# Economic Research and the Keynesian Thinking of Our Times

## I The Lesson of Ricardianism

It is now almost a century since John Stuart Mill's great work on the *Principles of Political Economy* appeared. In this treatise Mill rounded out and summed up the classical system of which Ricardo had been the leading architect. Mill wrote with dignity, assurance, and authority. His mind was not beset by doubts concerning the true principles of political economy. "The most important proposition in political economy", he proclaimed, "is the law of production from the land, that in any given state of agricultural skill and knowledge, by increasing the labour, the produce is not increased in an equal degree." In Mill's world, diminishing returns defined the production function in agriculture and thus set the stage within which economic progress could unfold. Population and technology were the dynamic factors in economic life, but population was considered the more potent variable. As population increased, the land already being farmed would need to be cultivated more intensively or inferior land brought under the plow; costs on the margin of cultivation consequently would rise, and serve ultimately to enrich the landlords and injure the capitalists and workers. "It is vain to say", Mill lamented, "that all mouths which the increase of mankind calls into existence, bring with them hands. The new mouths require as much food as the old ones, and the hands do not produce as much."*

If these doctrines of the classical school make curious reading today, our perspective has been altered by the emergence of new problems and a century of experience with the old ones. From the vantage point of history, we know that the Ricardians vastly overestimated the dynamic pressure of population

*J. S. Mill, *Principles* (Ashley edition), pp. 177, 191.

and underestimated the power of technology. We know that the static tendency of land to yield a diminishing return to successive increments of labor has been swamped by the historical tendency toward improvement in the industrial arts. Between 1870 and 1940 we have tolerably reliable measurements, and they show that the output of American agriculture increased much faster than employment, decade after decade. At the end of the seventy-year period employment was only 34 per cent higher than at the beginning, while output was 279 per cent higher.* Today many are troubled by the mechanization of agriculture and the slow growth of population, few are concerned over the 'law of diminishing returns'. In their study of American agriculture, published by the National Bureau in 1942, Barger and Landsberg do not even mention the law.

I have taken this excursion into history because we are living in a time of bold and vigorous theoretical speculation, the only close parallel of which is the Ricardian age. The principal practical problem of Ricardo's generation was whether the state should foster the economic power of the landlords or of the rising manufacturing class. The heated discussions of this question stimulated Ricardo to take the distribution of incomes as the principal problem of economic theory, and he thereby set the pattern of classical economics. The principal practical problem of our own generation is unemployment, and it has now become—as it long should have been—the principal problem of economic theory. This transformation of economic theory is due in large part to the writings of John Maynard Keynes, which are exercising a great influence on the thinking of economists and the shaping of public policies in our own and other countries. But although Keynes and his followers are concerned with a range of problems that the classical economists shunned, by and large they still seek to arrive at economic truth in the manner of Ricardo and his followers. Broadly speaking, the Keynesians investigate the volume of employment and income of a country on much the same plane as the

*Harold Barger and Hans H. Landsberg, *American Agriculture, 1899-1939*, p. 253. Of course, these figures exaggerate the disparity, since they take no account of the shift from direct labor on farms to indirect labor in factories.

Ricardians investigated the distribution of incomes. If the fate of the Ricardian system carries a moral, it has not been clearly impressed on this original and able group of economists of our generation.

## II Keynes' Theory of Underemployment Equilibrium

I have said enough to set the theme of my report, which is to relate the work of the National Bureau to the Keynesian thinking of our times. The opinion is widespread that Keynes has explained what determines the volume of employment at any given time, and that our knowledge of the causes of variations in employment is now sufficient to enable governments to maintain a stable and high level of national income and employment within the framework of our traditional economic organization. If this opinion is valid, the solution of the basic problem of democratic societies is in sight, and the National Bureau would do well to reconsider its research program. Unhappily, this opinion reflects a pleasant but dangerous illusion.

The basis for the Keynesians' confidence is Keynes' theory of underemployment equilibrium, which attempts to show that a free enterprise economy, unless stimulated by governmental policies, may sink into a condition of permanent mass unemployment. The crux of this theory is that the volume of investment and the 'propensity to consume' determine between them a unique level of income and employment. The theory can be put simply without misrepresenting its essence. Assume that business firms in the aggregate decide to add during a given period 2 billion dollars' worth of goods to their stockpiles, using this convenient term to include new plant and equipment as well as inventories. This then is the planned investment. Assume, next, that business firms do not plan to retain any part of their income;* so that if they pay out, say, 18 billion to the public, they expect to recover 16 billion through the sale of consumer goods, the difference being paid out on

*This assumption is not essential to the Keynesian system; I make it here in order to simplify the exposition. The figures used throughout are merely illustrative. Further, the exposition is restricted to the proximate determinants of employment in Keynes' system; this simplification does not affect the argument that follows.

account of the expected addition to their stockpiles. Assume, finally, that the 'consumption function' has a certain definite shape; that if income payments are, say, 18 billion, the public will spend 17 billion on consumer goods and save 1, and that one-half of every additional billion of income will be devoted to consumption and one-half to savings. Under these conditions, the national income per 'period' should settle at a level of 20 billion.

The reason is as follows. If income payments were 18 billion, the public would spend 17 on consumer goods. But the firms that made these payments expected to sell 16 billions' worth to the public and to add 2 billions' worth to their stockpiles; the actual expenditure of 17 billion on consumer goods would therefore exceed sellers' expectations by 1 billion, and stimulate expansion in the consumer goods trades. On the other hand, if income payments were 22 billion, the public would spend 19 on consumer goods; this would fall short of sellers' expectations by 1 billion, and set off a contraction in the output of consumer goods. In general, if income payments fell below 20 billion, the sales expectations of business firms would be exceeded; while if income payments rose above 20 billion, the expectations of business firms would be disappointed. In either case, forces would be released that would push the system in the direction of the 20 billion mark. Hence, in the given circumstances, 20 billion is the equilibrium income, and it may be concluded that the basic data—that is, the volume of investment and the consumption function—determine a national income of unique size. If we assume, now, a unique correlation between income and employment, it follows that the basic data determine also a unique volume of employment—which may turn out to be well below 'full' employment.

This is the theoretical skeleton that underlies the Keynesian system. The theory implies that when unemployment exists, an increase in consumer spending out of a given income will expand employment; so too will an increase in private home investment or in exports, and so again will governmental loan expenditure, its effect on employment being in a sense similar to that of private investment expenditure. The theory implies also

that the magnitude of the expansion in employment by any of these routes is a precisely calculable quantity, since the determinants of employment are alleged to have been isolated. To get more out of the theory, more specific assumptions must be made.

At this vital juncture the Keynesians differ somewhat among themselves, but two institutional assumptions dominate the thinking of the school. The first is that consumer outlay is linked fairly rigidly to national income and is unlikely to expand unless income expands; in other words, there is little reason to expect, at least in the short run, that a condition of unemployment will be corrected through a reduction in individual savings. The second assumption is that investment opportunities are limited in a 'mature' economy such as our own; consequently, private investment may continue, year in and year out, at a level that falls considerably short of what the community would save if 'full employment' existed. If neither an upward shift in the consumption function, nor an expansion of private investment at home, nor an increase in net exports, can be confidently counted on, it follows that our lot may be persistent mass unemployment. We may escape the fate of secular stagnation, however, if the effective demand for employment is supplemented by governmental spending. Furthermore, this remedy for secular stagnation is also the remedy for business cycles, since the most that can be expected of private investment is that it may rise sufficiently to generate 'full employment' during a fleeting boom.

Of late this theory has been refined and elaborated, so that 'deficit financing' need no longer be the key instrument for coping with unemployment, and I shall refer to one of these refinements at a later point. But the practical significance of the modifications of the theory is problematical, and in any event the theory as I have sketched it still dominates the thinking of the Keynesians when they look beyond the transition from war to peace. The similarity of this theory to the Ricardian model is unmistakable. The most important proposition in Ricardian economics is that the production function in agriculture has a certain shape, that is, the marginal product dimin-

ishes as the input of labor increases. The most important proposition in Keynesian economics is that the consumption function has a certain shape, that is, consumer outlay increases with national income but by less than the increment of income. The Ricardians treated the production function as fixed, and deduced the effects on income distribution of an increase or decrease in population, or of a tax or bounty on the production of corn. The Keynesians treat the consumption function as fixed, and deduce the effects on the size of the national income of an increase or decrease in private investment, or of an increase or decrease in governmental loan expenditure. The Ricardians believed that population was the key dynamic variable, and they drew a gloomy picture of the course of events if that exuberant variable was not counteracted. The Keynesians believe that investment is the key dynamic variable, and they draw a gloomy picture of the course of events if that timid variable is not fortified by governmental loan expenditure. To be sure, the Ricardians recognized that the production function in agriculture was subject to change, and they frequently inserted qualifications to their main conclusions. The Keynesians likewise recognize that the consumption function is not absolutely rigid, and they frequently insert qualifications to their main conclusions. But I have formed the definite impression that the Keynesians—except when they discuss changes in personal taxation—attach even less importance to their qualifications than did the Ricardians; all of which may merely reflect the fact that the Ricardians were concerned largely with secular changes, while the Keynesians are mainly concerned, despite their anxiety over secular stagnation, with comparatively short-run changes.

There is, of course, nothing unscientific about Ricardianism as such. But *ceteris paribus* is a slippery tool, and may lead to serious error if the premises accepted for purposes of reasoning are contrary to fact, or if the impounded data are correlated in experience with factors that the theorist allows to vary, or if the very process of adjustment induces changes in the impounded data. Let us go back to the theoretical skeleton of the Keynesian system and examine it more carefully. Suppose that

the volume of intended investment is 2 billion dollars, income payments 20 billion, and consumers' outlay at this level of income 18 billion. On the basis of these data, the economic system is alleged to be in equilibrium. But the equilibrium is aggregative, and this is a mere arithmetic fiction. Business firms do not have a common pocketbook. True, they receive in the aggregate precisely the sum they had expected, but that need not mean that even a single firm receives precisely what it had expected. Since windfall profits and losses are virtually bound to be dispersed through the system, each firm will adjust to its own sales experience, and within a firm the adjustment will vary from one product to another. Under the circumstances the intended investment cannot—quite apart from 'autonomous' changes—very well remain at 2 billion, and the propensity to consume is also likely to change. Our data therefore do not determine a unique size of national income; what they rather determine is a movement away from a unique figure. Of course, we cannot tell the direction or magnitude of the movement, but that is because the basic data on which the Keynesian analysis rests are not sufficiently detailed for the purpose.

I have imagined that Keynes' aggregative equilibrium is realized from the start. But suppose that this does not happen; suppose that, in the initial period, the intended investment is 2 billion, income payments 16 billion, and that savings at this level of income are zero. Will income now gravitate toward the 20 billion mark, as the theory claims it should? There is little reason to expect this will happen. In the first place, windfall profits will be unevenly distributed, and the adjustment of individual firms to their widely varying sales experiences will induce a change in the aggregate of their intended investment. In the second place, unemployed resources will exercise some pressure on the prices of the factors of production, and here and there tend to stimulate investment. In the third place, if an expansion in the output of consumer goods does get under way, it will induce additions to inventories for purely technical reasons; further, the change in the business outlook is apt to stimulate the formation of new firms, and to

induce existing firms to embark on investment undertakings of a type that have no close relation to recent sales experience. In the fourth place, as income expands, its distribution is practically certain to be modified; this will affect the propensity to consume, as will also the emergence of capital gains, the willingness of consumers to increase purchases on credit, and the difficulty faced by consumers in adjusting many of their expenditures to increasing incomes in the short run. These reactions, and I have listed only the more obvious ones, are essential parts of the adjustment mechanism of a free enterprise economy. Under their impact the data with which we started—namely, the amount of intended investment and the consumption function—are bound to change, perhaps slightly, perhaps enormously. It is wrong, therefore, to conclude that these data imply or determine, even in the sense of a rough approximation, a unique level at which the income and employment of a nation will tend to settle. In strict logic, the data determine, if anything, some complex cumulative movement, not a movement toward some fixed position.

If this analysis is sound, the imposing schemes for governmental action that are being bottomed on Keynes' equilibrium theory must be viewed with scepticism. It does not follow, of course, that these schemes could not be convincingly defended on other grounds. But it does follow that the Keynesians lack a clear analytic foundation for judging how a given fiscal policy will affect the size of the national income or the volume of employment. Fiscal policy is now the fashion among economists, and three fiscal paths to 'full employment' have recently been delineated. The first is to increase expenditure but not taxes. The second is to increase taxes as much as expenditure. The third is to reduce taxes but leave expenditure unchanged. The first of these methods—that is, loan expenditure—avoids, we are told, the excessively large expenditures of the second method, and the excessive deficits of the third. This is a highly suggestive conclusion, and may have much to recommend it on practical grounds. But to accept it as an approximation to scientific truth we must be willing to make assumptions of the following type: (1) the consumption function is so shaped

that the dollar volume of savings increases as income increases, (2) the consumption function is practically invariant except in response to personal taxation, (3) an increase in taxes will lower the consumption function considerably but by less than the addition to taxes, (4) a reduction in taxes will raise the consumption function but by considerably less than the tax reduction, (5) the planned savings of business enterprises are correlated simply and uniquely with income payments, (6) monopolistic practices of business firms can safely be neglected, (7) private investment will not be influenced appreciably by the character of the fiscal policy pursued by government. Although assumptions such as these may be extremely helpful at a stage in our thinking about an exceedingly complicated problem, it seems plain that the inferences to which they lead cannot be regarded as a scientific guide to governmental policies.

## III Issues of Fact Raised by the Keynesian Doctrine

During the last decade the world has moved swiftly in a Keynesian direction. Keynes' *General Theory* crystallized the despondency of the 'thirties and gave it brilliant intellectual expression. Then came the war, and with it unprecedented government expenditures. The public debt followed suit; but the curse of unemployment was lifted. This experience has convinced many that democratic governments can, if they only have the will, readily subdue business depressions. While the war was still raging, the British government made the epoch-making announcement that it deemed the maintenance of a stable and high level of employment a fundamental responsibility, which it would seek to discharge by varying its own rate of spending and by such other devices as may keep total national expenditure steady. Similar policies have been proclaimed in Canada and Australia. In our own country this policy is being actively debated. The immediate outcome of the controversy is uncertain; but it is reasonable to expect that the gap between our thinking and the British will narrow quickly when extensive unemployment again develops, and that at least in the near-term future we shall seek a solution within the frame-

work of an individualistic capitalism. For both reasons the need for authentic knowledge of the causes of unemployment in modern commercial nations is now greater than ever.

The problem of unemployment facing our generation calls for realistic, thorough, and unceasing investigation. The great and obvious virtue of the remedies proposed by the Keynesians is that they seek to relieve mass unemployment; their weakness is that they lean heavily on a speculative analysis of uncertain value. This weakness attaches also to my critical remarks on the theory of underemployment equilibrium. Granted that the simple determinism of Keynesian doctrine is an illusion, it does not follow that secular stagnation is another, or that the consumption function may not be sufficiently stable in experience to enable public officials to forecast reliably some consequences of their policies. These questions raise factual issues of the highest importance, which should be faced objectively: they are closely related to investigations that we have carried out in the past and to investigations that we now have under way.

In 1938, under a liberal grant from the Falk Foundation, we undertook a detailed historical study of production and employment in the United States. This investigation has pushed statistical measures of output back to 1870 or 1880 for some major industries, back to about 1900 for others. Whatever the time range covered, the leading industries of the country show notable advances, decade after decade, until we reach the 'thirties. There is nothing in this statistical record to suggest 'secular stagnation' before that fateful decade. The story appears dramatically in the statistics of manufacturing production. Output rose 58 per cent from 1899 to 1909, 41 per cent from 1909 to 1919, 64 per cent from 1919 to 1929. In the next decade these remarkable advances came to an abrupt stop; output increased a mere 3 per cent, whereas population rose 7.5 per cent.* Estimates of the flow of goods, which Kuznets and Shaw have traced back to about 1870, repeat Fabricant's story for manufacturing: substantial growth decade after decade, then virtual standstill in the 'thirties. Data on employ-

*For the sources of the figures cited in this section, see the Appendix.

ment and unemployment are less reliable and do not go back as far as data on output. But they too give no hint of stagnation until the 'thirties, when everything seemed to change: unemployment, which amounted to 1.5 million in 1929, reached nearly 9 million in 1939.

All this, of course, is generally known, as is also the chasm in economic activity between 1929 and 1937 and the valley between 1937 and 1939. The significant question raised by the 'thirties is not what happened to aggregate activity, but why economic progress suffered its severest setback of recent times. This question has evoked lively debates in which many economists have participated. One group, largely of the Keynesian persuasion, holds the view that profound changes have been occurring for some time in the dynamic factors of our economic life, but that their full impact was delayed by the outbreak of World War I and other special circumstances until the nineteen-thirties. This group stresses the declining rate of population growth, the disappearance of the frontier, and the capital-saving character of many modern technological innovations—all of which, it is argued, is tending to check investment outlets severely. Another group traces the stagnation of the 'thirties to ill-judged policies of government, particularly with respect to labor, industrial combinations, public utilities, and the public debt. A third group rationalizes the 'thirties in terms of a peculiar conjuncture of short and long cycles, or in terms of a haphazard succession of business cycles. Each group has defended its position with persuasive logic and reassuring statistics, but no one has as yet presented an interpretation of the 'thirties that weighs carefully and dispassionately the many conflicting pieces of evidence.

That is by no means an easy task, as an examination of Table 1 and the fuller exhibit in the Appendix will quickly demonstrate. Stagnation—once we have learned how to use this term—may perhaps describe adequately the aggregate output and employment of the 'thirties, but it describes little else. The period was anything but stagnant, even if the violent cyclical movements are put out of sight, as they are very roughly in Table 1. It was a period of turbulence, of swift and momen-

## TABLE 1

### Conspectus of Economic Changes, United States, 1923-1939

(All figures are expressed as relatives on a 1929 base. The original figures for every year from 1923 through 1939 and sources are given in the Appendix. In some instances the relatives are computed from figures carried to more places than are shown in the Appendix.)

| Series no. | Series | *1923* | *1929* | *1937* | *1939* |
|---|---|---|---|---|---|
| | POPULATION | | | | |
| (1) | Total | 92 | 100 | 106 | 107 |
| (2) | Annual increment | 158 | 100 | 69 | 83 |
| | GROSS NATIONAL PRODUCT[a] | | | | |
| (3) | Total | 81 | 100 | 97 | 103 |
| | Consumer outlay | | | | |
| (4) | Total | 81 | 100 | 103 | 111 |
| (5) | Perishable goods | 84 | 100 | 122 | 129 |
| (6) | Semidurable goods | 83 | 100 | 84 | 95 |
| (7) | Durable goods | 75 | 100 | 83 | 80 |
| (8) | Services | 79 | 100 | 99 | 111 |
| | Gross capital formation | | | | |
| (9) | Total | 82 | 100 | 71 | 73 |
| (10) | Producer durable goods | 77 | 100 | 88 | 81 |
| (11) | Residential construction | 103 | 100 | 51 | 76 |
| (12) | Private nonresidential construction | 69 | 100 | 40 | 33 |
| (13) | Public construction | 58 | 100 | 88 | 100 |
| | LABOR FORCE[b] | | | | |
| (14) | Total | 90 | 100 | 110 | 112 |
| | Number employed | | | | |
| (15) | Total | 90 | 100 | 98 | 97 |
| (16) | Civil nonagricultural | 86 | 100 | 97 | 95 |
| (17) | Number unemployed | 175 | 100 | 485 | 590 |
| | OUTPUT AND EMPLOYMENT IN MAJOR INDUSTRIES | | | | |
| | Agriculture | | | | |
| (18) | Output | 92 | 100 | 106 | 111 |
| (19) | Number employed | 105 | 100 | 91 | 89 |
| (20) | Output per worker | 87 | 100 | 116 | 124 |
| | Coal mining | | | | |
| (21) | Output | 111 | 100 | 80 | 73 |
| (22) | Number employed | 132 | 100 | 90 | 82 |
| (23) | Hours per worker | 88 | 100 | 76 | 70 |
| (24) | Output per man-hour | 96 | 100 | 116 | 126 |
| | Manufacturing | | | | |
| (25) | Output | 77 | 100 | 103 | 103 |
| (26) | Number employed | 98 | 100 | 102 | 94 |
| (27) | Hours per worker | 104 | 100 | 84 | 82 |
| (28) | Output per man-hour | 76 | 100 | 121 | 133 |
| | Steam railroads | | | | |
| (29) | Output | 98 | 100 | 81 | 75 |
| (30) | Number employed | 112 | 100 | 68 | 60 |
| (31) | Hours per worker | 103 | 100 | 94 | 94 |
| (32) | Output per man-hour | 85 | 100 | 127 | 132 |
| | Electric light and power | | | | |
| (33) | Output | 50 | 100 | 136 | 152 |
| (34) | Number employed | 67 | 100 | 96 | 93 |
| (35) | Hours per worker | 98 | 100 | 86 | 85 |
| (36) | Output per man-hour | 72 | 100 | 164 | 192 |

TABLE 1 (cont.)

| Series no. | Series | 1923 | 1929 | 1937 | 1939 |
|---|---|---|---|---|---|
| | INCOME OF INDIVIDUALS | | | | |
| | Income payments | | | | |
| (37) | Total | 82 | 100 | 86 | 85 |
| (38) | Wages and salaries | 83 | 100 | 91 | 90 |
| (39) | Entrepreneurial withdrawals | 84 | 100 | 84 | 85 |
| (40) | Dividends, interest, and rent | 79 | 100 | 73 | 69 |
| | Relative share going to highest | | | | |
| (41) | 1% of income recipients | 85 | 100 | 90 | 82 |
| (42) | 5% of income recipients | 88 | 100 | 92 | 90 |
| | Net income after federal income tax, for incomes of | | | | |
| (43) | $ 5,000 | 99 | 100 | 99 | 99 |
| (44) | 10,000 | 97 | 100 | 97 | 97 |
| (45) | 25,000 | 96 | 100 | 94 | 94 |
| (46) | 100,000 | 91 | 100 | 80 | 80 |
| (47) | 500,000 | 78 | 100 | 50 | 50 |
| (48) | 1,000,000 | 76 | 100 | 42 | 42 |
| | LABOR MARKET | | | | |
| | Average hourly earnings | | | | |
| (49) | Manufacturing | 92 | 100 | 110 | 112 |
| (50) | Coal mining | 116 | 100 | 120 | 125 |
| (51) | Steam railroads | 92 | 100 | 106 | 112 |
| | Average daily wage | | | | |
| (52) | Farm laborers | 100 | 100 | 72 | 69 |
| (53) | Trade union membership | 106 | 100 | 195 | 239 |
| (54) | Number of workers on strike | 262 | 100 | 644 | 405 |
| | COMMODITY PRICES | | | | |
| | Wholesale | | | | |
| (55) | 'All' commodities | 106 | 100 | 91 | 81 |
| (56) | Raw materials | 101 | 100 | 87 | 72 |
| (57) | Semi-manufactured goods | 126 | 100 | 91 | 82 |
| (58) | Finished goods | 105 | 100 | 92 | 85 |
| (59) | Building materials | 114 | 100 | 100 | 95 |
| (60) | Business capital goods | 104 | 100 | 99 | 99 |
| (61) | Cost of living | 100 | 100 | 84 | 81 |
| | STATUS OF CORPORATIONS | | | | |
| (62) | Number active | 78 | 100 | 99 | 97 |
| (63) | New incorporations | ... | 100 | 63 | 57 |
| | Profits | | | | |
| (64) | Total | 62 | 100 | 48 | 62 |
| (65) | Dividends paid | 61 | 100 | 82 | 67 |
| (66) | Income retained | 65 | 100 | —93 | 43 |
| (67) | Depreciation and depletion | 61 | 100 | . 85 | 86 |
| | SECURITIES MARKET | | | | |
| | Prices of common stocks | | | | |
| (68) | 'All' | 36 | 100 | 58 | 47 |
| (69) | Industrial | 35 | 100 | 69 | 55 |
| (70) | Public utility | 31 | 100 | 40 | 36 |
| (71) | Railroad | 49 | 100 | 33 | 19 |
| (72) | Shares traded | 21 | 100 | 36 | 23 |
| (73) | Corporate security issues | 32 | 100 | 24 | 22 |

TABLE 1 (concl.)

| Series no. | Series | 1923 | 1929 | 1937 | 1939 |
|---|---|---|---|---|---|
| | INTEREST RATES | | | | |
| (74) | Commercial paper rate | 86 | 100 | 16 | 12 |
| | Customers' rate | | | | |
| (75) | New York City | 88 | 100 | 41 | 39[c] |
| (76) | Southern and western cities | 97 | 100 | 68 | 67[c] |
| (77) | Spread: (76)–(75) | 288 | 100 | 669 | 685[c] |
| | Corporate bond yields | | | | |
| (78) | Moody's *Aaa* bonds | 108 | 100 | 69 | 64 |
| (79) | Moody's *Baa* bonds | 123 | 100 | 85 | 84 |
| (80) | Spread: (79)–(78) | 181 | 100 | 151 | 167 |
| | SUPPLY AND TURNOVER OF MONEY | | | | |
| (81) | Currency in public circulation | 103 | 100 | 155 | 168 |
| (82) | Deposits | 75 | 100 | 99 | 106 |
| (83) | Turnover of deposits | 70 | 100 | 54 | 45 |
| | Bank debits | | | | |
| (84) | Total | 54 | 100 | 51 | 46 |
| (85) | New York City | 39 | 100 | 33 | 28 |
| (86) | Outside New York City | 72 | 100 | 74 | 69 |
| | FOREIGN TRADE | | | | |
| (87) | Imports | 86 | 100 | 70 | 53 |
| (88) | Exports | 80 | 100 | 64 | 61 |
| | FEDERAL FINANCE | | | | |
| (89) | Receipts[b] | 97 | 100 | 141 | 120 |
| (90) | Expenditures[b] | 97 | 100 | 242 | 277 |
| (91) | Total debt | 132 | 100 | 211 | 238 |

a Adjusted for changes in prices.
b Relatives for 1923 are not strictly comparable with those for 1937 and 1939. See Appendix.
c Computed from data for 1938. See Appendix, notes (75)-(76).

tous change in nearly every department of economic life. Let us stand back in 1929 and look ten years forward in our table. What do we see? A growth in population but a drop in the rate of growth; some decline in the number of active corporations and a severe slump in the formation of new ones; consumer outlay in constant prices up 11 per cent, gross capital formation down 27 per cent; consumer outlay on perishable goods up 29 per cent, on durable goods down 20 per cent; public construction unchanged, residential construction down 24 per cent, business construction down 67 per cent; the flow of income payments reduced but the inequality of personal incomes apparently lessened; technological progress making rapid strides over a wide range of industries; the cost of living down 19 per cent, the average hourly earnings of factory workers up 12 per cent, their hours worked per week down 18 per cent, and

the number of them employed down 6 per cent; a still greater improvement in the real hourly earnings of coal miners but not in their employment; a sharp deterioration of farm wages; a vast growth of trade unionism and industrial strife; wholesale commodity prices in general down 19 per cent, but prices of 'finished' products down only 15 per cent, of building materials 5 per cent, and of business capital goods 1 per cent; corporate profits much reduced and new security issues down to a trickle; the stock market in a bad slump, particularly the prices of railroad and public utility stocks; interest rates on the highest grade loans sharply down but the spread among different types of interest rates very much widened; bank deposits up 6 per cent but their rate of turnover much reduced; currency in the hands of individuals and firms up 68 per cent; foreign trade a shadow of its former self; the federal income tax pressing much harder, especially on the upper brackets, yet the federal debt sharply up; the output of agriculture up 11 per cent, of coal down 27 per cent, of manufacturing up 3 per cent, of railroads down 25 per cent, of electric light and power up 52 per cent.

This bare recital might be elaborated to advantage, and a contrast drawn between the 'new era' of the 'twenties and the 'stagnation' of the 'thirties—both being represented in our table. But the recital suffices for my present purpose, which is merely to show that for a period as complicated and turbulent as the 'thirties it is not difficult to find particular facts that agreeably support any one of several simple hypotheses. To some extent that is always a danger in historical interpretation, and the only real safeguard against it is thorough scholarship. For some time we have planned a volume that would sum up and interpret the massive information developed in our studies of production, employment, and productivity. The most important problem to be faced in that final volume is the setback to economic progress in the 'thirties: whether that decade defines a new trend of stagnation or a passing historical episode. To serve this purpose it will be necessary to cover the secular changes in the output and employment of American industry at least since the Civil War. Also, the depression of

the 'thirties should be compared with the severe depressions that followed the crises of 1837, 1873, and 1893, and some analysis of foreign experience made. The investigation will start from our findings on employment and production, and as it proceeds draw heavily on results reached in our historical studies of national income, agriculture, transportation, construction, mechanization, trade unionism, migration, wages, prices, interest rates, security markets and banking. Doubtless, a great deal of new and difficult research will still be necessary, especially in connection with foreign countries and the period before 1900 in this country. But an objective interpretation of the 'thirties is of vital significance; and if our resources prove adequate, we should not be deterred by the prospect that the capstone of our studies in production and employment may develop into a series of monographs instead of a single volume.

A study that comes to grips with the doctrine of secular stagnation must deal not only with the hypothesis of declining or inadequate investment opportunity, but also with the second main pillar of the Keynesian edifice—namely, the assumption that the consumption function is highly stable. This assumption raises important questions of economic fact, quite apart from its bearing on the stagnation thesis. A tentative exploration of the existing statistics indicates that the consumer outlay corresponding to a national income of a given size varies appreciably with the month of the year, the stage of the business cycle, and with time generally; in other words, that the consumption function is subject to seasonal, cyclical, and secular shifts. Furthermore, random shifts seem so considerable in any one group of statistics, and to differ so much from one group to another, that our ability to forecast what increment of consumer outlay will accompany a specified increment of income, to say nothing of a specified increment of governmental loan expenditure, is as yet very limited. These results should be tested, converted into quantitative statements if possible, and pushed in a constructive direction; in other words, a statistical test of the Keynesian assumption concerning the relative stability of the consumption function should become an incident in a positive analysis of the influences that play on consumer spending over

time. Numerous studies already made by the National Bureau or now in process will contribute materially to this undertaking —especially the investigation by Ruth Mack of the shoe market and other aspects of the purchasing and prices of consumer goods, the studies on national income and consumer outlay by Kuznets, Shaw and Barger, on consumer debt by the Financial Research Program, on capital gains and losses by Seltzer, and on the inequality of personal incomes by Friedman, Kuznets and Mendershausen.

The study of consumer spending links up with the study of secular stagnation when interest turns to the secular shifts in the spending-savings pattern. Common observation and some existing statistics suggest that, for the population as a whole, thrift has been declining over the decades in the sense that the average saving at a given level of family income has been shrinking. If such a trend has continued into the present, there is less reason to fear secular stagnation than if the trend has been arrested. The data necessary to develop adequately the secular aspects of consumption and saving will not be easy to find or to interpret when found, but the importance of the question may justify our taking the risk.

## IV The Need for Tested Knowledge of Business Cycles

The investigations I have sketched deal with certain of the institutional assumptions of the Keynesian economists. If these investigations prosper they should help materially to clarify public thinking about the problem of maintaining a stable and high level of employment in the years ahead. But these investigations cannot be more than pieces in the solution of the great puzzle of business cycles.

From its inception the National Bureau recognized the need of thorough study of economic fluctuations. A program of research in business cycles was authorized by the Executive Committee in 1921, and has led to substantial publications on different aspects of the subject by King, Thorp, Jerome, Mitchell, Wolman, Macaulay, Clark, Schmidt, Gayer, Mills, and Haberler. A volume on *Measuring Business Cycles* will be off

the press in a matter of weeks, and other reports will follow shortly. Not a few of our studies abound in subtle theoretical analysis, but they stress especially those observable phenomena of cyclical behavior which in common parlance pass as 'facts'. This feature of our work reflects a cool scientific judgment: viz., if business cycles are to be explained reliably, we should have precise and tested knowledge of what the business cycles of actual life have been like. Unless such knowledge is attained, any explanation is bound to bear an uncertain relation to the experiences we seek to understand or to guard against.

The consequences that may flow from a disregard of this elementary precaution are exemplified in Keynes' sketch of business cycles at the end of his long treatise on underemployment equilibrium. Keynes starts by saying that a theory of business cycles should account for a certain regularity in the duration and sequence of cyclical phases—that the duration of contractions, for example, is about three to five years. Second, the theory should account for the sharp and sudden transition from expansion to contraction, in contrast to the gradual and hesitant shift from contraction to expansion. These starting points for a theoretical inquiry suggest preocupation with a single dramatic case—the collapse from 1929 to 1933. In the United States at least, business-cycle contractions have not run typically from three to five years; the typical duration is much shorter. Nor is there any such systematic difference between the upper and lower turning points as Keynes supposes. The upturn of 1933 in this country conforms to his rule, the upturns of 1924 and 1938 do not, nor do the downturns of 1926 and 1937—to mention only a few recent cases. Since Keynes works with an artificially simplified business cycle, it is not surprising that his explanation collides with the facts of experience. His theory is that a collapse of investment brings prosperity to a close; that this in turn is caused by a collapse of confidence regarding the profitability of durable assets; and that the contraction which follows is bound to last, say, three to five years, since recovery is possible only after stocks have been worked off, and more important still, after the 'fixed' capital of business firms has been reduced sufficiently

to restore its profitability. But can this theory be easily reconciled with the fact that orders for machinery, orders for other durable equipment, and contracts for different categories of construction often reach cyclical maxima at widely scattered dates? Or with the fact that even a sharp decline in investment orders is ordinarily converted into a fairly gradual decline in investment expenditure, which moreover starts several months later? Or with the fact that the stock of durable goods in a growing country is virtually free from any trace of business cycles, increasing as a rule during contractions of business activity as well as during expansions?

Keynes' adventure in business cycle theory is by no means exceptional. My reason for singling it out is merely that the *General Theory* has become for many, contrary to Keynes' own wishes, a sourcebook of established knowledge. Fanciful ideas about business cycles are widely entertained both by men of affairs and by academic economists. That is inevitable as long as the problem is attacked on a speculative level, or if statistics serve merely as a casual check on speculation. To develop a reliable picture of the business cycles of actual life it is necessary to study with fine discrimination the historical records of numerous economic activities—not merely investment, or employment, or public finances, or banking operations, but all these and many others. Statistical data, preferably by months or quarters, must be marshalled with care; wherever possible these records must be pushed back well into the nineteenth century, checks on each series must be devised, contradictions among series sifted, new data developed and old data recombined as needed, the relation of each series to the process it purports to represent investigated, and a scientific method for measuring the cyclical features of time series developed. Work on this plan is costly and time-consuming; it means much turning back, revising, rethinking, redoing; it often leads to disappointments and taxes patience. But there is no reliable shortcut to tested knowledge. Public thinking about business cycles can be confused by hurried and ill-digested statistical inquiries, no less than by speculative excursions from the dreamland of equilibrium or from the caprices of common sense.

It is tempting for statistical investigators, as it is for speculative writers, to analyze business cycles on the basis of comprehensive aggregates. But although broad index numbers or aggregates give useful summaries, they tell nothing of the processes by which they are fashioned. The conception of a business cycle as a synchronous expansion of all economic activities followed by a synchronous contraction, which theorists so often hold, is not drawn from life. Expansions and contractions occur together, side by side, at every stage of the business cycle. If that fact sometimes escapes our notice, it is only because we are in the habit of watching aggregates. Pulsating movements go on steadily within the aggregates, and they often have no close relation to the cyclical tide of the aggregates. A community, an industry, an individual firm experiences a rise here and a fall there; each faces some pressure or opportunity of its own—finding an outlet for its wares, adjusting to a competitor's improved technology, financing an expansion of output, replacing an exhausted source of raw materials, starting a new business, converting to a new kind of production, adjusting to new governmental regulations, and so on. These divergencies in economic fortune are no less important for the understanding of business cycles than is the dominance of expansion during some periods and of contraction during others.

The character of the employment problem is not brought out adequately by existing statistics, and it will not be until statistical agencies publish three figures instead of one for each industry and all industries combined; that is, the number of employees in 'firms' experiencing a rise in employment, the number in 'firms' experiencing a decline in employment, as well as the total number employed. A rough equivalent of this type of information, however, is the breakdown of some aggregate figure, such as factory employment, into industrial components. Our Business Cycle Unit has analyzed the behavior of many of the published subdivisions as well as of the broad composites. Table 2 shows the distribution of changes in direction of 21 independent series on factory employment, from stage to stage of the four business cycles in this country from

## TABLE 2

### Directions of Change from Stage to Stage of Business Cycles Index of Factory Employment and 21 of Its Components United States, 1921-1938

| Cycle and interval | Direction of change of index of factory employment | Number of components that Rise | Fall | Show no change |
|---|---|---|---|---|
| *Cycle of Sept. 1921 to July 1924* | | | | |
| Stage I to stage II | + | 11 | 9 | 1 |
| Stage II to stage III | + | 13 | 8 | ... |
| Stage III to stage IV | + | 18 | 3 | ... |
| Stage IV to stage V | + | 16 | 4 | 1 |
| Stage V to stage VI | — | 11 | 10 | ... |
| Stage VI to stage VII | — | 3 | 18 | ... |
| Stage VII to stage VIII | — | 3 | 18 | ... |
| Stage VIII to stage IX | — | 2 | 19 | ... |
| *Cycle of July 1924 to Dec. 1927* | | | | |
| Stage I to stage II | + | 15 | 6 | ... |
| Stage II to stage III | + | 16 | 5 | ... |
| Stage III to stage IV | + | 13 | 8 | ... |
| Stage IV to stage V | + | 11 | 10 | ... |
| Stage V to stage VI | — | 9 | 12 | ... |
| Stage VI to stage VII | — | 12 | 9 | ... |
| Stage VII to stage VIII | — | 9 | 12 | ... |
| Stage VIII to stage IX | — | 5 | 16 | ... |
| *Cycle of Dec. 1927 to March 1933* | | | | |
| Stage I to stage II | + | 8 | 12 | 1 |
| Stage II to stage III | + | 11 | 10 | ... |
| Stage III to stage IV | + | 17 | 4 | ... |
| Stage IV to stage V | + | 15 | 6 | ... |
| Stage V to stage VI | — | 2 | 19 | ... |
| Stage VI to stage VII | — | ... | 21 | ... |
| Stage VII to stage VIII | — | ... | 21 | ... |
| Stage VIII to stage IX | — | 5 | 16 | ... |
| *Cycle of March 1933 to May 1938* | | | | |
| Stage I to stage II | + | 21 | ... | ... |
| Stage II to stage III | + | 19 | 2 | ... |
| Stage III to stage IV | + | 18 | 3 | ... |
| Stage IV to stage V | + | 20 | 1 | ... |
| Stage V to stage VI | — | 6 | 15 | ... |
| Stage VI to stage VII | — | ... | 21 | ... |
| Stage VII to stage VIII | — | 2 | 19 | ... |
| Stage VIII to stage IX | — | 6 | 15 | ... |
| *Average of 4 cycles, 1921-1938* | | | | |
| Stage I to stage II | + | 13.8 | 6.8 | 0.5 |
| Stage II to stage III | + | 14.8 | 6.2 | ... |
| Stage III to stage IV | + | 16.5 | 4.5 | ... |
| Stage IV to stage V | + | 15.5 | 5.2 | 0.2 |
| Stage V to stage VI | — | 7.0 | 14.0 | ... |
| Stage VI to stage VII | — | 3.8 | 17.2 | ... |
| Stage VII to stage VIII | — | 3.5 | 17.5 | ... |
| Stage VIII to stage IX | — | 4.5 | 16.5 | ... |

Stage I represents the initial trough of a business cycle, stages II-IV successive thirds of expansion, stage V the peak, stages VI-VIII successive thirds of contraction, and stage IX the terminal trough. For explanations of the chronology of business cycles and their division

*(Concluded on page 24)*

1921 to 1938. We find that expansions are imperfectly diffused during a cyclical upswing in aggregate activity, and that contractions are imperfectly diffused during a cyclical downswing. But the diffusion is much greater during a vigorous cyclical movement such as that from 1929 to 1933 than during a mild cyclical movement such as that from 1926 to 1927. There is also some tendency for the diffusion to be greater during the middle stages of a cyclical upswing or downswing in aggregate activity than during the transitional stages from one phase to the other. If our table covered 210 series instead of 21 it would doubtless show smaller diffusion throughout. That would also be true if we examined shorter periods than our stage-to-stage intervals, which is a matter of some importance in a long cyclical phase such as that of 1929-33. On the other hand, it seems likely that if the table showed the actual volume of employment gained by industries experiencing a rise and the actual volume lost by industries experiencing a decline, the diffusion would appear greater than it does in the present table. But even as the figures stand, they bring out a vital feature of business cycles. They suggest that the mere maintenance of aggregate expenditure by governmental action may give slight aid to the declining sectors of the economy just after a peak in aggregate activity has been passed; further, since no two contractions are strictly alike, a governmental policy aiming at 'full employment' will need to rely on measures that are adjusted from case to case.

The breakdown of aggregates not only helps to define the nature of the business-cycle problem; it often also gives a clue to the processes that link different business factors together. Suppose, for example, that 'investment' goes up. This may be a sign that business will soon improve materially, as when extensive new construction gets under way; or it may be a sign

*Note to Table 2 concluded:*

into stages, see A. F. Burns and W. C. Mitchell, *Measuring Business Cycles,* Ch. 4, Sec. III-V; Ch. 5, Sec. VII; and Appendix A. The employment series are indexes by the Bureau of Labor Statistics, adjusted for seasonal variations. The 21 components are the maximum number of subdivisions available in our business-cycle collection. They include flour, baking, cane sugar refining, slaughtering and meat packing, tobacco manufactures, cotton goods, silk and rayon goods, dyeing and finishing textiles, men's clothing, shirts and collars, women's clothing, millinery, leather, boots and shoes, paper and printing, iron and steel products, furniture, glass, transportation equipment, machinery, building materials. These series represent 67% of total factory employment in 1923-25.

that business will soon get worse, as when goods pile up beyond dealers' intentions. The ambiguity can be cleared up a little by examining investment in inventories apart from investment in structures and equipment. But the cyclical behavior of inventories, or of net changes in inventories, is itself a resultant of highly diverse patterns. For example, the stocks held by manufacturers tend to lag about nine months on the average at the cyclical turns in production; this lag covers up the tendency of goods in process to move synchronously with production, of raw material stocks to lag about two months at cyclical turns, and of stocks of finished manufactured staples to lag more than a year. These findings set a problem. Why, for example, is the adjustment of stocks of finished staples retarded so long? This question naturally impels an investigator to examine the behavior of production, shipments, and prices.

Again, broad composites on construction contracts and building permits show that commitments for new structures as a rule begin to decline while industrial production, employment, and national income are still expanding; further, commitments for new structures as a rule turn upward months before general business activity revives. It is tempting to suggest an explanation of the cyclical lead in terms of broad market forces. But such an explanation cannot be entertained seriously unless the cyclical leads that appear in the aggregates of construction work are repeated in minor subdivisions. To this question the statistics give, on the whole, an affirmative answer, but the breakdown also discloses systematic discrepancies in the movements of different parts of construction. For example, public and institutional projects tend to move irregularly in relation to business cycles while private projects conform closely; residential projects tend to lead industrial projects both at recoveries and recessions; contracts for new factories in industries organized into many small units seem to lead contracts of industries characterized by relatively few but large units; new railroad projects led cyclical recoveries in the eighteen-seventies and 'eighties by a substantial interval, but the lead shrank with the passage of time and has now disappeared. These and similar findings incite a realistic investigator to examine the

changing pace of new investment undertakings in relation to the circumstances peculiar to different classes of investors, as well as in relation to factors—such as the movement of national income, construction costs, interest rates, and the policies of lenders—which may be expected to influence investors generally. Further, just as the investigator must work backward from contracts to the factors that shape investment decisions, so he must work forward and analyze the timing of construction expenditures and of completed projects. As long as production periods are short, as is true of the great bulk of manufactured commodities, it is sufficient ordinarily to speak of the production of an industry during a certain month or year without specifying whether 'production' refers to the volume started, or the volume executed, or the volume completed. These distinctions can be neglected in the case of the construction industry only at the risk of confusion and error. For example, contracts for factory construction typically reach a peak about two months before general business activity turns down, but it appears that the crop of newly completed factories reaches its maximum when contraction is well under way —or just in time to intensify the competitive struggle then in process.

I have stressed the importance of breaking down aggregates because this matter, so slighted by the Keynesian economists, is a central feature of our own work on business cycles. It explains better than anything else why our investigations extend over years. Happily, we have reached a point where a substantial part of our results will soon be made available to the public. As Part Two of this report indicates in detail, several of our monographs on special topics are close to the stage of publication. Most important of all, we expect to publish this year Wesley Mitchell's progress report on *What Happens during Business Cycles*. This volume will be the first instalment of a grand synthesis of our cyclical measurements, which even in their present unfinished state cover a very wide range of economic activities. Mitchell's progress report will render obsolete his California treatise, which—although published thirty-three years ago—has remained to this day the best

theoretical account of how the economic organization of the Western world generates business cycles.

We hope that our quest of the lessons of experience will aid other students, as well as laymen who must wrestle practically with business cycles. Whether a cyclical downturn can be recognized promptly enough to permit immediate governmental intervention, whether cost-price relations are of slight consequence in the termination of a boom, whether inflationary tendencies become important only as 'full employment' is approached, whether the volume of the circulating medium rises and falls in close sympathy with aggregate activity, whether minor cycles mainly reflect inventory fluctuations, whether the volume of investment is materially affected over periods of business-cycle length by the rate of change in consumer spending—these and similar matters are, after all, not metaphysical questions. True, the most painstaking studies of experience will not always lead to conclusive answers; but they should at least narrow the margins of uncertainty, and thus furnish a better basis than now exists for dealing with grave issues of business-cycle theory and policy.

## V The Range and Continuity of the Bureau's Research Program

If I am right in believing that the Keynesian thinking of our times makes realistic investigation of business cycles more necessary than ever, we should seek to intensify our work on that subject. The obvious method of promoting this objective is to expand the Business Cycle Unit well beyond its present size, but such a policy would be shortsighted. The 'material' of speculative investigations of business cycles consists largely of concepts and models, which often have no obvious use in any other branch of economics. Realistic investigations, on the other hand, draw their material from records of experience. In such inquiries the subject of business cycles can never be put in a box by itself. Any record that makes a contribution to knowledge of how our economic organization works becomes automatically a datum in business-cycle analysis. That is clear-

ly true of records that come in the shape of time series, and is no less true of cross-section studies which indicate the order of magnitude of economic quantities.

The main reason why we are able to conduct the far-reaching studies of business fluctuations that I have sketched in this report is that throughout our history we have done basic statistical research on national income, production, employment, prices, wages, and finance. These inquiries have developed factual information of the highest importance, have stimulated work by other students, and led to improvements in the work of official agencies. Their work in turn has stimulated ours, and this process must continue. The study of national income is our oldest enterprise, and one that has proved especially useful to economists, businessmen, and public officials. Nevertheless, vital differences of concept and fact still divide estimators of national income. Employment estimates have been much improved and extended in recent years, but it is uncertain whether they can meet the strain that may soon be put on them. Measures of the cost of living and price indexes of other types still require careful attention, especially in comparisons of distant periods and different countries. We are therefore not only continuing, but expanding our work in these directions. Meanwhile we are engaged in new statistical explorations of the flow of money payments, urban real estate finance, and agricultural finance. We expect that besides making a direct contribution to knowledge, these explorations will lead to substantial improvements in current statistics.

The usefulness of our various studies extends beyond their value in business-cycle analysis. Although the issue of 'full employment' justly dominates economic thinking today, we must not allow our concern with that problem to blind us to other matters of genuine significance. Apart from the ravages of unemployment the standard of living is still appallingly low for the great masses of mankind, and different groups of society—within and across national boundaries—have special and changing problems of their own. In the years ahead we must continue to shape our research program with an eye to

these requirements for economic knowledge, as well as the problem of business cycles. We must continue to focus attention on the large issues concerning the 'production, exchange and distribution of wealth', substitute as far as possible facts for speculations, remain critical of our work, strive steadily to improve it, and cooperate with others. If our zeal and industry remain strong, we shall not fail to render a definite service to our own generation and to the generations that will come after us.

ARTHUR F. BURNS
*Director of Research*

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# APPENDIX

## A Record of Salient Economic Changes, United States, 1923-1939

| Series no. | Series | Unit | *1923* | *1924* | *1925* | *1926* | *1927* |
|---|---|---|---|---|---|---|---|
| | POPULATION | | | | | | |
| (1) | Total | Million | 111.9 | 114.1 | 115.8 | 117.4 | 119.0 |
| (2) | Annual increment | Million | 2.030 | 1.941 | 1.642 | 1.603 | 1.551 |
| | GROSS NATIONAL PRODUCT | | | | | | |
| (3) | Total | Billion 1929 $ | 78.8 | 80.3 | 82.9 | 88.5 | 89.5 |
| | Consumer outlay | | | | | | |
| (4) | Total | Billion 1929 $ | 61.9 | 66.0 | 64.9 | 70.0 | 71.7 |
| (5) | Perishable goods | Billion 1929 $ | 23.5 | 25.3 | 25.1 | 26.3 | 26.8 |
| (6) | Semidurable goods | Billion 1929 $ | 9.8 | 9.0 | 9.9 | 10.0 | 11.2 |
| (7) | Durable goods | Billion 1929 $ | 6.6 | 6.9 | 7.8 | 8.6 | 8.2 |
| (8) | Services | Billion 1929 $ | 22.0 | 24.8 | 22.0 | 25.1 | 25.5 |
| | Gross capital formation | | | | | | |
| (9) | Total | Billion 1929 $ | 16.9 | 14.2 | 18.0 | 18.6 | 17.8 |
| (10) | Producer durable goods | Billion 1929 $ | 5.8 | 5.4 | 6.0 | 6.5 | 6.1 |
| (11) | Residential construction | Billion 1929 $ | 3.8 | 4.4 | 4.8 | 4.8 | 4.5 |
| (12) | Private nonresidential construction | Billion 1929 $ | 2.9 | 3.0 | 3.4 | 4.0 | 4.1 |
| (13) | Public construction | Billion 1929 $ | 1.4 | 1.7 | 2.0 | 2.0 | 2.3 |
| | LABOR FORCE | | | | | | |
| (14a) | Total—NICB | Million | 43.8 | 44.5 | 45.0 | 46.0 | 46.9 |
| (14b) | —BLS | Million | | | | | |
| | Number employed | | | | | | |
| (15a) | Total—NICB | Million | 43.0 | 42.5 | 44.2 | 45.5 | 45.3 |
| (15b) | —BLS | Million | | | | | |
| (16a) | Civil nonagricultural—NICB | Million | 30.9 | 30.4 | 32.0 | 33.2 | 33.3 |
| (16b) | —BLS | Million | | | | | |
| (17a) | Number unemployed—NICB | Million | 0.7 | 2.0 | 0.8 | 0.5 | 1.6 |
| (17b) | —BLS | Million | | | | | |
| | OUTPUT AND EMPLOYMENT IN MAJOR INDUSTRIES | | | | | | |
| | Agriculture | | | | | | |
| (18) | Output | 1929 : 100 | 92 | 95 | 96 | 101 | 98 |
| (19) | Number employed | 1929 : 100 | 105 | 104 | 104 | 104 | 101 |
| (20) | Output per worker | 1929 : 100 | 87 | 91 | 92 | 97 | 97 |
| | Coal mining | | | | | | |
| (21) | Output | 1929 : 100 | 111 | 98 | 94 | 109 | 100 |
| (22) | Number employed | Thousand | 862 | 779 | 749 | 759 | 759 |
| (23) | Hours per worker | No. per year | 1,569 | 1,550 | 1,552 | 1,781 | 1,602 |
| (24) | Output per man-hour | 1929 : 100 | 96 | 94 | 94 | 94 | 96 |
| | Manufacturing | | | | | | |
| (25) | Output | 1899 : 100 | 280 | 266 | 298 | 316 | 317 |
| (26) | Number employed | 1899 : 100 | 183 | 170 | 175 | 179 | 175 |
| (27) | Hours per worker | No. per week | 47.3 | 45.4 | 46.3 | 46.5 | 46.3 |
| (28) | Output per man-hour | 1899 : 100 | 177 | 189 | 201 | 208 | 214 |
| | Steam railroads | | | | | | |
| (29) | Output | 1929 : 100 | 98 | 92 | 97 | 102 | 98 |
| (30) | Number employed | 1929 : 100 | 112 | 106 | 105 | 107 | 105 |
| (31) | Hours per worker | 1929 : 100 | 103 | 100 | 100 | 101 | 100 |
| (32) | Output per man-hour | 1929 : 100 | 85 | 87 | 92 | 94 | 93 |
| | Electric light and power | | | | | | |
| (33) | Output | 1929 : 100 | 50 | 55 | 64 | 74 | 82 |
| (34) | Number employed | 1929 : 100 | 67 | 72 | 74 | 83 | 86 |
| (35) | Hours per worker | No. per week | 45.6 | 45.9 | 46.1 | 44.9 | 45.8 |
| (36) | Output per man-hour | 1929 : 100 | 72 | 75 | 85 | 91 | 97 |

| 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | Series no. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120.5 | 121.8 | 123.1 | 124.0 | 124.8 | 125.6 | 126.4 | 127.3 | 128.1 | 128.8 | 129.8 | 130.9 | (1) |
| 1.366 | 1.288 | 1.135 | 0.882 | 0.770 | 0.766 | 0.836 | 0.840 | 0.788 | 0.886 | 1.028 | 1.064 | (2) |
| 90.6 | 97.1 | 90.0 | 78.7 | 65.1 | 65.6 | 72.3 | 76.9 | 87.3 | 93.8 | 90.7 | 100.2 | (3) |
| 73.2 | 76.4 | 75.7 | 68.6 | 61.2 | 61.5 | 67.2 | 67.3 | 73.5 | 79.0 | 79.7 | 85.1 | (4) |
| 26.7 | 28.0 | 27.5 | 26.2 | 25.9 | 26.9 | 28.6 | 29.6 | 32.9 | 34.2 | 34.2 | 36.1 | (5) |
| 11.2 | 11.8 | 10.6 | 10.5 | 9.5 | 8.7 | 8.7 | 9.5 | 10.2 | 9.9 | 10.0 | 11.2 | (6) |
| 8.4 | 8.8 | 6.9 | 5.7 | 4.3 | 4.2 | 4.7 | 5.9 | 7.1 | 7.3 | 5.9 | 7.0 | (7) |
| 26.9 | 27.8 | 30.6 | 26.1 | 21.6 | 21.7 | 25.2 | 22.3 | 23.3 | 27.6 | 29.6 | 30.8 | (8) |
| 17.4 | 20.7 | 14.3 | 10.2 | 3.8 | 4.2 | 5.0 | 9.6 | 13.8 | 14.8 | 11.0 | 15.1 | (9) |
| 6.5 | 7.5 | 6.1 | 4.1 | 2.5 | 2.7 | 3.4 | 4.5 | 5.7 | 6.6 | 4.7 | 6.1 | (10) |
| 4.1 | 3.7 | 2.1 | 1.9 | 1.0 | 0.7 | 0.9 | 1.4 | 1.9 | 1.9 | 2.1 | 2.8 | (11) |
| 4.1 | 4.2 | 3.7 | 2.3 | 1.3 | 0.9 | 0.9 | 1.0 | 1.4 | 1.7 | 1.3 | 1.4 | (12) |
| 2.4 | 2.4 | 2.9 | 2.9 | 2.2 | 1.4 | 1.6 | 1.6 | 2.3 | 2.1 | 2.3 | 2.4 | (13) |
| 47.9 | 48.4 | | | | | | | | | | | (14a) |
| | 48.1 | 48.7 | 49.3 | 49.8 | 50.4 | 51.0 | 51.7 | 52.3 | 52.8 | 53.5 | 54.1 | (14b) |
| 46.1 | 47.9 | | | | | | | | | | | (15a) |
| | 46.6 | 44.4 | 41.4 | 37.9 | 37.8 | 40.1 | 41.5 | 43.7 | 45.6 | 43.6 | 45.3 | (15b) |
| 34.0 | 35.8 | | | | | | | | | | | (16a) |
| | 33.3 | 31.1 | 28.0 | 24.7 | 24.7 | 27.0 | 28.0 | 30.1 | 32.1 | 30.1 | 31.6 | (16b) |
| 1.9 | 0.4 | | | | | | | | | | | (17a) |
| | 1.5 | 4.2 | 7.9 | 11.9 | 12.6 | 11.0 | 10.2 | 8.6 | 7.3 | 9.9 | 8.8 | (17b) |
| 102 | 100 | 100 | 104 | 100 | 97 | 84 | 92 | 93 | 106 | 105 | 111 | (18) |
| 101 | 100 | 98 | 98 | 96 | 95 | 93 | 95 | 93 | 91 | 90 | 89 | (19) |
| 102 | 100 | 102 | 107 | 104 | 102 | 90 | 97 | 100 | 116 | 117 | 124 | (20) |
| 96 | 100 | 89 | 74 | 60 | 63 | 70 | 70 | 80 | 80 | 65 | 73 | (21) |
| 683 | 654 | 644 | 590 | 528 | 523 | 567 | 566 | 579 | 591 | 538 | 538 | (22) |
| 1,660 | 1,780 | 1,557 | 1,347 | 1,208 | 1,369 | 1,362 | 1,304 | 1,424 | 1,360 | 1,150 | 1,254 | (23) |
| 99 | 100 | 104 | 109 | 111 | 103 | 105 | 110 | 113 | 116 | 122 | 126 | (24) |
| 332 | 364 | 311 | 262 | 197 | 228 | 252 | 301 | 353 | 376 | 295 | 374 | (25) |
| 175 | 187 | 162 | 137 | 117 | 129 | 151 | 160 | 174 | 191 | 160 | 176 | (26) |
| 46.1 | 45.7 | 43.5 | 41.7 | 38.2 | 37.8 | 34.5 | 36.5 | 39.1 | 38.6 | 35.5 | 37.6 | (27) |
| 226 | 233 | 241 | 252 | 240 | 256 | 265 | 281 | 285 | 281 | 284 | 309 | (28) |
| 98 | 100 | 86 | 69 | 52 | 55 | 60 | 63 | 76 | 81 | 66 | 75 | (29) |
| 100 | 100 | 90 | 76 | 62 | 59 | 61 | 60 | 65 | 68 | 58 | 60 | (30) |
| 100 | 100 | 96 | 92 | 87 | 87 | 90 | 91 | 94 | 94 | 93 | 94 | (31) |
| 98 | 100 | 100 | 99 | 96 | 108 | 109 | 117 | 125 | 127 | 122 | 132 | (32) |
| 90 | 100 | 104 | 102 | 93 | 93 | 99 | 108 | 123 | 136 | 137 | 152 | (33) |
| 92 | 100 | 103 | 96 | 84 | 78 | 82 | 84 | 90 | 96 | 93 | 93 | (34) |
| 45.6 | 46.6 | 47.0 | 47.1 | 44.0 | 42.0 | 38.8 | 39.3 | 40.1 | 40.3 | 39.9 | 39.6 | (35) |
| 100 | 100 | 99 | 105 | 117 | 131 | 146 | 153 | 160 | 164 | 172 | 192 | (36) |

## APPENDIX (cont.)

| Series no. | Series | Unit | 1923 | 1924 | 1925 | 1926 | 1927 |
|---|---|---|---|---|---|---|---|
| | INCOME OF INDIVIDUALS | | | | | | |
| | Income payments | | | | | | |
| (37) | Total | Billion $ | 67.9 | 69.1 | 72.0 | 75.0 | 76.1 |
| (38) | Wages and salaries | Billion $ | 43.3 | 43.3 | 45.0 | 48.0 | 48.4 |
| (39) | Entrepreneurial withdrawals | Billion $ | 11.3 | 11.9 | 12.5 | 12.5 | 12.6 |
| (40) | Dividends, interest, and rent | Billion $ | 13.2 | 13.8 | 14.5 | 14.6 | 15.1 |
| | Relative share going to highest | | | | | | |
| (41) | 1% of income recipients | Per cent | 12.3 | 12.9 | 13.7 | 13.9 | 14.4 |
| (42) | 5% of income recipients | Per cent | 22.9 | 24.3 | 25.2 | 25.2 | 26.0 |
| | Net income after federal income tax, for incomes of | | | | | | |
| (43) | $ 5,000 | Thousand $ | 4.949 | 4.974 | 4.992 | 4.992 | 4.992 |
| (44) | 10,000 | Thousand $ | 9.658 | 9.859 | 9.917 | 9.917 | 9.917 |
| (45) | 25,000 | Thousand $ | 23.13 | 23.48 | 23.87 | 23.87 | 23.87 |
| (46) | 100,000 | Thousand $ | 77.44 | 77.46 | 83.97 | 83.97 | 83.97 |
| (47) | 500,000 | Thousand $ | 304.6 | 300.5 | 384.0 | 384.0 | 384.0 |
| (48) | 1,000,000 | Thousand $ | 587.1 | 570.5 | 759.0 | 759.0 | 759.0 |
| | LABOR MARKET | | | | | | |
| | Average hourly earnings | | | | | | |
| (49) | Manufacturing | Dollar | .522 | .547 | .547 | .548 | .550 |
| (50) | Coal mining | Dollar | .832 | .826 | .810 | .801 | .774 |
| (51) | Steam railroads | Dollar | .581 | .592 | .599 | .599 | .610 |
| | Average daily wage | | | | | | |
| (52) | Farm laborers | Dollar | 2.25 | 2.29 | 2.29 | 2.31 | 2.28 |
| (53) | Trade union membership | Thousand | 3,439 | 3,364 | 3,360 | 3,338 | 3,366 |
| (54) | Number of workers on strike | Thousand | 757 | 655 | 428 | 330 | 330 |
| | COMMODITY PRICES | | | | | | |
| | Wholesale | | | | | | |
| (55) | 'All' commodities | 1926 : 100 | 100.6 | 98.1 | 103.5 | 100.0 | 95.4 |
| (56) | Raw materials | 1926 : 100 | 98.5 | 97.6 | 106.7 | 100.0 | 96.5 |
| (57) | Semi-manufactured goods | 1926 : 100 | 118.6 | 108.7 | 105.3 | 100.0 | 94.3 |
| (58) | Finished goods | 1926 : 100 | 99.2 | 96.3 | 100.6 | 100.0 | 95.0 |
| (59) | Building materials | 1926 : 100 | 108.7 | 102.3 | 101.7 | 100.0 | 94.7 |
| (60) | Business capital goods | 1929 : 100 | 103.5 | 101.4 | 99.5 | 99.4 | 99.2 |
| (61) | Cost of living | 1935-39 : 100 | 121.9 | 122.2 | 125.4 | 126.4 | 124.0 |
| | STATUS OF CORPORATIONS | | | | | | |
| (62) | Number active | Thousand | 381 | 399 | 411 | 435 | 454 |
| (63) | New incorporations | 1925 : 100 | ... | 83 | 100 | 100 | 103 |
| | Profits | | | | | | |
| (64) | Total | Billion $ | 4.7 | 4.1 | 5.1 | 6.9 | 5.5 |
| (65) | Dividends paid | Billion $ | 3.7 | 3.7 | 4.3 | 4.6 | 4.9 |
| (66) | Income retained | Billion $ | 1.0 | 0.4 | 0.8 | 2.3 | 0.6 |
| (67) | Depreciation and depletion | Billion $ | 2.4 | 2.6 | 2.8 | 3.4 | 3.4 |
| | SECURITIES MARKET | | | | | | |
| | Prices of common stocks | | | | | | |
| (68) | 'All' | 1935-39 : 100 | 72.9 | 76.9 | 94.8 | 105.6 | 124.9 |
| (69) | Industrial | 1935-39 : 100 | 60.1 | 62.9 | 79.9 | 90.3 | 107.0 |
| (70) | Public utility | 1935-39 : 100 | 86.2 | 92.1 | 110.9 | 116.9 | 135.5 |
| (71) | Railroad | 1935-39 : 100 | 190.6 | 203.5 | 237.5 | 265.1 | 315.8 |
| (72) | Shares traded | Million | 236 | 284 | 460 | 452 | 582 |
| (73) | Corporate security issues | Billion $ | 3.23 | 3.84 | 4.74 | 5.30 | 7.32 |

| 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | Series no. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 77.9 | 82.4 | 76.5 | 65.1 | 52.1 | 48.7 | 53.8 | 58.0 | 64.5 | 71.0 | 66.1 | 70.2 | (37) |
| 49.4 | 52.2 | 47.8 | 40.5 | 31.7 | 30.1 | 34.9 | 37.9 | 42.8 | 47.5 | 44.4 | 47.2 | (38) |
| 12.9 | 13.4 | 12.8 | 11.2 | 9.7 | 9.0 | 9.1 | 9.5 | 10.1 | 11.2 | 11.1 | 11.4 | (39) |
| 15.7 | 16.8 | 16.0 | 13.4 | 10.6 | 9.6 | 9.7 | 10.6 | 11.6 | 12.2 | 10.7 | 11.6 | (40) |
| 14.9 | 14.5 | 13.8 | 13.3 | 12.9 | 12.1 | 12.0 | 12.1 | 13.4 | 13.0 | 11.5 | 11.9 | (41) |
| 26.8 | 26.1 | 25.7 | 26.2 | 26.0 | 24.6 | 24.0 | 23.8 | 24.8 | 24.1 | 23.0 | 23.4 | (42) |
| 4.992 | 4.997 | 4.992 | 4.992 | 4.932 | 4.932 | 4.952 | 4.952 | 4.952 | 4.952 | 4.952 | 4.952 | (43) |
| 9.917 | 9.960 | 9.917 | 9.917 | 9.584 | 9.584 | 9.657 | 9.657 | 9.657 | 9.657 | 9.657 | 9.657 | (44) |
| 24.01 | 24.16 | 24.01 | 24.01 | 22.54 | 22.54 | 22.67 | 22.67 | 22.67 | 22.67 | 22.67 | 22.67 | (45) |
| 84.26 | 85.15 | 84.26 | 84.26 | 69.96 | 69.96 | 69.84 | 69.84 | 68.00 | 68.00 | 68.00 | 68.00 | (46) |
| 384.3 | 389.2 | 384.3 | 384.3 | 236.5 | 236.5 | 236.5 | 236.5 | 196.4 | 196.4 | 196.4 | 196.4 | (47) |
| 759.3 | 769.2 | 759.3 | 759.3 | 429.0 | 429.0 | 429.1 | 429.1 | 321.6 | 321.6 | 321.6 | 321.6 | (48) |
| .562 | .566 | .552 | .515 | .446 | .442 | .532 | .550 | .556 | .624 | .627 | .633 | (49) |
| .747 | .717 | .722 | .694 | .595 | .568 | .709 | .761 | .801 | .859 | .886 | .893 | (50) |
| .618 | .630 | .638 | .644 | .591 | .587 | .595 | .643 | .651 | .669 | .704 | .707 | (51) |
| 2.27 | 2.25 | 2.08 | 1.62 | 1.20 | 1.11 | 1.26 | 1.33 | 1.42 | 1.61 | 1.58 | 1.56 | (52) |
| 3,297 | 3,239 | 3,189 | 3,170 | 2,995 | 2,832 | 3,475 | 3,470 | 3,874 | 6,304 | 7,714 | 7,729 | (53) |
| 314 | 289 | 183 | 342 | 324 | 1,168 | 1,467 | 1,117 | 789 | 1,861 | 688 | 1,171 | (54) |
| 96.7 | 95.3 | 86.4 | 73.0 | 64.8 | 65.9 | 74.9 | 80.0 | 80.8 | 86.3 | 78.6 | 77.1 | (55) |
| 99.1 | 97.5 | 84.3 | 65.6 | 55.1 | 56.5 | 68.6 | 77.1 | 79.9 | 84.8 | 72.0 | 70.2 | (56) |
| 94.5 | 93.9 | 81.8 | 69.0 | 59.3 | 65.4 | 72.8 | 73.6 | 75.9 | 85.3 | 75.4 | 77.0 | (57) |
| 95.9 | 94.5 | 88.0 | 77.0 | 70.3 | 70.5 | 78.2 | 82.2 | 82.0 | 87.2 | 82.2 | 80.4 | (58) |
| 94.1 | 95.4 | 89.9 | 79.2 | 71.4 | 77.0 | 86.2 | 85.3 | 86.7 | 95.2 | 90.3 | 90.5 | (59) |
| 98.0 | 100.0 | 95.7 | 88.7 | 82.1 | 80.5 | 87.2 | 88.4 | 90.3 | 99.3 | 99.3 | 99.4 | (60) |
| 122.6 | 122.5 | 119.4 | 108.7 | 97.6 | 92.4 | 95.7 | 98.1 | 99.1 | 102.7 | 100.8 | 99.4 | (61) |
| 473 | 486 | 495 | 491 | 481 | 475 | 472 | 478 | 480 | 479 | 472 | 470 | (62) |
| 110 | 112 | 100 | 99 | 95 | 89 | 74 | 74 | 75 | 71 | 63 | 63 | (63) |
| 6.3 | 7.6 | 5.1 | 1.2 | —2.0 | —1.7 | —0.4 | 1.6 | 4.2 | 3.6 | 2.8 | 4.7 | (64) |
| 5.3 | 6.1 | 5.8 | 4.3 | 2.8 | 2.3 | 2.9 | 3.7 | 4.9 | 5.0 | 3.5 | 4.1 | (65) |
| 0.9 | 1.5 | —0.7 | —3.1 | —4.8 | —4.0 | —3.3 | —2.1 | —0.7 | —1.4 | —0.7 | 0.6 | (66) |
| 3.7 | 4.0 | 4.2 | 4.3 | 4.2 | 4.1 | 3.7 | 3.7 | 3.6 | 3.4 | 3.3 | 3.4 | (67) |
| 158.3 | 200.9 | 158.2 | 99.5 | 51.2 | 67.0 | 76.6 | 82.9 | 117.5 | 117.5 | 88.2 | 94.2 | (68) |
| 139.4 | 171.1 | 127.0 | 78.5 | 41.8 | 59.9 | 73.4 | 82.2 | 115.2 | 118.1 | 90.1 | 94.8 | (69) |
| 173.9 | 274.1 | 250.7 | 172.8 | 92.1 | 91.4 | 80.5 | 83.9 | 122.1 | 110.4 | 85.6 | 98.6 | (70) |
| 340.9 | 390.7 | 331.3 | 191.3 | 69.5 | 100.8 | 110.1 | 90.2 | 136.5 | 129.8 | 69.5 | 74.7 | (71) |
| 931 | 1,125 | 811 | 577 | 425 | 655 | 324 | 382 | 496 | 409 | 297 | 262 | (72) |
| 7.82 | 10.03 | 5.47 | 2.59 | 0.64 | 0.38 | 0.49 | 2.27 | 4.63 | 2.43 | 2.14 | 2.20 | (73) |

## APPENDIX (concl.)

| Series no. | Series | Unit | *1923* | *1924* | *1925* | *1926* | *1927* |
|---|---|---|---|---|---|---|---|
| | INTEREST RATES | | | | | | |
| (74) | Commercial paper rate | Per cent | 4.97 | 3.90 | 4.00 | 4.23 | 4.02 |
| | Customers' rate | | | | | | |
| (75) | New York City | Per cent | 5.19 | 4.60 | 4.47 | 4.67 | 4.53 |
| (76) | Southern and western cities | Per cent | 5.94 | 5.71 | 5.58 | 5.61 | 5.60 |
| (77) | Spread: (76)—(75) | Per cent | 0.75 | 1.11 | 1.11 | 0.94 | 1.07 |
| | Corporate bond yields | | | | | | |
| (78) | Moody's *Aaa* bonds | Per cent | 5.12 | 5.00 | 4.88 | 4.73 | 4.57 |
| (79) | Moody's *Baa* bonds | Per cent | 7.24 | 6.83 | 6.27 | 5.87 | 5.48 |
| (80) | Spread: (79)—(78) | Per cent | 2.12 | 1.83 | 1.39 | 1.14 | 0.91 |
| | SUPPLY AND TURNOVER OF MONEY | | | | | | |
| (81) | Currency in public circulation | Billion $ | 3.69 | 3.71 | 3.62 | 3.65 | 3.63 |
| (82) | Deposits | Billion $ | 38.5 | 41.0 | 44.6 | 46.7 | 48.5 |
| (83) | Turnover of deposits | No. per year | 20.8 | 20.7 | 21.7 | 22.2 | 23.4 |
| | Bank debits | | | | | | |
| (84) | Total | Billion $ | 685 | 716 | 820 | 872 | 952 |
| (85) | New York City | Billion $ | 281 | 312 | 369 | 400 | 463 |
| (86) | Outside New York City | Billion $ | 404 | 404 | 451 | 472 | 489 |
| | FOREIGN TRADE | | | | | | |
| (87) | Imports | Billion $ | 3.79 | 3.61 | 4.23 | 4.43 | 4.18 |
| (88) | Exports | Billion $ | 4.17 | 4.59 | 4.91 | 4.81 | 4.87 |
| | FEDERAL FINANCE | | | | | | |
| (89) | Receipts | Billion $ | 4.11 | 3.91 | 3.82 | 4.09 | 4.09 |
| (90) | Expenditures | Billion $ | 3.25 | 2.97 | 3.09 | 3.01 | 3.00 |
| (91) | Total debt | Billion $ | 22.4 | 21.4 | 20.7 | 19.8 | 18.7 |

### NOTES ON SERIES

(1). July 1 estimates for continental United States, by the Bureau of the Census. Based on statistics of births, deaths, civilian immigration and emigration, in conjunction with the decennial census. *Statistical Abstract of the United States, 1943,* p. 3.

(2). Year-to-year differences computed from series (1) before rounding, centered by a two-year moving average.

(3)-(13). In 1929 prices. Simon Kuznets, *National Product since 1869* (National Bureau, in press), Part I. In the breakdown of gross capital formation presented in our table two components are omitted: net changes in inventories, and net changes in claims against foreign countries.

(14a). National Industrial Conference Board, *The Management Almanac, 1945,* pp. 18, 27. (Employment plus unemployment.)

(14b). U. S. Bureau of Labor Statistics, *Technical Memorandum No. 20,* July 4, 1945, Table 1.

(15a). Includes armed forces. Source same as (14a).

(15b). Includes armed forces. Source same as (14b).

(16a). Omits employment in agriculture, armed forces, and public employees in service industries. Public employees classified in other industries are included. Computed from data by the National Industrial Conference Board, given in part in the above source, p. 18.

| 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | Series no. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.84 | 5.78 | 3.55 | 2.63 | 2.72 | 1.67 | 0.88 | 0.75 | 0.75 | 0.94 | 0.86 | 0.72 | (74) |
| 5.15 | 5.88 | 4.68 | 4.22 | 4.49 | 4.02 | 3.33 | 2.70 | 2.49 | 2.43 | 2.32 | ... | (75) |
| 5.70 | 6.14 | 5.72 | 5.39 | 5.62 | 5.56 | 5.17 | 4.69 | 4.34 | 4.17 | 4.10 | ... | (76) |
| 0.55 | 0.26 | 1.04 | 1.17 | 1.13 | 1.54 | 1.84 | 1.99 | 1.85 | 1.74 | 1.78 | ... | (77) |
| 4.55 | 4.73 | 4.55 | 4.58 | 5.01 | 4.49 | 4.00 | 3.60 | 3.24 | 3.26 | 3.19 | 3.01 | (78) |
| 5.48 | 5.90 | 5.90 | 7.62 | 9.30 | 7.76 | 6.32 | 5.75 | 4.77 | 5.03 | 5.80 | 4.96 | (79) |
| 0.93 | 1.17 | 1.35 | 3.04 | 4.29 | 3.27 | 2.32 | 2.15 | 1.53 | 1.77 | 2.61 | 1.95 | (80) |
| 3.58 | 3.59 | 3.42 | 3.78 | 4.57 | 4.78 | 4.66 | 4.78 | 5.13 | 5.55 | 5.55 | 6.03 | (81) |
| 50.9 | 51.3 | 50.5 | 47.7 | 41.1 | 37.3 | 39.4 | 44.1 | 48.6 | 50.8 | 50.9 | 54.4 | (82) |
| 26.2 | 29.9 | 22.4 | 18.1 | 14.8 | 15.3 | 16.0 | 15.8 | 16.2 | 16.1 | 14.0 | 13.6 | (83) |
| 1,114 | 1,276 | 931 | 685 | 471 | 437 | 491 | 547 | 628 | 650 | 566 | 592 | (84) |
| 590 | 712 | 454 | 312 | 198 | 190 | 196 | 217 | 247 | 234 | 199 | 202 | (85) |
| 524 | 564 | 477 | 373 | 273 | 247 | 295 | 330 | 381 | 416 | 367 | 390 | (86) |
| 4.09 | 4.40 | 3.06 | 2.09 | 1.32 | 1.45 | 1.66 | 2.05 | 2.42 | 3.08 | 1.96 | 2.32 | (87) |
| 5.13 | 5.24 | 3.84 | 2.42 | 1.61 | 1.68 | 2.13 | 2.28 | 2.46 | 3.35 | 3.09 | 3.18 | (88) |
| 3.92 | 4.24 | 3.95 | 2.67 | 1.88 | 2.53 | 3.49 | 3.86 | 4.37 | 5.80 | 5.65 | 4.92 | (89) |
| 3.20 | 3.33 | 3.54 | 4.30 | 4.24 | 4.39 | 7.28 | 6.68 | 9.24 | 7.75 | 8.10 | 8.88 | (90) |
| 17.7 | 17.0 | 16.3 | 16.8 | 19.4 | 22.2 | 26.6 | 29.0 | 32.5 | 35.9 | 37.8 | 40.5 | (91) |

(16b). Omits employment in agriculture, armed forces, and employees of federal, state and local governments. Computed from data in U. S. Bureau of Labor Statistics, *Technical Memorandum No. 16* (July 13, 1944) and *Technical Memorandum No. 20* (July 4, 1945).

(17). Series (14) minus series (15), before rounding.

(18). Harold Barger and Hans H. Landsberg, *American Agriculture, 1899-1939* (National Bureau, 1942), p. 42.

(19). Gainfully occupied. Unpublished revisions by Solomon Fabricant of estimates prepared by Barger and Landsberg.

(20). Based on series (18) and (19).

(21). Harold Barger and Sam H. Schurr, *The Mining Industries, 1899-1939* (National Bureau, 1944), Table A-5. (Indexes for total mining, including oil and gas wells, 1923-39, are available for output but not for employment, hours, or hourly earnings. Hence series (21)-(24) and (50) are restricted to coal mining.)

(22). All employees except office workers. *Ibid.*, Table A-3, and p. 67.

(23). Based on aggregate man-hours and number employed. *Ibid.*, Table A-3.

(24). Based on series (21), (22), and (23). *Ibid.*, Table A-5.

(25). Solomon Fabricant, Labor Savings in American Industry, *Occasional Paper 23* (National Bureau, 1945), p. 46.

(26). Wage earners. *Ibid.*, p. 46.

(27). U. S. Bureau of Labor Statistics, *Bulletin No. 694* (Handbook of Labor Statistics, 1941 ed., Vol. II), p. 16.

(28). Based on series (25), (26), and (27). See Fabricant, cited above, p. 46.

(29). Weighted index of freight traffic (ton-miles) and passenger traffic (passenger-miles). Unpublished data compiled by Harold Barger and Jacob M. Gould. See Fabricant, cited above, p. 50.

(30). Wage earners and salaried employees. *Ibid.*

(31). Unpublished data compiled by Harold Barger and Jacob M. Gould.

(32). Based on series (29), (30), and (31).

(33). Estimates prepared by Jacob M. Gould for a National Bureau monograph, *Output and Productivity in the Electric and Gas Utilities, 1899-1942.* The figures for 1927-39 in our table are comparable with employment, i.e., series (34). The figures for 1923-26 are not; the indexes of output comparable with employment for successive years during this period are 47, 53, 62, 73.

(34). Wage earners and salaried employees. *Ibid.*

(35). *Ibid.*

(36). Based on series (33), (34), and (35). For 1923-26 the output figures used are those cited in the note on series (33). *Ibid.*

(37)-(40). 1923-38: Simon Kuznets, *National Income and Its Composition, 1919-1938* (National Bureau, 1941), pp. 322-3. 1939: extrapolated by use of Department of Commerce data. Series (38) includes wages, salaries, and other compensation of employees.

(41)-(42). Before federal income taxes. Estimates prepared by Simon Kuznets for a National Bureau monograph, *Some Aspects of the Distribution of Income by Size.*

(43)-(48). Computations based on income tax forms and synopses of regulations in *Statistics of Income* (U. S. Bureau of Internal Revenue), on the assumption (a) that the taxpayer is married and living with spouse, (b) that he has two dependents, (c) that he claims all family exemptions, (d) that his capital gains or losses are nil, (e) that his income from partially tax-exempt interest on government obligations is nil, (f) that his income from dividends before 1936 was taxed on the same principle as in 1936 and later, and (g) that his 'earned net income' is equal to his total net income (i.e., the $5,000, $10,000, etc., in the table) or not less than the statutory maximum earned net income, according as his total net income is smaller or larger than the statutory maximum earned net income. Total net income is net of all deductions except personal exemption and credit for dependents.

The computations refer, obviously, to hypothetical families. The assumptions used blink differences in source of income (capital gains and losses, tax-exempt income, and 'unearned income' generally), differences in family composition, differences in respect of filing joint or separate returns, and changes in these factors and in the regulations affecting them. The actual (unaudited) returns for comparable income classes as given in *Statistics of Income* indicate, first, that the hypothetical figures portray rather faithfully the major changes in the federal personal income tax structure, second, that actual taxes of the upper income brackets relatively to the low brackets are somewhat less than our computations may suggest.

(49). 1923-31: obtained directly from U. S. Bureau of Labor Statistics. 1932-39:

mimeographed releases by the Bureau of Labor Statistics, *LS44-3259* (March 1944) and *LS46-555* (September 1945).

(50). Weighted average, bituminous and anthracite coal. Computed from data in U. S. Bureau of Labor Statistics, *Bulletin No. 694,* cited above, p. 13, and *Bulletin No. 697* (Hours and Earnings in the United States, 1932-40), p. 122, using man-hour weights from Barger and Schurr, cited above, p. 312.

(51). U. S. Bureau of Labor Statistics, *Bulletin No. 694,* cited above, p. 10.

(52). Without board. U. S. Bureau of Agricultural Economics, *Farm Labor,* January 12, 1945, p. 9.

(53). Unpublished estimates for the United States by Leo Wolman. Data for 1923-34, including Canadian membership, which is roughly 4 or 5 per cent of the total, are given in Leo Wolman, *Ebb and Flow in Trade Unionism* (National Bureau, 1936), p. 16.

(54). Includes workers involved in lockouts as well as in strikes. *Monthly Labor Review,* May 1945, p. 958.

(55)-(59). U. S. Bureau of Labor Statistics indexes. *Survey of Current Business,* 1942 Supplement, p. 18.

(60). 1923-35: Solomon Fabricant, *Capital Consumption and Adjustment* (National Bureau, 1938), Table 32. 1936-39: unpublished data by Fabricant.

(61). U. S. Bureau of Labor Statistics, *Bulletin No. 699* (Changes in Cost of Living in Large Cities in the United States, 1913-41), Table 2.

(62). Active corporations, including subsidiaries, filing federal income tax returns. 1923-26: reported number active and inactive, multiplied by .896 (ratio of active to total number of corporations in 1927), multiplied by 1.066 (ratio of number active including subsidiaries to number active excluding subsidiaries in 1929). 1927-28: reported number active multiplied by 1.066. 1929-39: reported number active plus reported number of subsidiaries. U. S. Bureau of Internal Revenue, *Statistics of Income for 1940,* Part 2, pp. 282 and 305.

(63). Unpublished index based on data from 6 to 8 states (New York is one of them), compiled for a National Bureau monograph on incorporations of business enterprises, by G. Heberton Evans, Jr. Figures for New York State do not go back of 1924. Indexes for 1923 and 1924 based on 6 states excluding New York are 99 and 90, respectively.

(64)-(66). Total profits and retained income are adjusted to eliminate effects of capital gains and losses, inventory revaluations, and the use of a historical cost rather than reproduction cost basis for depreciation charges. 1923-38: Simon Kuznets, *National Income and Its Composition, 1919-1938* (National Bureau, 1941), pp. 216 and 316. 1939: estimate based on Department of Commerce data.

(67). Unpublished estimates by Simon Kuznets, based on *Statistics of Income* data, adjusted to reflect reproduction cost instead of historical cost.

(68)-(71). Standard and Poor's Corporation, *Trade and Securities Statistics: Long Term Security Price Index Record,* pp. 5-11. (The issue cited is Vol. 96, No. 9, Sec. 2 of the Corporation's publications.)

(72). Number of shares traded in round lots, as reported by the New York Stock Exchange. Successive issues of *Commercial and Financial Chronicle.*

(73). New and refunding; Canadian and foreign issues included. *Ibid.*

(74). At New York City. 1923-36: Frederick R. Macaulay, *Interest Rates, Bond Yields and Stock Prices in the United States since 1856* (National Bureau, 1938), Appendix A, Table 10. 1937-39: successive issues of the *Bank and Quotation Record.*

(75)-(76). Weighted average of prevailing rates charged by banks to their customers on commercial and other loans. 1923-29: *Banking and Monetary Statistics* (Board of Governors of the Federal Reserve System, 1943), p. 463. 1930-38: successive issues of the *Federal Reserve Bulletin.* The number of cities in the Southern and Western group is 16 in 1923-24, 25 in 1925-28, and 27 in 1929-38.

These series were discontinued in February 1939, when a new method of compiling the rates was instituted. The new series are not strictly comparable with the old. See *Banking and Monetary Statistics,* pp. 426-27. Other data suggest that there was little or no difference between the rates prevailing in 1938 and 1939.

(78)-(79). *Ibid.,* p. 468. For description of series, see *ibid.,* pp. 429-30.

(81). Annual averages derived from end-of-month figures estimated by Anna Jacobson Schwartz and Elma Oliver, National Bureau of Economic Research. The year-end figures were weighted one-half each in deriving the calendar-year averages.

(82). Annual averages derived from semi-annual call-date figures (December and June) of total demand and time deposits in all banks, reported in *ibid.,* pp. 34-35. Collection items and interbank and U. S. government deposits are excluded. The year-end figures receive a weight of one-half each in the calendar-year averages. A figure for December 29, 1922 was estimated by Anna Jacobson Schwartz.

(83). Estimated debits at all commercial banks divided by total demand and time deposits, excluding collection items and interbank deposits (but not U. S. government deposits). *Ibid.,* p. 254.

(84)-(86). Estimates for all commercial banks. Series (84): *ibid.* Series (85) supplied by the Federal Reserve Board. Series (86) is series (84) minus series (85).

(87). General imports. U. S. Bureau of Foreign and Domestic Commerce, *Foreign Commerce and Navigation of the United States for the Calendar Year 1940,* p. XII.

(88). Including reexports. *Ibid.*

(89)-(90). Calendar year totals computed from monthly data, on basis of unrevised Daily Treasury Statements. 1923-31: successive issues of the *Annual Report of the Secretary of the Treasury,* 1926-32. 1932: supplied by George C. Haas, U. S. Treasury Department. 1933-39: *Treasury Bulletin,* January 1943, March 1946. Trust accounts are included in 1931 and prior years, excluded thereafter; though the figures for expenditures for 1932 may not be precisely comparable with figures for later years. Estimates excluding trust accounts, on which to base relatives for 1937 and 1939 in Table 1, were computed for 1929 (receipts, 4115 million dollars; expenditures, 3202 million dollars). Expenditures exclude public debt retirements. Receipts are net of amounts transferred to the federal old-age and survivors insurance trust fund.

(91). Annual averages computed from end-of-month data based on revised Daily Treasury Statements, presented in successive issues of the *Annual Report of the Secretary of the Treasury,* 1936-40. The year-end figures receive a weight of one-half each in the average for a calendar year.