selection of less employable individuals or a decreased probability for "the same" individual, or both. Re-employment probabilities of females are smaller than for males, but their unemployment duration is shorter be-cause of labor force withdrawals. The effect of schooling on re-employment probabilities is important for the young, less so for the old.

4. *Color Differentials.* Nonwhites of the same age and schooling as whites have higher rates and apparently also a longer duration of unemployment. The meaning of these differences depends partly on the extent to which reported differences in schooling misrepresent differences in labor productivities. This and other factors are currently being investigated by Dave O'Neill, whose more detailed report appears in Part IV.

Current plans for publication of our research findings include a proposed Occasional Paper on "Short-Term Changes in the Labor Force" which is nearing completion, one or more short papers on particular aspects of unemployment on which work has begun, and a summary monograph on the structure of unemployment.

JACOB MINCER