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Volume Title: The Behavior Of Income Shares: Selected Theoretical and Empirical Issues

Volume Author/Editor:

Volume Publisher:

Volume URL: http://www.nber.org/books/unkn64-1

Publication Date: 1964

Chapter Title: Long-Run Changes in the Distribution of Income by Factor Shares in Canada

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Chapter URL: http://www.nber.org/chapters/c1846

Chapter pages in book: (p. 189 - 286)

Long-Run Changes in the Distribution of Income by Factor Shares in Canada

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Introduction

In economic literature, there has always been a lively interest in the relative amounts of the national product (or income) accruing to the factors of production. Theoretical discussions usually distinguished three factors: land, labor and capital, with a fourth—enterprise—first hovering uneasily on the horizon and later descending to claim a coordinate and, at times, somewhat commanding position. Empirical studies, while paying appropriate respects to the theoretical distinctions, tended to become soiled quickly with the stark realities of statistical exigency, leading to the adoption of either a simplified functional classification of income into (a) labor and (b) property, occasionally separated into land and capital; or a rather institutional classification which reflected legal property relationships—most frequently, wages and salaries, net income of unincorporated business and investment income, with the latter subdivided at times into corporation profits, net rents and interest. In either case the relationship between the statistical categories and their theoretical counterparts has been rather uneasy.

In general, the main conclusion of earlier empirical work was that the shares of labor and property fluctuated around a line that tended to be horizontal. In more recent years, less of a consensus has prevailed, some studies emerging with a constant long-run ratio and others with a decided upward trend in favor of labor. More recently, too, short-term fluctuations have been receiving increasing attention. Various explanations have been brought forward for the changes, or lack of them, in the observed data but it is generally acknowledged that a completely satisfying theoretical framework for studying and explaining the observed distributions of factor incomes and changes in them is still lacking. It is, presumably, one of the objectives of further

NOTE: S. A. Goldberg and F. H. Leacy are responsible for all aspects of the paper and supplement, respectively: none of the statements made or unpublished statistics shown may be attributed to the Dominion Bureau of Statistics. The authors wish to acknowledge a deep debt of gratitude to their colleagues who have collaborated with them in the statistical work: in particular, Jenny R. Podoluk, D. H. Jones, P. S. Sunga, and E. C. West.

empirical work in this field to provide raw material for formulating eventually more effective theoretical tools in the field of income distribution. Another objective, of very recent origin, is to add ultimately to the evolving arsenal of anticipatory indicators for the purpose of detecting emerging cyclical developments in the economy.

To our knowledge no comprehensive study of the factor shares has been carried out with Canadian data and the purpose of this paper is to provide a beginning in the filling of this gap. We wish to stress the word "beginning." The central task to which we have addressed ourselves is merely to make a (reasonably comprehensive) statistical exploration of the behavior of the factor shares in Canada over a relatively long period; in the attached supplement, F. H. Leacy covers similar ground for shorter time segments. Only marginal attention could be devoted to related developments and no effort has been made to explain the observed relationships in terms of cause and effect. These narrow terms of reference, while they are in line with our interpretation of our assignment, have been imposed on us also by a growing realization that our subject matter is highly complex and somewhat amorphous, and that a realistic explanation of the observed changes would require more detailed study of related developments than it would be possible for us to make within the time at our disposal, and more penetrating insights into economic processes than we can claim.

The paper is divided into two parts, preceded by a summary statement of procedures and results. Most of the statistical material is shown in the appendix. Part I is devoted to a discussion of concepts and definitions and provides some comparisons of ratios, using a variety of definitions of income. Part II deals with long-run developments in the shares of net domestic income and its subdivisions. Main attention is devoted to the period from 1926 to date but some comparisons are made with years prior to 1926. While general reference is made to all factor incomes, detailed attention is devoted to the labor share. An institutional approach has been adopted but the two-way functional classification of income into labor and property income is briefly discussed.

Before turning to the summary, a word may be said here about terminology in order to avoid confusion: (a) the words "wages,"

"wages, salaries and supplementary labor income," and "labor income" are used to mean the same thing. Unless otherwise stated supplementary labor income is always included with the total. (b) The word "share" is used always in the sense of a percentage of a total; it is used interchangeably with the word "ratio." Thus the wage share and the wage ratio represent the same thing in our terminology. Dollar amounts accruing to individual factors are referred to as "returns" to that factor. (c) The words "domestic income" always refer to the net domestic income at factor cost. Income originating in any subdivision of domestic income (such as in a particular industry or sector) is referred to as the "product" of that industry or sector. Thus, income originating in the private business sector is called the private business product.

Summary of Procedures, Main Results and Conclusions

It was necessary at the outset to decide which definition of income and factor returns to use in the statistical compilations. Domestic income was selected as the main variant but alternative definitions are discussed and ratios based on them compared, in part because the ensuing similarities and differences in the changes of the factor shares are of some consequence, and in part as a means of emphasizing the uncertainties inherent in our subject matter.

A decision had to be made, also, regarding the procedures to employ for the purpose of summarizing the statistical results. The simple technique of comparing five-year arithmetic averages of annual ratios, of more or less comparable years, at the beginning and end of the period under consideration, is used. However, heavy reliance has been placed on charted year-to-year movements to provide a background against which to view the changes in the five-year averages.

By coincidence, the first five years (1926–30) of the official time series on the national accounts are broadly comparable with the last five years (1954–58) for which data were available in more or less final form when the work on this paper began. These periods are, therefore, used in the main comparisons.

The periods are comparable in the sense that economic activity and employment were, on the whole, at a high pitch, although there was some variation among individual years: 1926 to 1928 were years of sharp upswing, 1929 a year of high activity but

little growth and 1930 a year of decided downswing; a relatively mild pause in 1954 was followed by two years of intense growth, and two years of little (or no) growth but, on the whole, high activity. Persons without jobs and seeking work averaged 3.7 per cent of the labor force in 1926–30 and 4.5 per cent in 1954–58.

The terminal periods are, however, characterized by different price movements. The earlier period, 1926–30, is notable for the great stability that prevailed in the price level. In more recent years, by contrast, two years of price stability (1954 and 1955) were followed by pronounced upward movements in prices. These periods differ also in other respects, particularly in industrial structure and legal form of business organization; indeed, a substantial portion of Part II of the paper is devoted precisely to a discussion of these differences and to an attempt to evaluate statistically the impact of some of them on the observed changes in the factor shares. The most important of these differences are mentioned in the brief summary of the statistical results that follows.

There was a considerable rise in the wage share (some 17 per cent)[1] from 1926–30 to 1954–58, accompanied by a substantial decline in the share of net unincorporated income, both farm (—50 per cent) and nonfarm (—30 per cent). The relative importance of investment income remained fairly constant in the two periods, reflecting the net outcome of a percentage rise in the share of corporation profits, that almost matched that of salaries and wages, offset by a decline in the share of interest, rents, and other investment income.

Different definitions of income affect mainly the changes in the share of investment income and only moderately those of the other components. The four sectors contributing to domestic income—persons, general government, government business, and private business—are heterogeneous, and their contribution to production is valued differently in the national accounts. When the changes in the factor shares of the private business portion are examined separately, they appear to have been broadly similar to those of domestic income described above, although the rise in the wage ratio is moderately higher (20 per cent).

[1] The percentage figures shown in this summary refer to percentage changes in the *shares*, on the base of 1926–30. To illustrate, the wage share increased from 56.7 in 1926–30 to 66.2 in 1954–58, or by 9.5 points, amounting to nearly 17 per cent.

The percentage of wages and salaries paid out to total income originating differs among the various industries comprising the private business product. Accordingly, varying rates of growth of the constituent industries may be reflected in changes in the over-all wage ratio of the private business product. When allowance is made for this factor the remaining change in the wage ratio may be attributed to developments within industries. It appears that a large portion (roughly 60 per cent) of the observed increase in the over-all wage share of the private business product is due to interindustry shifts of the type mentioned, reflecting mainly the declining importance of the contribution of the agriculture industry to the total product.

The increase in the wage ratio that remains after the adjustments mentioned in the preceding paragraph have been made, is appreciable (roughly 7 to 8 per cent), but its meaning is hard to appraise:

a. One of the differences between the terminal periods is that the relative importance of nonfarm unincorporated business has declined, and the question naturally arises as to the extent to which the remaining increase in the wage share reflects a change in institutional practice *within* industries—a shift from unincorporated to the incorporated form of business organization. Such a shift can give rise to a lifting of the wage ratio because wages paid out are a larger fraction of income originating in incorporated business than in unincorporated business. It has not been possible to handle this problem satisfactorily in the absence of the appropriate statistics, but some rough calculations suggest that a portion of the remaining increase reflects a shift to the incorporated form of business organization.

b. The remaining rise in the wage ratio may reflect the changing composition of the labor force (within industries). This point is of added relevance in view of the fact that the increase in the wage share occurred mainly after 1946, coincident with an apparent upward drift in the relative importance of occupations involving a greater amount of training and skill.

c. The percentage of wages and salaries to sales or total income for incorporated establishments seems to decline as the size of establishment increases, so that different size distributions of establishments (within industries) in the periods being compared

may "produce" a change in the over-all wage ratio of the private business product.

Although the periods 1926–30 and 1954–58 appear to be reasonably appropriate for comparisons such as are made in this paper the question does arise whether undetected cyclical and other factors of a passing nature, peculiar to the one or the other period, may have contributed to the observed changes in the factor shares. To throw some light on this question special estimates of domestic income and wages and salaries were prepared for the years 1919 to 1925. Preliminary results of this work indicate that (a) before removal of interindustry shifts, the ratios for the domestic income of the earlier years are, on the whole, in the neighborhood of the average for 1926–30; and (b) after removal of interindustry shifts the ratios of the earlier years are, on the whole, of the same order of magnitude as the average for 1954–58. These findings make it even more doubtful that trend significance can be attached to the increase, from 1926–30 to 1954–58, in the wage ratio of the private business product (and *a fortiori* domestic income), after removal of the effect of the changing relative importance of constituent industries.

The changes in the over-all wage share after removal of the influence of interindustry shifts appear moderate in comparison with the wide variation in the changes of the ratios of the constituent industries. This relative inertness in the longer-run movements of the over-all ratios compared with the pronounced variation among those of constituent components is apparent in the industrial classes of domestic income and private business product, as well as in manufacturing. It is, of course, reasonable to expect substantial differences in the changes of the ratios among individual industries as the cyclical and other circumstances peculiar to each industry differ; and a certain amount of cancellation when the detailed parts are combined into larger aggregates. Be that as it may, the diverse behavior of the constituent parts throws considerable doubt on the adequacy of global explanations of the movements in the aggregate shares (of the economy as a whole or of the total private business product) that appeal to over-all variables, for example, of capital, labor inputs and prices.

While study of developments in individual industries and groups of industries will throw much needed light on the meaning of the movements of the aggregate ratios, and the forces underlying them,

the process of aggregation from detailed industries into larger segments should not, in our view, stop short of the economy as a whole since "everything depends on everything else." For example, the labor employed by government, even though it is not matched in the conventional national income statistics with corresponding estimates of capital service, surely competes with labor employed in the private sector. Similarly, residential capital should not be left out in a general theory. Furthermore, in view of the difficulties inherent in separating net income of unincorporated business into its components (of labor income and investment income) a general theory of the distribution of income by factor shares should attempt to handle this income component as a single entity.

I: Changes in Factor Shares on the Basis of Different Concepts and Definitions

Section 1 of this first part of our paper is devoted to a discussion of definitional and conceptual problems. The main purpose of this discussion is to indicate that, while we prefer the domestic income concept, there are some uncertainties regarding the precise delineation of aggregate income that cannot be resolved unequivocally; and further, that the composition of the constituent factor returns is rather heterogeneous, with ensuing implications as to the meaning of the observed changes in the ratios. Section 2 is designed to display the quantitative impact of various definitions on the changes in factor shares, thus providing perspective within which to view the changes described in the second part of the paper.

1. DEFINITIONS OF FACTOR SHARES: TOTAL AND COMPONENTS[2]

Just as market values can be separated into prices and quantities so can factor returns be thought of as quantities of factors (e.g. number of man-hours) multiplied by their unit prices (e.g. wage rates).[3] The total national income may be regarded simply as

[2] In writing this section we have benefited from Simon Kuznets, "Quantitative Aspects of Economic Growth of Nations: IV. Distribution of National Income by Factor Shares," *Economic Development and Cultural Change*, April 1959, Pt. II, esp. pp. 1–7.

[3] This way of looking at the matter is, of course, more difficult for investment income, and more difficult still for net unincorporated income. The phrase

the sum of factor returns arrived at in this way, and changes in the shares of factors may be thought of as reflecting changes in relative unit prices and relative amounts of factors employed in production. Complications arising from market imperfections and institutional arrangements aside, the ultimate causes of changes in the total income and the relative size of its constituent parts must be sought, of course, in changes in demand and prices for commodities and services, changes in technology, and changes in the supply and quality of the several factors of production, and in the interactions of these changes. We mention here this rather oversimplified generalization merely to provide some sort of a setting within which to view the considerations that follow.

Of more immediate concern is that the calculated size and changes of total income and its parts depend not only on the fundamental forces just mentioned but also upon the definitions employed. Naturally the definitions selected should reflect as closely as possible the fundamental forces at play, but which definitions actually come closest to achieving this is to some extent a matter of judgment, although statistical convenience necessarily plays a part in the choice.

The two most widely used definitions of the total product in studies such as this are the net national income at factor cost (to be referred to henceforth as national income), and the net domestic income at factor cost (to be referred to henceforth as domestic income). The difference between these two aggregates, it will be recalled, is that the former excludes and the latter includes payments abroad of factor income, while the former includes and the latter excludes receipts from abroad of factor incomes.[4] We have decided to use domestic income and its subdivisions as the main denominator in the calculations of part II, but in section 2, below, comparisons are made among ratios using a variety of definitions of income.

Our preference for domestic income is to some extent dictated by statistical convenience, as it is easier to handle industry and sector distributions of income on this basis. More fundamentally,

"wage rates" is used here to include not only wages and salaries but all other labor costs that are included in "wages, salaries and supplementary labor income."

[4] In the Canadian National Accounts only interest and dividends are involved. Payments to and receipts from abroad of wages and salaries, which are believed to be quite small, are not taken into account in the compilation of national income.

we prefer the domestic concept because it comes closer to a conception of income as it emanates from the point of production before the intervention of quasi-administrative decisions such as are involved in the distribution of dividends.

Likewise, our preference for the net concept, as opposed to the gross, is based on the simple view that allowances for capital consumption represent not a return *to* capital but a return *of* capital. It is, of course, true that the available (book value) depreciation figures leave a lot to be desired: a significant and varying proportion of profits may be impounded in them, depending on the extent to which the taxation incentive to shorten the lives of assets through write-offs is balanced by the tendency to undervalue capital consumption in relation to rising cost of replacement. It should be added, however, that there is some doubt as to the extent to which higher cost of replacement reflects higher prices rather than more efficient plant and equipment. If estimates of capital consumption valued at replacement cost and based on "realistic" assumptions of asset life were available, we would probably use them, and adjust profits and net unincorporated income accordingly, just as we have used the inventory valuation adjustment. In the absence of such estimates the available net figures have been used, with the proviso, however, that the significance of the changes in the resulting ratios must be appraised in the light of the uncertain composition of the depreciation data.

We must admit, however, that our preference for aggregates (and components) containing implied replacement cost depreciation (and inventories calculated on the basis of the value of physical change rather than the change of book values) results in considerable discomfort because (questions of reliability of the adjusted statistics aside) we are not sure which figures—the book values or the adjusted magnitudes—have a greater influence on the actions of entrepreneurs.

The use of net concepts is in close harmony with general practice and the requirements of theory.[5] More controversial is the treatment of interest on the public (and to a lesser extent, the consumer) debt. It would seem that this controversy stems basically

[5] The gross concept is implicitly preferred in the Canadian National Accounts; this is reflected in the fact that the tables on the industrial distribution of domestic income show only the gross figures. See *National Accounts, Income and Expenditure 1926–1956* (Dominion Bureau of Statistics, Ottawa).

from the unresolved problems of measuring adequately the output of noncommercial institutions; these problems, referred to again later, have had to be skirted in the construction of national accounts, in the absence of statistical solutions that are not at variance with common sense. The Canadian practice[6] of excluding all interest on the public debt and replacing it with an admittedly rough and incomplete estimate of imputed rents on government buildings, represents something of an act of desperation; and we have used it here in the absence of practical alternatives with greater appeal.

We have taken it for granted, so far, that incomes before taxes are the relevant magnitudes for our purposes. Yet the question may well be asked whether the typical businessman is guided by anticipated incomes before taxes or after taxes; for example, in making decisions regarding relative amounts of capital and labor to combine in production. In general, does labor respond to wages before taxes or net of taxes and other deductions in making decisions regarding alternative job opportunities or amounts of labor service to sell?

It would not be proper to take a strong position on matters about which so little is known. We are disposed to favor the before-tax figures because they appear to be more relevant in a substantially competitive economy—an economy in which all comers face the same structure of tax rates, where the quest for larger shares of markets (or the maintenance of existing ones) is an overriding consideration in making decisions, and where sheer bulk of personal and business income is a mighty prestige factor, even though the incomes may be reduced substantially by the state.

Income after taxes is really the more suitable concept in an analysis centered around the command over resources arising from the income stream, including capital transactions, in contrast with a study of income shares as they emerge from the productive process directly—the so-called "primary distribution of income."[7] A familiar variant of the former concept is disposable income, per-

[6] For a description of the Canadian practice and the reasons underlying it, see R. B. Crozier "The Treatment of Interest on the Public Debt in the National Accounts," *The Canadian Journal of Economics and Political Science,* November 1959.

[7] See, for example, Jesse Burkhead, "Changes in the Functional Distribution of Income," *Journal of the American Statistical Association,* June 1953.

sonal or business. This, however, would exclude capital gains and losses, in the absence of the appropriate information in Canada. Disposable income is more comprehensive than domestic income to the extent that it includes transfer incomes as well as those paid out in production; it is less comprehensive in that it excludes income arising in production that has not been paid out, although this exclusion is more applicable to personal disposable income than business disposable income. At any rate, the personal disposable concept, including its before-tax variant, lends itself readily to analysis of distributions of incomes by size of incomes and other characteristics of households and individuals. It should be emphasized that, despite the fact that the distribution of income by factor shares is in many ways related to the distribution of income by size of income, one cannot reach conclusions about changes in the latter from observed changes in the former without courting misleading inferences.

Various definitions of total income affect the constituent shares differently and we now turn to a more detailed consideration of the nature of the components. Each of the main headings of domestic income—salaries and wages, investment income, and net unincorporated income—is composed of heterogeneous items which, while possessing a common, unifying thread, are substantially unlike. Moreover, characteristics attributed to one class are also found, in some instances to a significant degree, in the others. Such heterogeneity is inherent in all classifications of complex phenomena and would not be serious in a study of changes in relative shares if it could be assumed that the relative importance of the characteristics remains substantially constant. Such an assumption would almost certainly be wrong, probably in proportion to the length of the time interval being considered, but to determine quantitatively the size and direction of such changes is a formidable task beyond our reach. However, the significance one attaches to the data described later is surely influenced, or should be, by the image one forms of the composition of the constituent parts and the possible changes in them, and we therefore summarize briefly several characteristics of the factor shares, purely as a reminder.

Turning first to the labor share, equated in the official statistics (and in this paper) with "wages, salaries and supplementary labor income," it should be noted that it is at once incomplete and too

comprehensive. It is incomplete in that it excludes the contribution to production of certain classes of individuals, namely unpaid family workers and working owners of unincorporated business; and, of lesser importance, certain emoluments taking the form of investment income, for example interest on pension funds. It is too comprehensive, in that it includes the return from working of all classes of paid employees, whatever their function in the organization—top executives, managers, and superintendents, as well as the whole range of skilled and unskilled clerical and manual workers. Many executive functions involve a degree of inventiveness and risk (both to the person concerned and the business) very much like the "enterprise" for which part, at least, of profits is considered the theoretical reward; and the psychological identification with the concern of the individuals fulfilling these functions resembles more that of owners than of employees.[8] Furthermore, a substantial amount of prior investment in time and money on training and education, which resembles physical capital accumulation, is clearly involved in the execution of many jobs. Although the return to this "human capital" appears in practice as an indistinguishable component of salaries and wages, it may be more properly regarded, from some points of view, as a form of investment income.

Casual observation suggests that significant changes may indeed have taken place in the occupational composition of the labor force since the end of World War I and particularly since World War II, even if the so-called "managerial revolution" is not taken into consideration.[9]

[8] In the case of closely held owner-managed corporations the distinction between salaries and investment income is even more arbitrary as it may reflect primarily the influence of tax considerations.

[9] Census information on occupational changes is difficult to interpret. However, an examination of the data between 1931 and 1951 suggests that there has been some upgrading, which may have continued at an accelerated pace since 1951. In a recent unpublished study, W. R. Dymond, Director, Economics and Research Branch, Department of Labour (Canada), comes to the following conclusion: "It is abundantly clear that the fastest growing occupations are the ones requiring relatively high levels of training and education. The professional group has been increasing most rapidly . . . . An outstanding development in the last 10 to 15 years has been the creation of a whole range of new jobs at the level between skilled trades and the professions, which may loosely be classified as technician occupations." Statistics of the annual census of manufacturing show that the ratio of "production and related workers" to total employees has been declining since the twenties and particularly since the second world war for manufacturing as a whole. The "non-production workers" include supervisors, engineers, technicians, office personnel and others but even among the "production workers" a

To the extent that market transactions are accepted as the relevant guides in the classification and valuation of factor services, it can be argued that, when labor services with more, or more up-to-date, training and education are offered on the market these are nonetheless pure and simple labor services, albeit of higher quality,[10] in the sense of being more suitable and effective to emerging technological requirements. The fact that the labor is of higher quality will be reflected in the price which market demand and supply fixes. More often than not the "upgrading" of the quality of labor will be preceded by the appearance on the scene of higher quality capital—in the same sense of being more up-to-date and effective—and the market forces will also fix the price of its services, in which the new characteristics will be reflected. It is the ratio of this new price for the services of capital to that of labor (as well as the relative quantities of each being combined in the

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greater number of trained people may be included. An examination of labor force data indicates that the percentage of nonfarm female workers in total nonfarm paid workers has risen since the end of the war. In 1947 the percentage was 25.9 and in 1958, 28.8. This rise since the war has taken place outside of manufacturing. Women command lower wage rates than men and it may therefore be thought that a rise in the proportion of women in the labor force would pull down the share of wages. This is not necessarily so, as the comparison must take into account, also, the extent to which wage rates of female workers have risen compared with those of men; it is possible that the present differential in the wage rates between men and women is smaller, on average, than it was in the late twenties or right after the war.

Census information and data on school enrollment from the Education Division (D.B.S.) indicate that there has been an increase in the number of years of schooling of the Canadian population. In 1921 the average (mean) number of years of schooling of Canadians was 9.1 years and in 1951, 10.5 years; the median years of schooling for Canadians ten years and over, not in school, is estimated at 6.9 years in 1921 compared with the Census figure of 8.25 years in 1951; the per cent of the school population, ages 5–19, in school, was 61.5 per cent in 1921 and 66.7 per cent in 1951. The 1961 Census may show an acceleration of these trends. More revealing than these global averages, perhaps, is the following table showing the percentage of the population attending school by age groups:

Age Group	*1921*	*1951*
Total 5–24	49.3	52.2
5–9	65.5	65.2
10–14	88.7	93.0
15–19	24.8	40.5
20–24	2.3	4.9

NOTE: Not including Newfoundland, Yukon, and Northwest Territories.

SOURCE: *Ninth Census of Canada, 1951*, Ottawa, 1956, Vol. X, *General Review*, Chapter XI, Table II, p. 214.

[10] R. M. Solow, "A Skeptical Note on the Constancy of Relative Shares," *The American Economic Review*, September 1958, p. 630.

new situation) that will be reflected in the relative factor shares.

While the employer may find it more relevant to regard all hired help simply as labor, though of varying quality (and no portion as capital), this is not necessarily so from the point of view of the individual concerned or that of society; and, as Kuznets pointed out,[11] it may not be the most useful way of looking at the problem for studies of economic growth. We cannot pursue this matter further here and it may suffice merely to point out that considerations such as those mentioned above add elements of vagueness to the significance of changes in the observed ratios of factor shares which are described later. We skip over other impurities in the definition of labor income[12] to a brief consideration of the other factor shares.

Investment income[13]—the return to owners of capital used in production—is also incomplete to the extent that it excludes returns to owners of property of unincorporated business concerns. Furthermore, the size and fluctuations of this return obviously depend on how capital is defined—whether consumer durables and outlays on long-run research and development, for example, are included or excluded; as well as whether or not interest on the public and consumer debt and depreciation allowances are included, as already intimated. If one is prepared to overlook the implications of the issues just raised and adopt the conventional definitions of the national accounts, the resulting *aggregate* of investment income is reasonably clear-cut; but once one starts examining its constituent parts strong ambiguities emerge: corporation profits include transfer incomes to the extent that they contain interest on the public and consumer debt; net rents appear as corporation profits when accruing to corporations but as a separate income component when accruing to individuals, and this is also true of interest; government investment income is a composite of miscellaneous receipts reduced by interest on government debt; net rents and net interest[14] contain elements of labor income (which, however, are likely to be quantitatively unimportant).

[11] Kuznets, in *Economic Development and Cultural Change*, April 1959, p. 5.

[12] To illustrate, labor income is defined in gross terms—to the extent, for example, that expenses on transportation to and from work and other expenses arising from the job are not deducted; on the other hand, certain benefits in the form of subsidized cafeterias, for example, are not added. Some part, at least, of expense accounts may also add to the real income of the recipient.

[13] This paragraph benefited from comments by T. K. Rymes.

[14] For example, when an individual manages his own estate.

To simplify our task we deal below mainly with the aggregate of investment income.

Perhaps the most difficult income component to handle satisfactorily is net income of unincorporated business. For some purposes (such as the determination of the value of parameters used in simplified production functions) this "factor share" is most conveniently regarded as a composite of two distinct shares—labor income and investment income—which ought to be separated into its parts. For other purposes, such as studying separately the behavior and development of segments of business with distinct sociological and economic characteristics, the net income should be kept intact.

There is, of course, no reason why both these purposes could not be served by appropriate arrangement of the statistical material; and the case against splitting the composite of net income of unincorporated business has to be made on other grounds. We touch on the statistical aspects of this problem later; it may suffice to indicate here that we would be as hard put to separate net unincorporated income into its theoretical components as we would be to break down, for example, corporation profits into interest, rents, "pure" profits, and so on. The entity "net unincorporated income" should perhaps be likened, not to a *mixture* of elements, but to a chemical compound in which the constituent elements have become transformed into something which is neither labor nor capital but a synthesis of both. Thus it happens, as Kuznets points out,[15] that when the return to capital of unincorporated business is estimated residually, what appears to be an unreasonably low figure is obtained; and similarly, when the return to labor is calculated in this manner. The point is that the unincorporated owner's *own* labor and the capital employed in the business may not be two independent factors whose services can be priced independently of each other or priced on the basis of market criteria relevant to other sectors of the economy.[16]

[15] See Kuznets, in *Economic Development and Cultural Change,* April 1959, pp. 26–27. It should be noted, however, that high postwar tax rates may have had some depressing influence on the size of the net income estimates, as the incentives and ability to understate taxable incomes are probably greater for this factor share than for the others. Furthermore, the estimates of a number of components of net income of incorporated business are based on poor data.

[16] The concept of substitution of capital for labor when their relative prices change is difficult to apply to the labor that the working-owner contributes to the enterprise. It is interesting to note in this connection that, despite the rapid

2. COMPARISONS OF CHANGES IN FACTOR SHARES USING VARIOUS DEFINITIONS

We now turn to a comparison of factor shares using the various definitions of income discussed above. In each case the components have been recalculated to conform to the contents of the aggregate. The ratios are shown in Table 1 for the years 1926–30 and 1954–58. In addition, accompanying charts show comparisons, for the whole period from 1926 to 1958, for selected components that were thought to be of special interest.

Turning first to a comparison of the ratios of domestic income and national income, it will be seen that the increase in the relative wage share is appreciably greater, and the decline in the share of net unincorporated income somewhat smaller, in domestic income than in national income, but the most notable difference is in regard to investment income. Whereas investment income, as a percentage of domestic income, was practically the same in the five-year periods 1926–30 and 1954–58, it shows a rather pronounced rise when adjusted to a national income concept and expressed as a percentage of national income; reflecting, of course, the influence of changes in net factor payments to foreigners.[17] In the earlier period these payments represented 5.1 per cent of domestic income but in the more recent years the percentage had fallen to 1.6 per cent. Examination of Chart 1 indicates, further, that the differences in the ratio of investment income widened during the depression of the thirties, reflecting the fact that payments of dividends and interest abroad were sustained at high levels even in the face of rapidly falling profits. In the depth of the depression net interest and dividends paid to foreigners amounted to fully 9 per cent of domestic income. During the war and postwar years, however, payments abroad became relatively less important in relation to domestic income and, as a consequence,

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mechanization on Canadian farms and the ensuing displacement of man by machines, this has not led to a displacement of the farmers' own labor—the number of hours worked on the farm by farm operators not having changed, apparently, in the postwar years. General observation suggests that, in the case of many professional people, mechanization in their offices is not accompanied by a reduction in their own labor; and that small business proprietors tend to work as hard in bad times as in good times though for different reasons.

[17] It should be noted that these figures are purely formal to the extent that the national income figures include undistributed income accruing to foreigners.

TABLE 1
COMPARISON OF CHANGES IN FACTOR SHARES USING DIFFERENT DEFINITIONS

	1926–30 (1)	1954–58 (2)	Point Change (col. 2 minus col. 1) (3)	Percentage Change (col. 3 ÷ col. 1) (4)
1. *Domestic Income*				
Wages and salaries	56.7	66.2	9.5	16.8
Investment income	20.3	20.2	− 0.1	− 0.5
Net unincorporated income	23.0	13.6	− 9.4	−40.9
Corporation profits[a]	10.6	12.2	1.6	15.1
2. *National Income*				
Wages and salaries	59.8	67.3	7.5	12.5
Investment income	16.0	18.9	2.9	18.1
Net unincorporated income	24.2	13.8	−10.4	−43.0
3. *Gross Domestic Income*				
Wages and salaries	49.8	57.3	7.5	15.1
Investment income	26.9	28.4	1.5	5.6
Net unincorporated income	23.4	14.4	− 9.0	−38.5
4. *Domestic Income plus Interest on Public and Consumer Debt*				
Wages and salaries	53.9	63.9	10.0	18.5
Investment income	24.2	22.9	− 1.3	− 5.4
Net unincorporated income	21.9	13.2	− 8.7	−39.7
5. *Domestic Income after Tax*				
Wages and salaries after tax	57.2	69.0	11.8	20.6
Corporation profits after tax[a]	10.0	7.7	− 2.3	−23.0
6. *Personal Income before Tax*				
Wages and salaries	61.3	69.9	8.6	14.0
Investment income received by persons	12.8	8.9	− 3.9	−30.5
Net unincorporated income	24.5	14.4	−10.1	−41.2

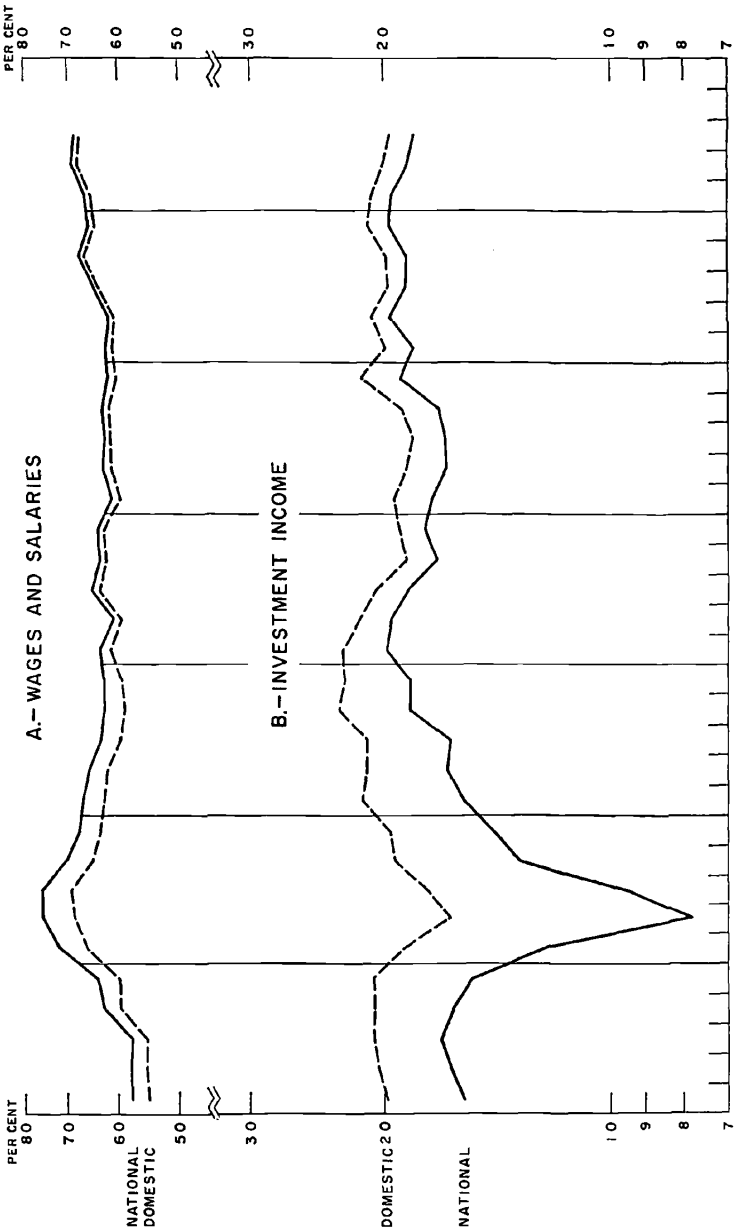
SOURCES: Personal income data (item 6) are taken from the Canadian National Accounts publications without adjustment. All other data are from Tables A-1 through A-5.

[a] These figures of corporation profits are not entirely on a domestic basis; while they exclude interest and dividends received from abroad, they include only dividends, but not interest, paid abroad by corporations.

the ratios of investment income in the two aggregates have tended to converge.

When comparisons are made between the relative factor shares of net domestic income and gross domestic income (that is, before deduction of depreciation allowances in the total and components) rather less striking differences emerge for the two terminal periods:

CHART 1
Factor Shares in Relation to National and Domestic Income



the rise in the ratio of wages and salaries and the decline in that of unincorporated business were somewhat smaller in the gross figures, while the ratio of gross investment income rose moderately. However, Chart 2 (lines 3 and 5) and Chart 3 (lines 1 and 3) indicate that the differences in the amplitude of the movements of the wage and investment income ratios were considerable. The ratio of gross investment income shows a much shallower trough in the thirties, reflecting the fact that, with only a fraction of capacity being utilized, depreciation allowances represented a larger proportion of gross profits. The curve of the gross ratio also remained flatter in the postwar years until 1950 and from 1955 on. In the latter case, this probably reflected changes in the income tax laws that encouraged companies to charge higher capital cost allowances.

Although interest on the public debt was much higher in more recent years than in the twenties it did not rise as fast as the domestic income. Accordingly, when interest on the public debt is added to investment income and aggregate income, the resulting ratio shows a moderate decline, compared with no change in the ratio of domestic income. This decline is dampened somewhat by the inclusion, in the figures of Table 1, of interest on consumer debt which had risen more sharply than domestic income in the postwar years. However, the weight of interest on consumer debt was not great enough to alter appreciably the general picture.[18] Chart 3 (lines 2 and 3) shows, further, that the amplitude of the movements of the two income variants has been appreciably different. In particular, in the early thirties, the cyclical trough of the investment income ratio disappears with interest on the public debt included, reflecting a moderate depression-induced swelling of the public debt during these years, in contrast with rapidly shrinking profits.

Turning to the before-tax and after-tax comparisons, it will be seen that from 1926–30 to 1954–58, the wage ratio rose considerably more after exclusion of taxes than in the before-tax calculations. As might be expected, the opposite is true for corporation profits: while corporation profits before tax, as a percentage of domestic income, rose from 10.6 to 12.2, or by some 15 per cent, the after-tax ratios declined from 10.0 to 7.7, or

[18] Similarly net imputed rent on government buildings has *not* been deducted but exclusion of rents would not alter the ratios perceptibly.

CHART 2
Wages and Salaries in Aggregate Income, Various Concepts

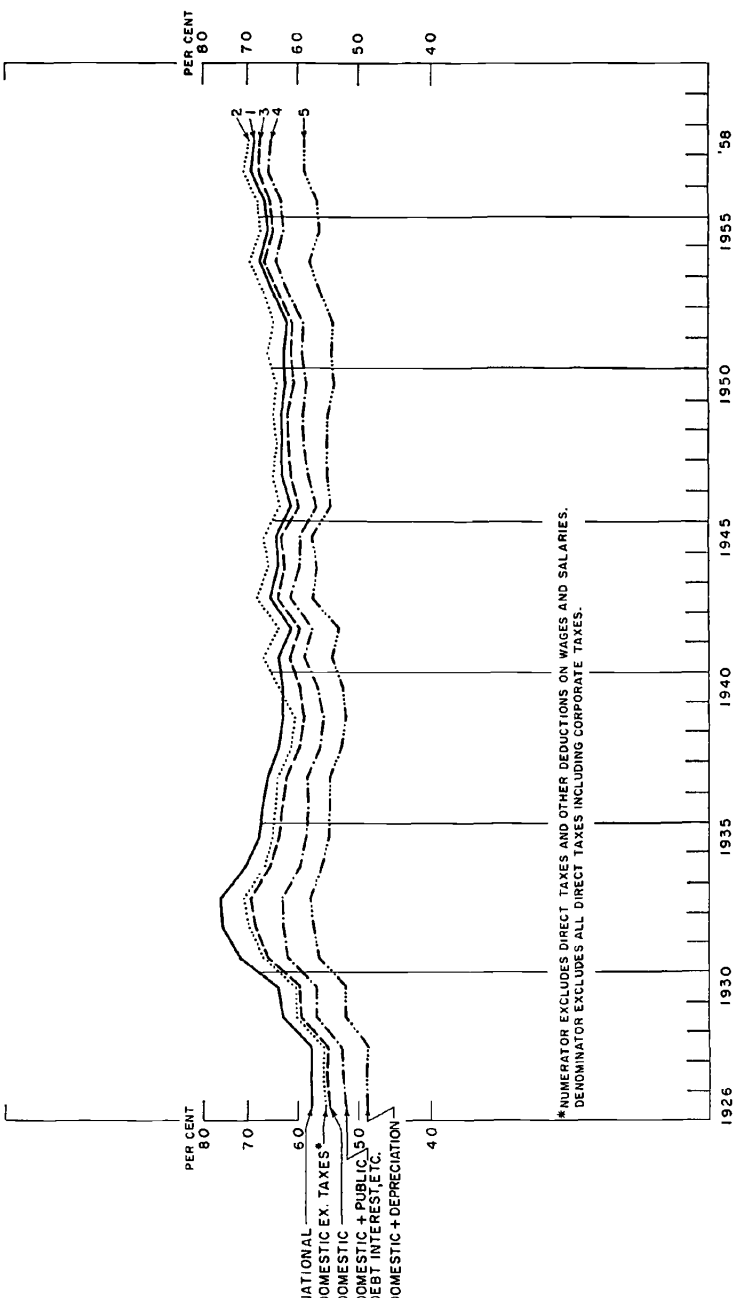
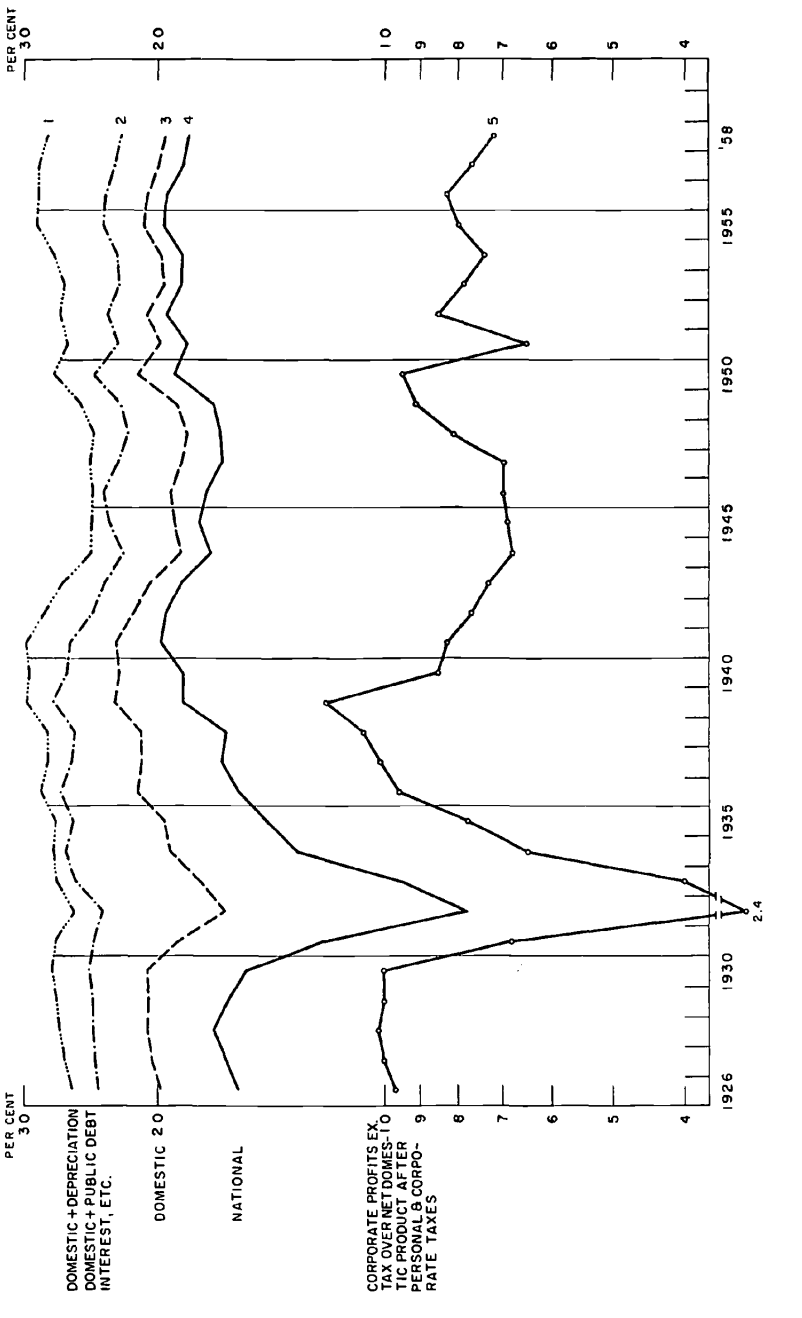


CHART 3

Investment Income in Aggregate Income, Various Concepts



by 23 per cent.[19] Chart 2 (lines 2 and 3) shows that the spread in the wage ratios before and after taxes fluctuated within a narrow band until 1939; between 1939 and 1940 the band widened abruptly and remained wider, with some variations, until 1952, at which time, it tended to narrow. The widening between 1939 and 1940 was caused by a jump in corporate tax rates which resulted in an increase in corporation income tax from 18.4 per cent of profits in 1939 to 44.4 per cent in 1940. Taxes and other deductions accounted for 2.9 per cent of wages in 1940, practically unchanged from the previous year, and although this percentage rose to nearly 9 per cent in 1942, taxes on profits and other incomes also rose.

In summary, Table 1 and the charts suggest that while the relative factor shares calculated on the basis of different definitions exhibit striking similarities in general behavior, they also show some notable differences. In the longer-term comparison from 1926–30 to 1954–58, a considerable increase is shown for the wage ratio and a substantial decline for the ratio of net unincorporated income, no matter what definition is used. On the other hand, the situation is rather more indeterminate in regard to the longer-run changes and fluctuations of the ratio of investment income.

II: Longer-Run Changes in Factor Shares of Domestic Income and Its Subdivisons

In what follows we concentrate attention on domestic income and its subdivisions but, as we shall see, it is difficult to arrive at unequivocal conclusions even within the restricted framework of a single definition of total output.

We begin (Section 1) with an examination of the changes in the factor shares in the two terminal periods 1926–30 and 1954–58, leading up to the question of the extent to which certain structural and institutional changes in the economy may be reflected in the observed rise of the wage ratio. Section 2 is devoted to a discussion of the influence on factor shares of changes in the relative importance of the four sectors of the economy—persons, general

[19] Only wages and salaries and corporation profits are included in these comparisons because it has not been possible to separate other direct taxes between those falling on net unincorporated income, on the one hand, and on investment income received by persons on the other. Employer and employee contributions to social insurance and government pension plans have been included with taxes on wages.

government, government business and private business. This analysis leads to the somewhat surprising conclusion (Section 3) that, on balance, the influence of these changes has been rather small, so that the behaviour of the private business product is shown to be substantially similar to that of the total domestic income.

Changes in the relative importance of the various industries comprising the private business product are next considered (Section 4). The impact of these changes on the longer-run movements of the wage ratio has been substantial, reflecting mainly the decline of the relative importance of agriculture which, being almost wholly unincorporated, is characterized by a very small wage ratio. The point emerges, incidentally, that the movements of the wage ratios in the various industrial groups have been very different.

A more detailed examination of the factor shares of the nonfarm private business product is made in Section 5. The discussion focuses attention on the extent to which the observed increases in the standardized wage ratios may reflect the declining importance of net income of unincorporated business within industries. The reasons for the decision not to split net unincorporated income between wages and investment income are specified.

Attention is then turned (Section 6) to the question of whether a more detailed standardization for changing industry weights than was made in Section 4 would affect the changes in the wage ratios significantly. To answer this question detailed data on the census of manufacturing are used; the general conclusion is that more detailed standardization would not affect the over-all results significantly, in manufacturing at least. The manufacturing data emphasize again that the relatively moderate increase in the wage ratios of the total represents compensating results of rather substantial diverse movements in the parts.

A brief discussion then follows (Section 7) on the possible influence of changes in size of establishment on the wage ratio. Section 8 displays some tabular material for the years prior to 1926 that throws further doubt on the trend significance of the increases in the wage ratios for the period from 1926 to 1958.

1. CHANGES IN FACTOR SHARES OF DOMESTIC INCOME

It has been shown above that the wage ratio in total domestic income rose from an average of 56. 7 for the five-year period 1926–30 to an average of 66.2 for the years 1954–58, or by 9.5 points

representing 16.8 per cent. Accompanying this pronounced rise was a drastic reduction in the relative position of net farm unincorporated income to approximately one-half of the 11 points which it had represented in the earlier period; and a lesser, but nevertheless substantial, reduction of net income of nonfarm unincorporated business from 12 to 8.3 points. As already noted, the ratio of investment income remained substantially at the same level in the two periods.[20]

Reference to the preceding charts and Chart 4, below, indicates that the changes summarized in Table 2 have been accompanied

TABLE 2
CHANGES IN FACTOR SHARES OF DOMESTIC INCOME, 1926–30 TO 1954–58

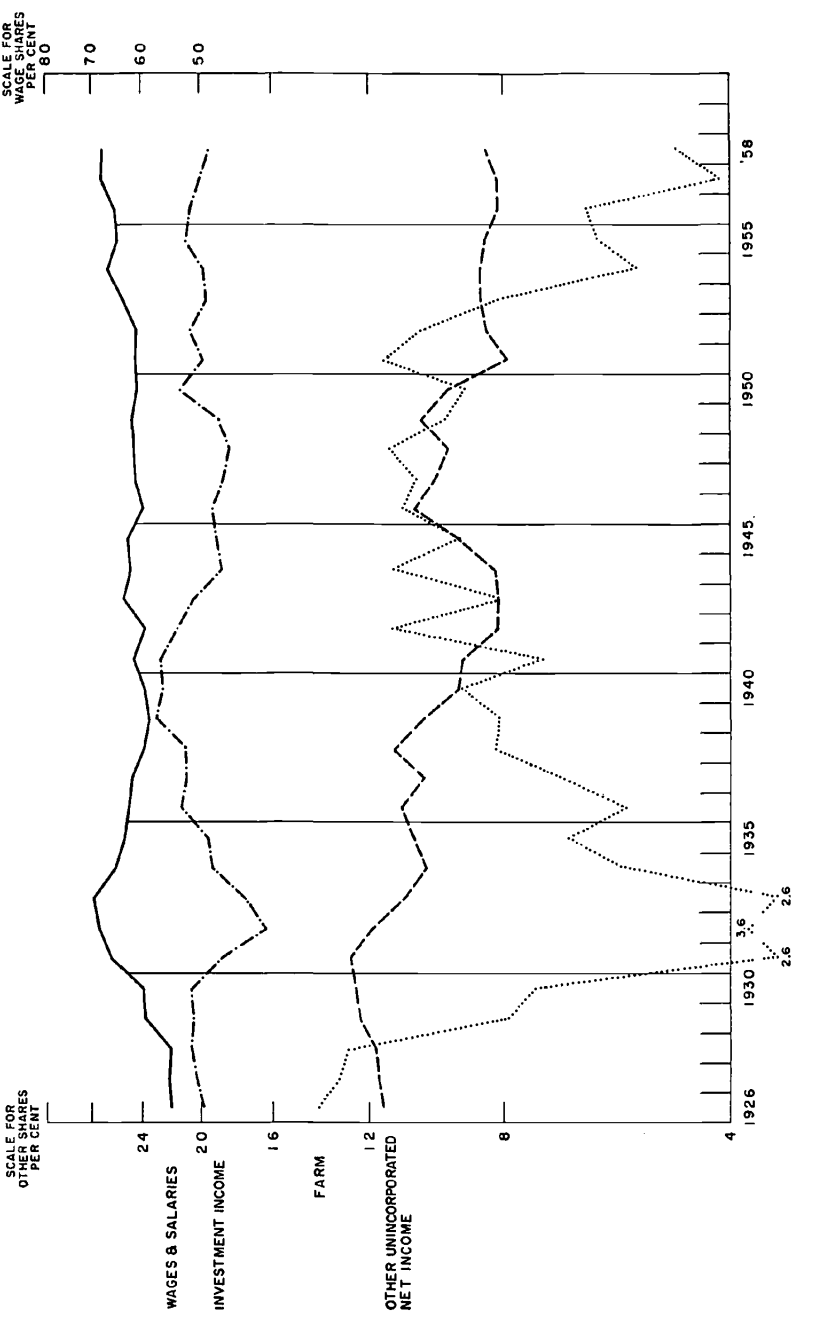
	1926–30 (1)	1954–58 (2)	Point Change (col. 2 minus col. 1) (3)	Percentage Change (col. 3 ÷ col. 1) (4)
Wages and salaries	56.7	66.2	9.5	16.8
Investment income	20.3	20.2	−0.1	− 0.5
Net nonfarm unincorporated income	12.0	8.3	−3.7	−30.8
Net farm unincorporated income	11.0	5.3	−5.7	−51.8
Corporation profits[a]	10.6	12.2	1.6	15.1

SOURCE: Table A-1.
[a] See note a, Table 1.

[20] As before, these figures *include* the inventory valuation adjustment. Ratios *excluding* this adjustment are shown in Appendix Table A-1. For individual years of the two terminal periods, 1926–30 and 1954–58, the ratios in Appendix Table A-1 are similar whether or not the IVA is included, with the exception of 1930. The (positive) IVA for 1930 is very high relative to profits and net income and, in the face of the rather moderate price declines of that year, may be overstated. In a comparison of changes between the two terminal periods the effect of such overstatement would, of course, be to overstate somewhat the rise of the wage ratio (and understate that of investment income) when the IVA is included; and to understate somewhat the rise in the wage ratio (and overstate that of investment income) when the IVA is excluded. Changes in the factor shares between the two terminal periods with the IVA excluded were as follows:

	1926–30 (1)	*1954–58* (2)	*Point Changes* (col. 2 − 1) (3)	*Percentages Changes* (col. 3 ÷ col. 1) (4)
Wages and salaries	57.5	66.0	8.5	14.8
Investment income	19.5	20.4	0.9	4.6
Net nonfarm unincorporated income	11.9	8.4	−3.5	−29.4
Net farm unincorporated income	11.1	5.2	−5.9	−53.2

CHART 4
Domestic Income by Factor Shares



by considerable fluctuations, the amplitudes as well as the phasing of which differed as between the various factor shares. This is elaborated in the Supplement. A number of other noteworthy characteristics are evident from an examination of Chart 4, which are briefly summarized here.

First, the rise of the relative position of the wage share, while considerable, is of rather recent origin. Comparisons between the ratios in the late twenties and those of postwar years prior to 1953 show smaller gains.

Secondly, the rise in the wage ratio since 1952 is almost matched by a corresponding and coincident decline in the relative position of net farm income. Thus the wage ratio increased from 60.7 in 1952 to 67.4 in 1958, or by 6.7 points; net farm income during the same years dropped from 10.3 to 4.7, or by 5.6 points. It is interesting to note, further, that the decline in the relative position of net farm income has not been part of a gradual downward drift but, rather, has taken place in sudden drops. As late as 1951 the ratio of net farm income was 11.4 compared with 12.8 in 1928 and 7.9 in 1929; in 1950 it was 10.3.[21]

Thirdly, the apparent stability of total investment income is the net result of some contrary movements within the parts; in particular, corporation profits have risen considerably as shown in Table 2, with a corresponding decline in the remainder of investment income.

Fourthly, in contrast with the stability of aggregate investment income, the decline in the relative importance of net nonfarm unincorporated income reflects a persistent downward drift.

The last observation, together with the movements of the ratio of net farm income and corporation profits, raises the question whether the observed increases in the wage ratio in the postwar years, compared with the late twenties, reflect mainly a secular de-

[21] It should be noted, incidentally, that the substantial drop in the relative position of net farm income cannot be attributed to the exodus from the farms which commenced after 1946, accompanied as this exodus was by intense mechanization and ensuing increase in productivity. Whereas "persons with jobs" in agriculture (excluding paid workers) declined from 1,039,000 in 1946 to 780,000 in 1952, the ratio of net farm income hovered within a range of 11.2 and 10.3 during this period. The decline in "persons with jobs" in agriculture (excluding paid workers) continued at a somewhat lower rate between 1952 and 1958 when it reached 615,000, but this time it was accompanied by the very substantial drop in the ratio of domestic income, from 10.3 to 4.7. This drop, it would appear, reflects, in part at least, adverse developments in the prices of farm products compared with nonfarm products.

cline in the unincorporated business portion of the economy (farm and nonfarm). Agriculture is almost entirely unincorporated in Canada and is characterized by a very low wage ratio compared with the average of nonagricultural industries; the wage ratio of nonfarm unincorporated business is lower than for incorporated business.[22] In both cases the wage ratios are lower, in part at least, because the implied wages of unpaid family workers and of working owners are included in net income. At any rate, when parts of the economy exhibiting low wage ratios become relatively less important, and those with higher wage ratios more important, the over-all ratio for the economy will rise even if there is no change in the wage ratio within each part.

The impact on the wage ratio of the declining importance of unincorporated business is part of a more general influence arising from changes in the structure of the economy, namely, the changing relative importance of the various sectors and industries comprising the domestic income. Since the wage ratios in these various sectors and industries differ considerably, changes in their relative importance will be reflected in the factor shares. We discuss later (Section 5) the possible impact on the wage ratio of the secular decline of unincorporated income.[23]

2. THE TRANSITION FROM DOMESTIC INCOME TO PRIVATE BUSINESS PRODUCT

As is well known, the conventional national accounts divide the economy into the two main parts: that which produces goods or services for a price designed to cover cost of production at the

[22] In the absence of comprehensive Canadian statistics, this statement is based on United States data. There is no reason why Canadian experience should differ in this regard. The following ratios of salaries and wages to income originating are taken from Edward F. Denison, "Income Types and the Size Distribution" *American Economic Review*, May 1954, Table 1:

	1929	*1941*	*1951*
Nonfarm corporations	74.1	72.6	72.9
Nonfarm proprietorships and partnerships	48.4	47.1	50.3

[23] The analysis that follows is an adaptation of the one used by a number of other people, particularly Edward F. Denison in the *American Economic Review*, May 1954, and in "Distribution of National Income: Pattern of Income Shares since 1929," *Survey of Current Business*, June 1952. See also, Odd Aukrust "Trends and Cycles in Norwegian Income Shares," *Income and Wealth*, Series VI, London, 1957; M. Kalecki, *Theory of Economic Dynamics*, London, 1954; and John T. Dunlop, *Wage Determination Under Trade Unions*, New York, 1944.

very least—the so-called business (commercial) sector; and that which does not, or the so-called noncommercial sector. Each of these sectors is subdivided further into (a) private or personal and (b) government.

The treatment accorded the two main sectors is unequal. Whereas the valuation of the product of business is complete, in the sense that all elements entering into market prices are accounted for, that of the noncommercial sector is not, as only wages and salaries are counted.[24] The partial coverage of the contribution of the noncommercial sector to the domestic income has been accompanied by a considerable increase in its relative importance, though not as large as might be supposed (Table 3).[25]

TABLE 3
PERCENTAGE DISTRIBUTION OF DOMESTIC INCOME BY SECTORS

Year	Persons[a]	General Government	Government Business	Private Business
1926	3.2	5.7	6.8	84.3
1929	3.4	5.9	6.9	83.8
1930	3.6	6.8	6.6	83.0
1933	4.3	10.2	7.8	77.7
1939	3.0	8.0	6.5	82.5
1945	1.5	16.8	7.0	74.7
1946	1.7	9.7	7.1	81.5
1947	1.8	7.0	6.5	84.7
1950	1.9	7.3	6.4	84.4
1954	2.3	9.9	6.7	81.1
1958	2.4	11.2	6.8	79.6

SOURCE: Table A-6.
[a] Includes private noncommercial institutions.

The main distinction between government business and private business is that the latter may be assumed to aim to maximize profits and is not likely to withstand prolonged losses; the former, by contrast, does not necessarily aim to maximize profits and its losses

[24] The salary and wage figures may, however, "undervalue" the services in question compared with the business sector. This is illustrated by the fact that, in the United States for example, several individuals have recently accepted top government jobs at a fraction only of their pay in private industry but their new jobs are certainly no less "important."

[25] It is interesting to note that the private business sector emerged from the war relatively more important, in terms of its contribution to the domestic income, than it entered; the sustained decline in its relative importance started after the Korean War.

are likely to be subsidized out of general government revenues. Indeed, a private concern may be converted into a public body after a prolonged period of sustained losses, as happened, for example, in the case of concerns that now comprise the Canadian National Railways. At the other extreme, there is the case of the Provincial Liquor Control Boards, included with government business in the Canadian accounts, which have a legal monopoly and whose profits are not unlike indirect taxes in many respects. At any rate, the institutions classified in the government business sector, as a group, while similar in many respects to their private business counterparts, are sufficiently unlike to warrant isolating them in order to permit separate analysis of private business. In this way, a more homogeneous group whose operations are more directly determined by competitive market forces is obtained.[26]

Table 3 indicates that the relative importance of the government business sector has remained remarkably constant over the period. This constancy has, however, been accompanied by an appreciable decline in the wage ratio of the government business product from 68.4 in 1926–30 to 62.1 in 1954–58, reflecting, mainly, developments in government business enterprises classified as public utilities, communications and retail trade.

3. CHANGES IN FACTOR SHARES OF THE PRIVATE BUSINESS PRODUCT

By eliminating from domestic income the noncommercial sectors (whose total income originating is wages and salaries) and the government business sector, we are left with private business product. When the changes of the factor shares of private business product are calculated and compared with those of domestic income we find a rather similar picture. Although the increase in the wage ratio of the private business product was moderately higher than that of domestic income.[27] The fluctuations in the fac-

[26] A considerable amount of rearrangement of the basic information was necessary in order to separate the private business sector, as the published estimates include totals only for the business sector as a whole. This work and the calculations of the various ratios were done in the National Accounts Division and Labor Division under the supervision of P. S. Sunga.

[27] The rise in the wage ratio of domestic income from 1926–30 to 1954–58 is practically the same as that of the *total* (private and government) business product (Table A-11). It may occasion surprise that addition of the (100 per cent wage income) noncommercial sector, which was relatively more important in the later period, does not lift the wage ratio. Consider, however, the dual in-

tor shares over the period were also similar to those of domestic income, on the whole, although there were some differences in detail.[28]

The similarities in the general movements of the relative factor shares of domestic income and the private business product are clearly apparent when Charts 4 and 5 are compared. However, the contours of the movements in Chart 5 are somewhat sharper; in particular, the inverse correlation between the wage ratio and the investment income ratio stands out more prominently. For

TABLE 4
CHANGES IN FACTOR SHARES OF THE PRIVATE BUSINESS PRODUCT

	1926–30 (1)	1954–58 (2)	Point Change (col. 2 minus col. 1) (3)	Percentage Change (col. 3 ÷ col. 1) (4)
Wages and salaries	51.0	61.4	10.4	20.4
Investment income	21.7	21.8	0.1	0.5
Net nonfarm unincorporated income	14.2	10.3	−3.9	−27.5
Net farm unincorporated income	13.1	6.5	−6.6	−50.4
Corporation profits[a]	12.7	15.2	2.5	19.6

SOURCE: Table A-7.
[a] See note a, Table 1.

this reason, and also because the cyclical analysis of the supplement to this paper is carried out more suitably on the basis of the private business product, we shall continue the discussion on this basis but broadly similar results would have been obtained had we continued on the basis of domestic income.

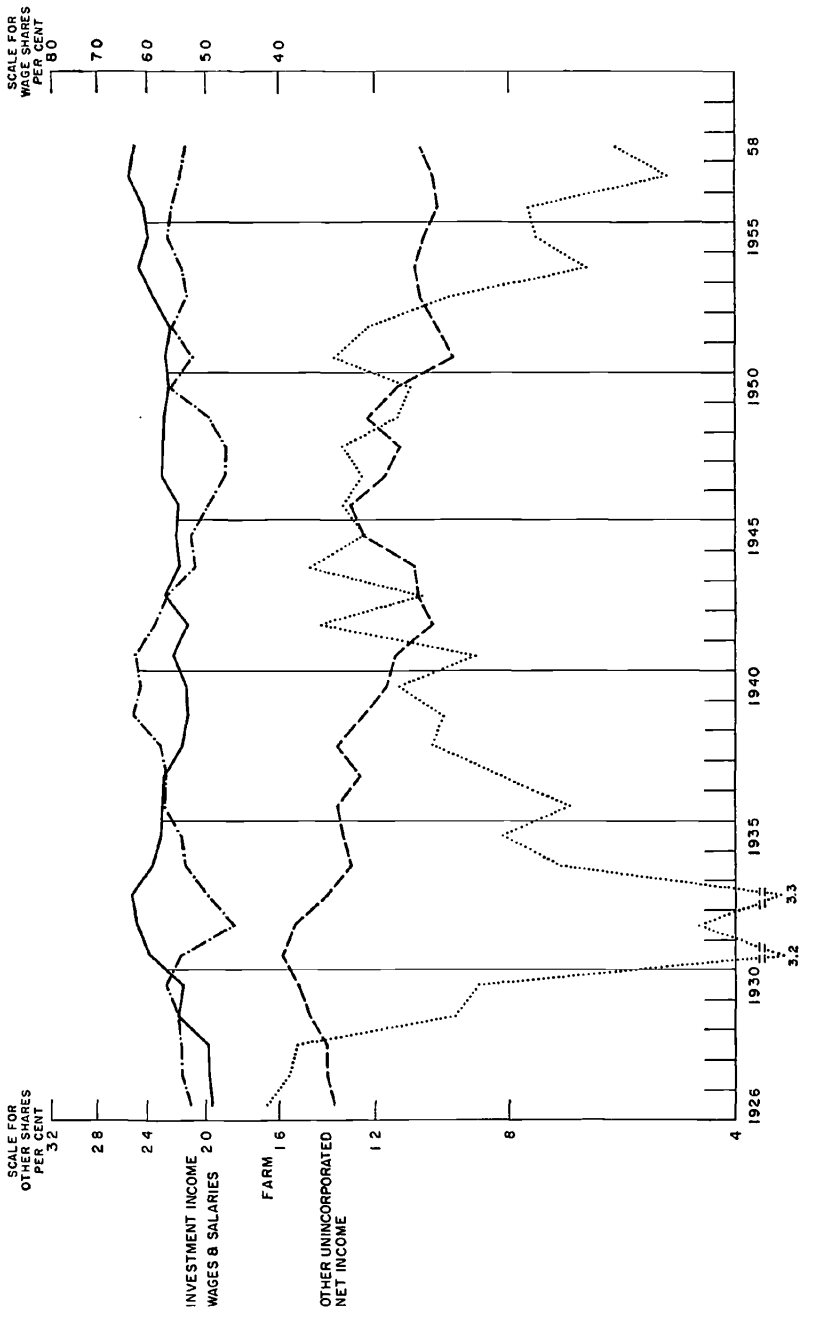
fluence of the noncommercial sector:

1. If the wage ratio in the business sector remains constant in two periods and the relative importance of the noncommercial sector increases from period 1 to period 2, then addition of the noncommercial sector will result in a rise of the wage ratio; the wage ratio of domestic income will show an increase even though that of the business sector remains constant.

2. If the wage ratio in the business sector rises from period 1 to period 2 and the relative importance of the noncommercial sector remains constant, then addition of the latter to the former results in a *smaller* increase of the wage ratio. The actual wage ratio is the net result of these two influences and in the comparison between 1926–30 and 1954–58 they have almost cancelled each other out.

[28] From 1929 to 1930 the wage share goes down slightly in the private business sector and rises somewhat in domestic income, reflecting an (absolute) increase in government payrolls.

CHART 5
Private Business Product by Factor Shares



4. THE INDUSTRIAL COMPOSITION OF THE CHANGE IN THE WAGE RATIO OF THE PRIVATE BUSINESS PRODUCT—STANDARDIZATION

The industrial groups comprising the private business product sector have contributed rather differently to the rise in the over-all wage ratio of 10.4 points (or 20.4 per cent), some industries showing declines and others substantial increases, as indicated in Table 5. The wage ratios of the service-producing industries have

TABLE 5

PERCENTAGE CHANGE IN THE WAGE SHARE OF THE INDUSTRIES OF THE PRIVATE BUSINESS PRODUCT: 1926–30 TO 1954–58

Industry	1926–30	1954–58	Points Change	Percentage Change	Weights in 1949
Commodity-producing industries					
Agriculture	16.1	11.9	−4.2	−26.1	12.7
Forestry	91.3	86.0	−5.3	− 5.8	2.2
Fishing[a]	23.1	33.5	10.4	45.0	.6
Mining	58.9	61.1	2.2	3.7	4.2
Manufacturing	68.4	73.8	5.4	7.9	34.6
Construction	77.9	74.1	−3.8	− 4.9	6.7
Service-producing industries					
Transportation, communication and public utilities	68.3	70.7	2.4	3.5	6.8
Wholesale trade	68.8	73.4	4.6	6.7	6.0
Retail trade	53.8	64.3	10.5	19.5	10.8
Finance, insurance and real estate	31.0	32.9	1.9	6.1	7.1
Service (proper)	37.9	52.7	14.8	39.1	8.4
Total private business product	51.0	61.4	10.4	20.4	100.0

SOURCE: Table A-9.

[a] Part of the increase in the wage ratio in fishing reflects a discontinuity that occurred in the estimates beginning with the year 1952.

all shown gains, though of varying size; those of service (proper) and retail trade have risen most. The ratios of agriculture, forestry and construction have declined but those of the remainder of the commodity-producing industries have risen.

It is apparent from Table 5 that the wage ratios of only two industries, service (proper) and fishing with a combined weight in 1949 of only 9.0 per cent, have risen more than the over-all ratio. Retail trade, with a 1949 weight of 10.8 per cent, has risen almost as much as the over-all ratio. The remaining industries have shown much smaller increases or actual declines. This suggests that simultaneously with the movements of the shares *within*

industrial groups, there have been shifts as *between* industries resulting in some additional lifting in the over-all wage ratio of the private business product.

In order to isolate the impact of interindustry shifts we have recalculated the wage ratios on the assumption that the relative importance of the constituent industries (as measured by the relative contribution of each industry to the private business product) that prevailed in the year 1949 remained fixed throughout the period 1926–58. We shall refer henceforth to these fixed weighted ratios as the standardized series, in contrast with the implied currently (changing) weighted series which we shall call the unadjusted ratios. The year 1949 has been chosen because it is generally considered the first "normal" postwar year and is used in many Canadian index numbers, but calculations with 1928 and 1956 industry weights were also made.

Turning first to the total private business product we find that the rise in the wage ratio from 1926–30 to 1954–58 was only 4.1 points or 7.4 per cent, using 1949 industry weights. Thus, of the increase of 10.4, or 20.4 per cent, in the unadjusted series, the larger portion reflects a change in the relative importance of the various industries during the periods being compared.[29] Substantially similar results have been obtained with 1956 and 1928 industry weights.

Secondly, it will be seen that much of the change in the ratio, when standardized figures are used, reflects the influence of agriculture, a result that could be surmised from Chart 5. The unadjusted wage ratio, calculated with agricultural income excluded from the numerator and denominator, has risen only 6.9 points, or 11.8 per cent (compared with 20.4 per cent when agriculture is included). When the wage ratio of the nonagricultural private business product is standardized for changes in the relative importance of industries, the rise in the wage ratio declines further to 5.3 points or 8.7 per cent. Evidently the sharp reduction in the relative importance of income originating in agriculture during the two periods being compared has contributed more to the apparent rise in the unadjusted wage ratio of the total private business product than the combined changes of all the other industries.

[29] It should be noted that we have ignored the effect of the interaction of weight changes and ratio changes which cannot be assigned to either.

TABLE 6
CHANGES IN UNADJUSTED AND STANDARDIZED WAGE RATIOS: 1926–30 TO 1954–58

	1926–30	1954–58	Point Change	Percentage Change
Total private business product				
Unadjusted	51.0	61.4	10.4	20.4
Standardized	55.5	59.6	4.1	7.4
Nonfarm private business product[a]				
Unadjusted	58.6	65.5	6.9	11.8
Standardized	61.2	66.5	5.3	8.7
Total domestic income				
Unadjusted	56.7	66.2	9.5	16.8
Standardized	60.7	63.7	3.0	4.9
Nonfarm domestic income[a]				
Unadjusted	63.9	69.8	5.9	9.2
Standardized	66.0	70.0	4.0	6.1

SOURCE: Tables A-1, A-8, A-10, A-12, and A-13.
[a] Includes farm rents, paid and imputed.

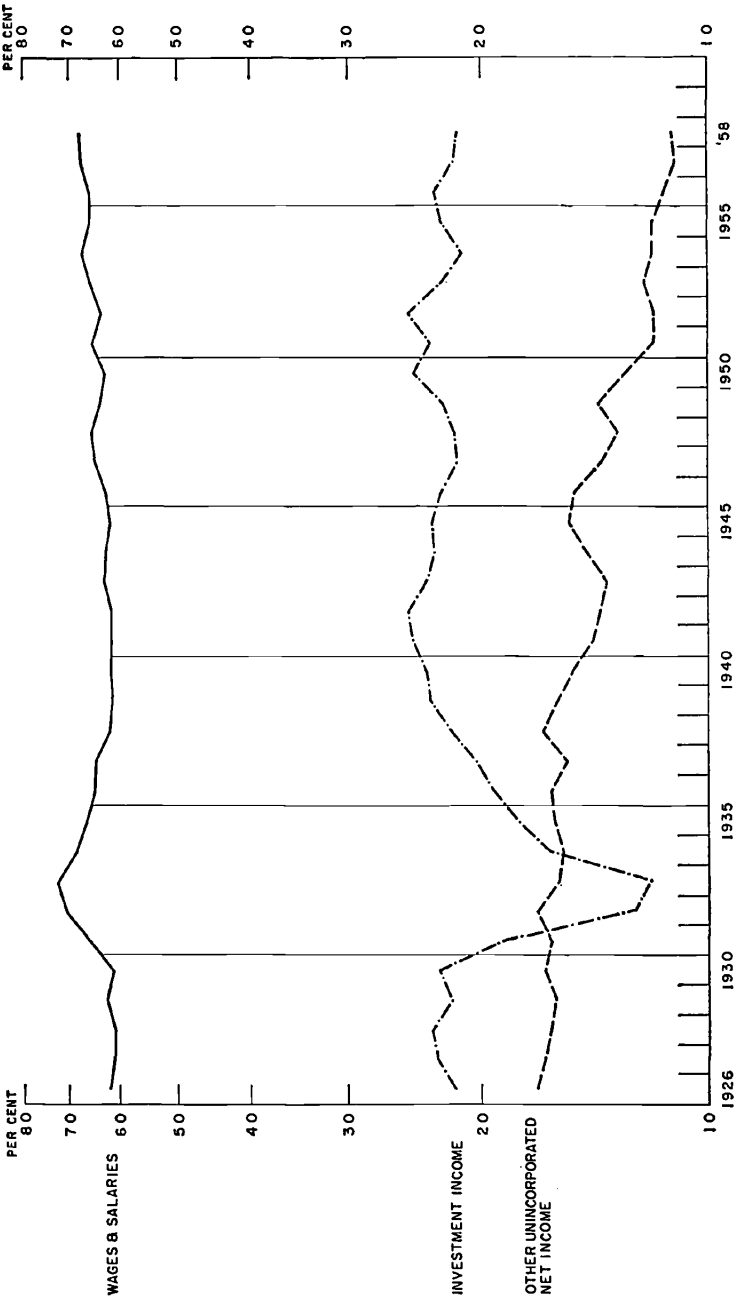
As a matter of interest, we made similar calculations for the wage ratio of domestic income. As might be surmised from the comparisons already shown in preceding sections comparable results are obtained, although the rise in the wage ratio from 1926–30 to 1954–58 was more moderate (see Table 6).

5. THE SHARES OF THE NONFARM PRIVATE BUSINESS PRODUCT

We turn now to a somewhat closer examination of the movements of the standardized factor shares of the nonfarm portion of private business product,[30] focusing attention on the possible influence on the wage ratio of changes in the form of business organization. Chart 6 summarizes the movements in the standardized shares. It will be seen that the upward drift of the wage ratio is visible from 1946 on, earlier than in the preceding charts. The pronounced, though irregular, downward drift of the ratio of net unincorporated income is seen to be steeper in the postwar period as a whole than for the years 1926 to 1945; the downward drift was

[30] As will be observed from Chart 6, the trend of the wage ratio tends to be flat because of the effect of the great depression in the earlier years of the time series. A least square line has been fitted to the nonfarm standardized wage ratio from 1926 to 1958, deleting the complete cycle from 1929 to 1937 (and tested for significance). As might be expected this gives a linear fit with a strongly significant, upward trend of practically the same slope as a line joining the average ratio for the two terminal periods 1926–30 and 1954–58.

CHART 6
Nonfarm Private Business Product, Standardized Factor Shares



particularly sharp from 1946 to 1951 but it continued, though at a slower rate, after 1951, in contrast with the movements in Chart 5 where the ratio is seen to fluctuate around an essentially horizontal line after 1951.[31]

It should be emphasized that Chart 6 shows the movements of the relative factor shares after elimination of the effects of changes in the relative importance of industries. The standardization procedure also abstracts from the effect of the changing importance of various forms of business organization—but only to the extent that this is reflected in the changing industrial pattern; it leaves unaffected changes in the ratios resulting from shifts in the form of business organization *within* industries.

Such a shift could take the form, for example, of established concerns incorporating themselves in order to gain a tax advantage. The wages and salaries paid by these firms have already been included with labor income before the incorporation and continue to be so included; what happens after the incorporation is that the sum of wages and profits (and interest) is higher by the amount that net unincorporated income has been reduced.[32] But in what proportions?

The proportion could, of course, be estimated roughly using available information as a guide. Then, by adding the split amounts to labor income and investment income respectively, a consolidated dual classification of income would be produced with the disturbing effects of shifts between forms of business organization removed from the data.[33]

We have decided not to split unincorporated income, not only for reasons already mentioned above (see Part I) but also because, while the desirable procedure for carrying out the segregation is

[31] Tax incentives to convert to the incorporated form of business organization were considerable after the war, especially after 1949 when tax regulations were introduced lowering tax rates on the first $10,000 (subsequently raised to $35,000) of profits. Beginning with 1946 the Census of Manufacturing began collecting data by form of organization: these show a decided drift toward the incorporated form. The relative movements of net income of unincorporated business described in the text are, of course, the net result of a number of interacting factors and not just the drift toward incorporation.

[32] Similar reasoning can, of course, be applied where net unincorporated income drops in relative position because larger proportions of new firms assume the incorporated form when they get established.

[33] See, for example, I. B. Kravis, "Relative Income Shares in Fact and Theory," *The American Economic Review*, December 1959; and Edward C. Budd, "Factor Shares, 1850–1910," *Trends in the American Economy in the Nineteenth Century*, Studies in Income and Wealth 24, Princeton University Press for NBER, 1960.

complex, the necessary statistical data for carrying it out are not readily available.

The proportions of labor input and capital input in net unincorporated income undoubtedly vary substantially as between industries,[34] from instances where almost the entire net income could properly be allocated to wages (e.g., such self-employed professionals as accountants, lawyers, doctors,[35] private detectives, entertainers) to cases where substantial proportions may be attributed to capital (restaurants, funeral parlors and certain manufacturing). The proportions will also vary with the prevalence of owner-occupied unincorporated business establishments, the capital component being lower in rented premises. Further, the proportions will vary with size of concerns, the portion properly attributed to capital probably being greater as the size of establishment increases. Finally, the apportionment will vary with the extent of mechanization over time (such as, for example, has taken place in agriculture), and the degree of utilization of unpaid labor.

Thus it would appear that a realistic apportionment of net unincorporated income between capital and labor should be calculated separately for each industry, by size groups, by form of ownership of premises and on the basis of changing, not constant, ratios. Furthermore, in order to make the calculation on any basis, appeal would have to be made to statistical data reflecting, in many ways, substantially different market situations (as already suggested), such as those pertaining to the corporate sector and the regular labor market.

Since we are unable to split net income, it would be desirable at the very least to make separate calculations of the factor shares by legal form of business organization. In this respect we have been handicapped in the handling of our subject in this paper because of the absence in Canada of such estimates for the nonagricultural portion of the economy. However, we have carried out some calculations which are aimed to approximate, albeit incompletely, the incorporated part of the nonfarm private business product.

[34] In unpublished comments on Kravis' paper George Jaszi emphasized this point.

[35] The expenditures involved in the training of professionals, such as doctors, could, of course, be regarded as a capital outlay, the return to which should be included with investment income as already indicated. Further, the capital they employ is mainly social capital, such as hospitals and other expenditures by government on health.

As a first step to an approximation of changes in the wage ratio of incorporated business we have recalculated the ratios of each industrial group for the years 1926–30 and 1954–58 excluding net income of unincorporated business and net rents received by persons. These exclusions bring the data closer to the factor shares of the corporate sector. The revised wage ratios were then standardized, using 1949 industry weights. The results are summarized in Table 7.

TABLE 7
PERCENTAGE CHANGES OF WAGE SHARE IN NONFARM PRIVATE BUSINESS PRODUCT, EXCLUDING NET INCOME OF UNINCORPORATED BUSINESS AND NET RENTS

	1926–30 (1)	1954–58 (2)	Point Change (col. 2 minus col. 1) (3)	Percentage Change (col. 3 ÷ col. 1) (4)
Unadjusted	75.2	76.9	1.7	2.3
Standardized	75.9	77.2	1.3	1.7

As might be expected Table 7 shows a substantial reduction in the rise of the wage ratio (compared with the corresponding ratio in Table 6). However, since salaries and wages paid out by unincorporated business have been included and since, in line with the reduction in the unincorporated portion of the economy the weight of these wages has undoubtedly declined, the actual increase of the wage ratio in the corporate portion is undoubtedly higher than that shown in Table 7. The most reasonable conclusion perhaps is that the rise of the standardized wage ratio in the corporate portion of the economy from 1926–30 to 1954–58 was positive but considerably smaller than the 8.7 per cent of the total nonfarm private business product. In other words, it seems likely that a portion of the 8.7 per cent reflects a shift from the unincorporated to the incorporated form of business organization.

6. CHANGES IN THE WAGE RATIO IN MANUFACTURING

Standardization in Greater Industrial Detail

We have seen above that the differences between the standardized and unadjusted wage ratios in the nonfarm private business product were small. However, since the standardization was carried out at a rather aggregative level, which permits consider-

able shifts to take place within groups,[36] the question arises whether significantly different results would be obtained if it had been carried out at a finer level of detail.

We were able to carry out more detailed standardization for the industries classified in manufacturing in the standard industrial classification, but before examining the results, the characteristics of the data are summarized here so that their limitations may be kept in mind.

First, the denominator used here is the larger aggregate of census value added (which differs from income originating in manufacturing, used above, in that it includes, in addition to income originating, depreciation allowances, cost of repairs, office supplies and purchased services such as advertising and insurance). The ratio of income originating to census value added in manufacturing, while not exhibiting any pronounced trend, is appreciably lower in the period 1954–58 than in 1926–30, apparently reflecting, mainly, a greater importance of purchased services in the later period (although the possibility of unknown differences in valuations affecting the figures of census value added in the two periods cannot be excluded). On this account, we would expect the ratio of wages and salaries to census value added to have risen correspondingly less than that of wages and salaries to income originating.

Secondly, the coverage of the wages and salaries data is somewhat different from that used earlier. In the first place, supplementary labor income is excluded because the information is not available for individual manufacturing industries. Since supplementary labor income has become an increasingly important component of total payrolls in manufacturing, having risen from an average of 2 per cent of the total in 1926–30 to 3.8 per cent in

[36] Separate income figures for only eleven industrial groups are available in the Canadian National Accounts for the whole period back to 1926, reflecting data deficiencies and unresolved difficulties in classification. Whereas wage income and, to a considerable extent, net unincorporated business income are classified on an establishment basis, corporation profits and depreciation are available only on a company basis. Accordingly, the finer the industrial classification the less comparable are the factor shares within industries. Even in the more aggregative published figures difficulties in the comparisons are present because manufacturing overlaps to some extent with mining, on the one hand, and forestry on the other. It is felt that in these cases the overlap is not sufficiently large to invalidate the comparisons made. It should be mentioned, though, that we have encountered some disconcerting anomalies that we were unable to remove between the movements of the ratios of payrolls to census value added in mining, on the one hand, and those of payrolls to income originating in mining, on the other. In an unpublished memorandum, H. J. Adler of the National Accounts Division lists at least a dozen factors that might be responsible for such differences.

1954–58, the ratio of wages and salaries to census value added will again show a correspondingly smaller rise than that of wages and salaries to income originating.

There are several other differences which, however, may be expected to cancel out more or less completely: the most important of these is that the census figures include, in addition to payrolls, the withdrawals of working proprietors; but they excluded, until the year 1949, a portion at least of salaries paid in head offices which were situated in a separate physical location, unattached to any other manufacturing establishment of the firm. The inclusion of working proprietors' withdrawals understates the rise in the wage ratio because the relative importance of withdrawals to the total wage bill has been declining; the exclusion of a portion of unattached head offices in the earlier period overstates the rise in the wage ratio. Since, roughly, similar order of magnitudes are involved in the understatement and overstatement (between 2 and 3 per cent of payrolls) the over-all wage ratio may be assumed to be unaffected.

Revisions for the factors just described have been made in the National Accounts, but only for manufacturing as a whole. Since in the present section attention is directed to individual industries within manufacturing, as well as the total, the unrevised data will be used.

Turning now to the data as they emanate from the census of industry,[37] we compare first the movement in the ratios of wages and salaries (exclusive of supplementary labor income), standardized for eighteen industrial groups (using the percentage of census value added of each industry to the total of all industries in 1949 as the fixed weights), with the unadjusted ratios, that is, with the implied changing current weights. This comparison is made in Table 8 (columns 1 and 2).

It will be seen, first, that in neither case does the ratio exhibit any pronounced trend, although the average in 1954–58 is somewhat higher than that of 1926–30. Secondly, the standardization does not give rise to any appreciable differences in the movements of the ratios, except for the depression years of the thirties. Thirdly, in contrast with the ratios of the private business product standardization in manufacturing does not give rise to a lower wage ratio in the longer-run comparison; in fact the standardized wage

[37] In a number of cases the census of industry data had to be adjusted to render them more comparable over time.

TABLE 8

WAGES AND SALARIES (EXCLUDING SUPPLEMENTARY LABOR INCOME) AS A PERCENTAGE OF CENSUS VALUE ADDED—MANUFACTURING

	Total Manufacturing		*Durable Goods*		*Nondurable Goods*	
	Un-adjusted	Standard-ized	Un-adjusted	Standard-ized	Un-adjusted	Standard-ized
1926	48.8	48.9	55.7	55.1	44.5	44.0
1927	47.5	47.8	53.6	53.4	43.7	43.5
1928	46.2	46.7	52.3	52.7	42.2	42.2
1929	45.3	45.5	50.6	50.5	41.6	41.6
1930	47.1	48.1	54.2	54.6	42.6	43.1
1931	48.4	50.1	55.7	57.2	44.5	44.7
1932	49.6	53.1	60.2	62.7	45.4	45.7
1933	47.4	51.1	52.2	57.9	45.5	45.9
1934	46.3	49.2	50.1	54.8	44.6	44.9
1935	48.5	50.5	54.3	56.5	45.7	46.0
1936	47.5	49.3	51.1	53.6	45.5	46.0
1937	47.8	49.4	49.0	51.9	47.0	47.4
1938	49.4	51.0	51.7	54.0	48.0	48.6
1939	48.2	49.7	51.6	53.6	46.2	46.8
1940	47.4	48.0	50.2	51.1	45.4	45.7
1941	48.6	48.5	50.5	50.7	46.8	46.9
1942	50.9	49.9	54.0	53.4	47.5	47.2
1943	52.1	51.1	57.1	55.9	46.3	47.4
1944	50.5	49.7	55.5	54.4	45.2	46.1
1945	51.8	51.3	57.5	56.5	46.7	47.2
1946	50.2	50.8	59.3	59.2	44.3	44.3
1947	48.6	48.8	54.5	54.5	44.2	44.4
1948	48.8	48.8	53.9	53.8	44.8	44.9
1949	48.6	48.6	52.7	52.7	45.4	45.4
1950	46.6	46.8	50.3	50.3	43.7	44.2
1951	47.2	47.8	52.0	52.1	43.2	44.5
1952	48.5	48.9	53.4	53.2	44.2	45.5
1953	48.7	48.9	52.6	52.5	45.1	46.1
1954	50.2	51.0	55.3	55.8	45.9	47.3
1955	47.8	48.5	51.9	52.5	44.1	45.5
1956	48.5	49.4	52.1	52.8	45.2	46.7
1957	50.1	51.0	54.4	55.0	46.3	47.9
1958	50.1	51.1	55.7	56.1	45.5	47.2
Averages						
1926–30	47.0	47.4	53.3	53.3	42.9	42.9
1954–58	49.3	50.2	53.9	54.4	45.4	46.9
Points change	2.3	2.8	.6	1.1	2.5	4.0
Percentage change	5.0	5.9	1.1	2.1	5.8	9.3

ratio is somewhat higher. However, the difference is really too small to be significant, particularly in view of the imperfections in the data described above. At any rate, these comparisons suggest that the increases of the wage ratios of the nonfarm private business product, shown in the preceding sections, would not be materially altered by a more detailed standardization, although this inference must be qualified by the possibility that different results might be obtained in a more detailed standardization of the other industrial groups.[38] Even within manufacturing, it can, of course, be argued that standardization on a more detailed basis than the eighteen industries we have used might produce significantly different results.

Industrial Composition of Changes in the Over-All Manufacturing Wage Ratio

The rather inert behavior of the over-all wage ratio in manufacturing (with supplementary labor income excluded) is in sharp

TABLE 9
PERCENTAGE CHANGES OF WAGE RATIO IN VARIOUS MANUFACTURING INDUSTRIES
(census value added)

Industry	Percentage Change in Wage Ratio: 1926–30 to 1954–58
Electrical apparatus	27.1
Textile products	20.0
Chemical and allied	18.9
Foods and beverages	18.6
Miscellaneous industries	18.0
Rubber products	14.1
Knitting mills	10.0
Leather products	6.6
Printing, etc.	5.9
Clothing	5.8
Paper products	3.2
Iron and steel	3.1
Nonmetallic minerals	2.8
Wood products	0.9
Nonferrous metals	0.2
Transportation equipment	− 6.2
Tobacco products	−25.7
Petroleum and coal	−29.5
Totals	
Unadjusted	5.0
Standardized	5.9

[38] Some experimental calculations with mining data, carried out by E. C. West of the National Accounts Division, suggest that more detailed standardization in mining would not give rise to significantly different changes in the wage ratio.

contrast with the substantially diverse movements of the wage ratios of the constituent industries. The diverse behavior of the wage ratios is illustrated in Table 9 which ranks the individual manufacturing industries by size of percentage change in the wage ratio from 1926–30 to 1954–58.[39]

Changes in the Wage Ratio Using Different Aggregate Classifications

Closer examination of Table 9 suggests that there is a measure of underlying regularity, within the cross-currents of large variability, not only when the constituent industries are combined into a total for all manufacturing, but also for major subgroupings of the total on the basis of broad technological and market criteria. With the exception of electrical apparatus, all the industries in Table 9 that have exhibited small changes in the wage ratio are classified in durable manufacturing. On the other hand, most of the industries showing large increases are the ones classified in nondurable manufacturing; the outstanding exceptions being tobacco products and petroleum and coal. The combined wage ratio for the durable manufacturing group as a whole shows no perceptible trend. Although that of the nondurable group exhibits a discernible upward drift, especially in the standardized form, it is small compared to the variations in the constituent industries. The amplitude of the fluctuations of the durable group is larger than that of the nondurable group (see Table 8).

The individual manufacturing industries can, of course, be combined on the basis of a number of criteria other than durability of product. One such classification is the so-called "primary" and "secondary" manufacturing grouping.[40] While a large portion of

[39] An examination of the industrial distribution of detached head office salaries and withdrawals of working proprietors for recent years suggests that allowances for these factors would not affect the over-all picture conveyed by Table 9.

[40] The classification is that developed in D. H. Fullerton and H. A. Hampson, *Canadian Secondary Manufacturing Industry*, Royal Commission on Canada's Economic Prospects, Ottawa, 1957. Primary manufacturing industries are those which involve "either relatively minor processing of domestic resources (i.e., in which the value added by manufacture is relatively low), or those high intensive and often extremely complex industries which produce industrial materials from (Canadian) basic natural resources for sale mainly in export markets. Flour milling, cheese factories and saw and planing mills are examples of the first type, while pulp and paper production (excluding finished paper goods) and smelting and refining are examples of the second." In contrast, the secondary manufacturing industries "are characterized by a rather higher degree of processing and much greater dependence on the domestic market. They tend to be located close to the centre of the market, while primary industries are usually found at or near the resource on which they are based." These industries draw on foreign

the primary industry group is export oriented it includes several industries that export very little of their produce. On the other hand, two industries classified as secondary[41] have a considerable export content. By adding the latter to the primary group, and subtracting the nonexport industries a somewhat amended classification is obtained of "export" and "domestic" industries. The unadjusted wage ratios for these four major groupings have been calculated and plotted. The results are shown in Chart 7.

While these groupings represent different classification criteria, the long-run drifts of the (unadjusted) wage ratios fall within very narrow limits, despite the wide variation of the ratios of the individual industries of which they are composed.

Thus it appears that there are compensating forces present which produce relatively small changes in the longer-run comparisons of the wage ratios of the broader industrial groupings. However, in view of the strong element of dispersion underlying these movements one may well ask whether the search for the "invisible hand" causing regularities would not benefit greatly from prior study of the changes in the ratios of the more detailed industries or small groups of industries and the factors responsible for them.

7. NOTE ON POSSIBLE INFLUENCE ON THE FACTOR SHARES OF CHANGES IN SIZE OF BUSINESS UNIT

In appraising the significance of changes in the relative factor shares between two periods, account has to be taken not only of changes in industrial structure of the type already discussed but also those which take the form of changes in the relative size of business units within industries (changes between industries having been eliminated by the standardization).

Information on the changes in relative size of business units in Canada is scanty.[42] Some sketchy data we have examined suggest

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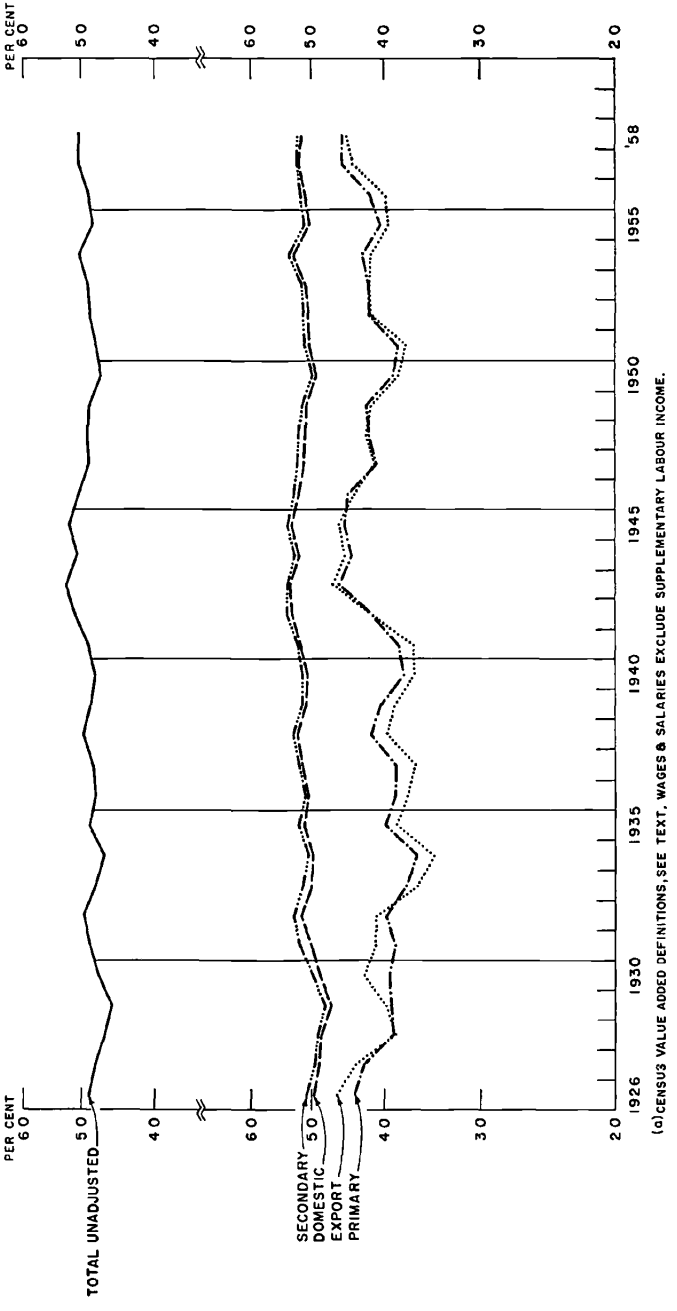
as well as domestic suppliers for raw materials and tend to be more labor intensive than the basic resource industries. Examples are textiles, clothing, transportation equipment and electrical apparatus and supplies (see *ibid.*, pp. 3 and 4). An average of about one-quarter of census value added in manufacturing is accounted for by the primary group and three-quarters by the secondary groups. For a listing of industries included with each of these groupings see Appendix A of the report.

[41] The two industries are agricultural implements and distilled liquors.

[42] See, however, the authoritative study by Gideon Rosenbluth, *Concentration in Canadian Manufacturing Industries,* Princeton, 1957. This study (p. 21), which

CHART 7

Wage and Salary Share in Manufacturing by Manufacturing Divisions



(a) CENSUS VALUE ADDED DEFINITIONS, SEE TEXT. WAGES & SALARIES EXCLUDE SUPPLEMENTARY LABOUR INCOME.

that there is an inverse relationship between the wage ratio and the size of establishment of incorporated firms. In incorporated manufacturing establishments, for example, the ratio of salaries and wages to census value added goes down as the size of establishment increases, when the value of shipments is used as the criterion of size. In 1958 this ratio was as follows:[43]

Value of Shipments	*Ratio*
Under $25,000	86.5
$25,000 to 100,000	68.1
$100,000 to 500,000	59.4
$500,000 to 1,000,000	56.4
$1,000,000 to 5,000,000	51.5
$5,000,000 and over	43.4

The ratio of wages and salaries to profits before tax for independent incorporated retail stores also declines, in general, as the size of establishment increases, when sales are used as the criterion of size.[44] Time did not permit us to study these data adequately, nor to disentangle the size effect from the industry and other effects. The data are mentioned here merely for the purpose of reaffirming the conclusion to which we are tending: that the significance of the observed changes in the wage ratio cannot be determined from aggregative data alone; rather it would require much more detailed information and analysis than we were able to muster for this paper.

8. COMPARISONS WITH YEARS PRIOR TO 1926

The comparisons of the wage ratio have been made for the periods 1926–30 and 1954–58 and the question arises whether comparisons with earlier years would give rise to significantly different results. In order to throw some light on this question the official figures of labor income and domestic income were extended back to 1919, using published and unpublished information and estimates of income originating by industry prepared some years ago by the

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is confined to manufacturing, shows that there has been a decline in plant concentration in manufacturing from 1922 to 1948.

[43] The ratios for unincorporated establishments are complicated by the inclusion of withdrawals of working owners in the wage figures. The source of the data on which the calculations are based is *General Review of Manufacturing Industries of Canada*, Dominion Bureau of Statistics, Ottawa, 1957 and 1958.

[44] See, for example, *Operating Results, Retail Trade, 1956*, Dominion Bureau of Statistics, Ottawa.

Dominion Bureau of Statistics in connection with its work on national income.[45]

The nature and reliability of these estimates are described in a memorandum that will be made available on request. It will suffice to note here that, while they agree reasonably well in total with estimates for the same years made by others, we do not attribute to them the same degree of reliability as those of the official series. Moreover, further checking than we have been able to do until now may give rise to some revisions.

The figures were prepared on a *domestic* income basis only. The ratios are shown in the following table:

TABLE 10
RATIO OF WAGES AND SALARIES TO DOMESTIC INCOME 1919–25

	Unadjusted		*Standardized (1949 industry weights)*[a]	
Year	Total	Nonfarm	Total	Nonfarm
1919	55.1	65.2	60.0	65.5
1920	57.3	68.3	63.2	69.1
1921	60.5	68.6	65.1	70.7
1922	56.5	65.6	62.1	67.8
1923	57.2	66.7	63.2	69.0
1924	60.3	68.1	65.3	70.9
1925	54.0	65.6	62.2	68.2
1926–30	56.7	63.9	60.7	66.0
1954–58	66.2	69.8	63.7	70.0

[a] Substantially the same results are obtained with 1928 industry weights.

In interpreting these ratios it has to be kept in mind that the figures for the year 1919 may reflect the aftermath of World War I; 1920 was a year of high inflation and 1921 a year of sharp, though short-lived, recession; there was also, apparently, some recession in 1924. The unadjusted total domestic income is, in addition, strongly influenced by (the characteristically erratic) developments in agriculture.

Be that as it may, the average ratio of total domestic income, including agriculture, for the period from 1919 to 1925 is of the same order of magnitude as the average for 1926–30. On the other hand, with agriculture excluded, the average ratio for the

[45] The estimates were made by D. H. Jones of the Central Research and Development Staff, Dominion Bureau of Statistics.

period 1919 to 1925 is half way between those of the late twenties and the late fifties; the standardized ratios are closer to those of the more recent years than for 1926–30. On the whole we must conclude that, after allowance for interindustry shifts, the ratios of the earlier years cast further doubt on the trend significance of the increases between 1926–30 and 1954–58 of the private business product and, *a fortiori*, the domestic income described in the preceding sections. While further work on the estimates for the years from 1919 to 1925 may give rise to revisions, it is unlikely that these will be of sufficient magnitude to alter this conclusion.[46]

Wage ratios have also been calculated for manufacturing industries, using comparable definitions and classifications, back to 1917, and are shown in Table 11:[47]

TABLE 11
WAGES AND SALARIES AS A PERCENTAGE OF CENSUS VALUE ADDED IN MANUFACTURING 1917–25

Year	Unadjusted	Standardized (1949 industry weights)
1917	41.0	40.9
1918	43.2	43.4
1919	44.3	44.6
1920	45.8	46.2
1921	47.9	48.7
1922	47.9	48.8
1923	49.1	50.1
1924	50.6	51.4
1925	49.7	50.2
1926–30	47.0	47.4
1954–58	49.3	50.2

An examination of these figures indicates, again, that the wage ratio for manufacturing as a whole was higher from 1921 to 1925 than the average for 1926–30; from 1917 to 1920 the ratios were

[46] This paragraph benefited from comment by David C. Smith, who in addition pointed out that it is possible that an actual decline may be shown in the standardized wage ratio from 1919–25 to 1954–58 if other factors, particularly the shift from unincorporated to incorporated business within industries, are taken into account. This result may be accentuated somewhat if the calculations are made on a gross basis, that is, before deduction of depreciation allowances.

[47] This work, which required considerable reclassification of individual industries and estimation of several components, was carried out by Miss J. R. Podoluk, who also prepared ratios for later years. The preparation of the manufacturing data was carried out in connection with a major project on historical statistics comprising a large number of statistical areas in addition to manufacturing, which is being completed under the direction of Professors M. C. Urquhart and K. Buckley.

lower. However, the ratios for 1917 to 1919 undoubtedly reflect developments peculiar to World War I and its aftermath and one cannot impute longer-run significance to them.

We have examined also the wage ratios in manufacturing calculated on the basis of information gathered primarily from decennial censuses for the following years: 1915, 1910, 1900, 1890, 1880 and 1870. The denominator used for calculating these ratios was census value added less materials purchased only. There are some anomalies present in these ratios that it was not possible to remove despite a very careful sifting of the data.[48] The ratios for 1915 and 1900 appear to be of the same high level as those for 1923–1925. Although these high ratios could be explained on the basis of assumptions about related developments, we are disposed rather to suspect that hitherto uncovered differences in definitions and classifications are responsible for the high level of the ratios in these two years. If these years are disregarded, the standardized ratios in particular are significantly lower than for the years 1920–25. However, manufacturing becomes an increasingly smaller proportion of the economy as we go back in time and it would not, of course, be appropriate to generalize from manufacturing to the economy as a whole. Since the relative importance of net unincorporated income looms larger in the earlier periods, one could surmise that the ratio of wages paid out probably declines as we go back in time. This, however, raises the question of whether comparisons of the wage ratios for periods which are substantially unlike do not inevitably mirror the basic differences that existed in the industrial structure and institutional arrangements, despite adjustments that may be made to the (generally poorer) data to eliminate these factors.

Supplement

Short-Term Fluctuations of Wage Shares

F. H. Leacy

DOMINION BUREAU OF STATISTICS

It is a commonplace that because wages and salaries are a large component of nonfarm private business product, they are highly

[48] T. K. Rymes prepared and analyzed the figures prior to 1917 for the historical study referred to above. The ratios are not reproduced here.

correlated with that total, and that the total as well as the components display cyclical variability. But the ratios between them are much more subtle, *since they reflect differential rates of change during business cycles.* For example, if wages and salaries are less flexible to cyclical forces, or display less amplitude of variation during expansions and contractions than private business product, then the wage share itself will behave in an inverted fashion. We start out by examining the extent to which this hypothesis is borne out by the data; it will be seen that there are many exceptions to the general rule.

Section 1 describes very briefly the general behavior of factor returns. We then proceed to a description of the cyclical movements of factor returns and shares in the total nonfarm private business product and its major industry divisions, followed by a brief glance into manufacturing by eighteen groups and by selected export, primary, and other major groupings. The cyclical behavior of the industry wage shares is examined first in terms of the fixed set of turning points known as "reference dates"; and second in terms of the varying "specific dates" which each individual industry displays. Since annual data leave much to be desired in this kind of analysis, a special compilation was made of postwar quarterly data, seasonally adjusted, for the four industry groups of mining, manufacturing, transportation and utilities, and trade. These postwar data are also used to examine the timing of turning points in the wage share. The share may turn down later than the peaks of each individual industry's product, or turn up later at troughs. To what extent these timing lags supplement the earlier findings regarding inverted behavior of the wage share, is also considered.[1]

1. Income Components and Their Cyclical Variability

It will be recalled that the investment income share appeared to have greater cyclical volatility than the wage and salary share.

[1] The wage share can be regarded as labor costs per dollar of output; if the latter is deflated, we have labor cost per unit of output, or simply unit labor costs. Moore and Hultgren have shown that unit labor costs lag behind the turns in general business activity. See *Current Economic Situation and Short-Run Outlook*, Hearings, Joint Economic Committee, 86th Congress, December 7th and 8th, 1960, p. 94. See also, *Business Cycle Indicators* (Geoffrey H. Moore, ed.), Princeton for NBER, 1961 and Thor Hultgren, *Changes in Labor Costs During Cycles in Production and Business*, New York, NBER, Occasional Paper 74, 1960, p. 73.

The charts shown in the paper on long-term changes were designed for use in cyclical analysis as well as long-run changes. They show percentage variation and provide a visual measure of what might be called "coefficients of variation." An examination of Charts 4, 5 and 6 indicates that the investment income share displays more percentage variation than the wage share. In addition, the investment income share is almost perfectly inverse to the wage and salary share, suggesting that these two items interact with one another[2] despite the complications introduced by net unincorporated income.

But these share charts, of course, do not show which factors contribute the most variation to their sum (in dollar terms). We therefore examined the factor returns of the nonfarm private business product, with investment income divided into corporation profits, net rents, and interest and have concluded that there is less percentage variation in wage and salary returns than in either profits or net unincorporated income (both adjusted for inventory valuation). However, rents and interest follow relatively smooth paths. The main body of the industrial analysis which follows was carried out with charts showing dollar figures of the factor returns as well as their shares, but they are not reproduced here.

2. *Reference Cycle of Behavior of Wage Shares*

In order to describe the behavior of the wage share during recurrent expansions and contractions of general business activity (the so-called reference cycles), we have charted the main industrial divisions of nonfarm private business product, and have indicated the alternate periods of expansion and contraction by plain and shaded areas (see Chart 8). In delineating these periods, the reference dates developed by E. C. Chambers for Canadian business cycles have been utilized.[3] The dates of these reference cycles, incidentally, resemble very closely (frequently within one or two months), those used for the United States economy by the National Bureau.

[2] If we add $10 to wages which hitherto were $50 and do this at the expense of another factor, say profits, which hitherto were $20, we have added 20 per cent to wages and deducted 50 per cent from profits. Thus, if one factor were gaining or losing absolute amounts at the expense of another, we would expect to see quite diverse movements cyclically, on semilog share charts.

[3] E. C. Chambers, "Canadian Business Cycles Since 1919: A Progress Report," *Canadian Journal of Economics and Political Science*, May 1958, p. 181. We have added turning points in January 1944, April 1957, and April 1958.

CHART 8
Wage and Salary Share of Nonfarm Private Business Product

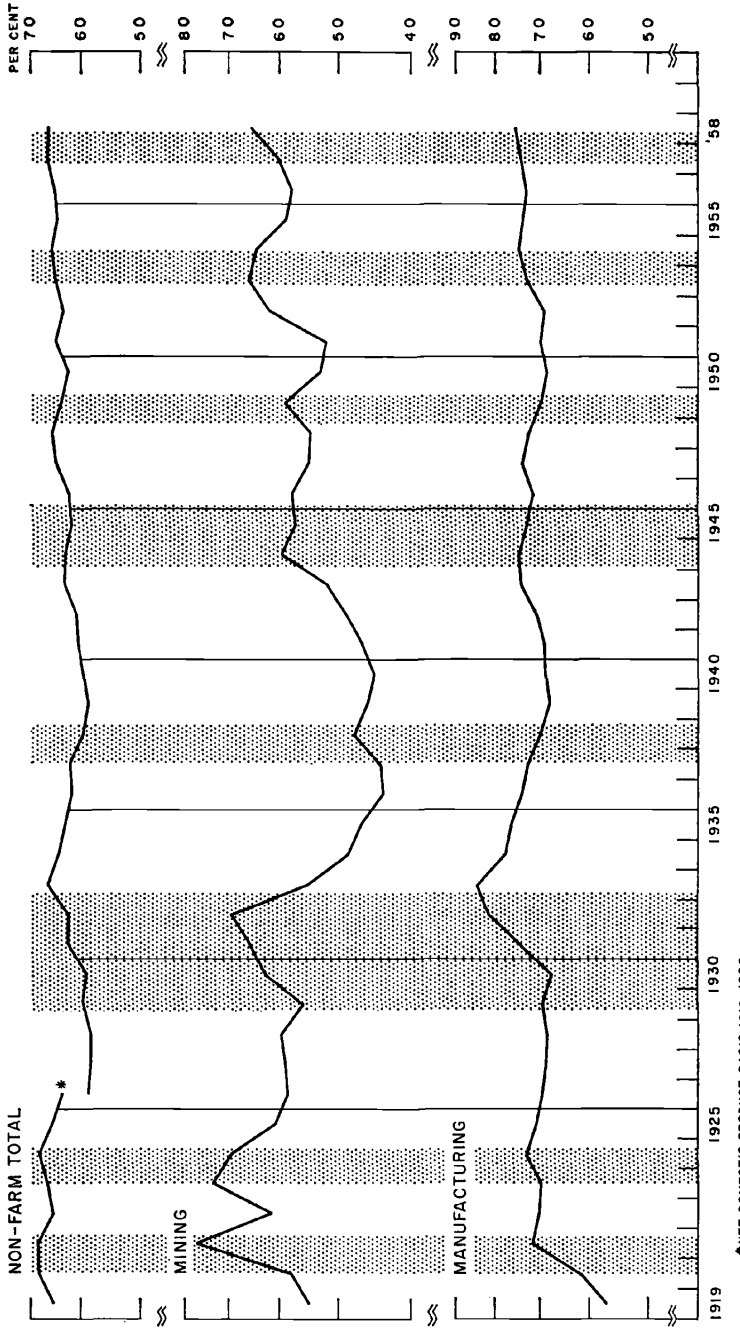


CHART 8 (continued)

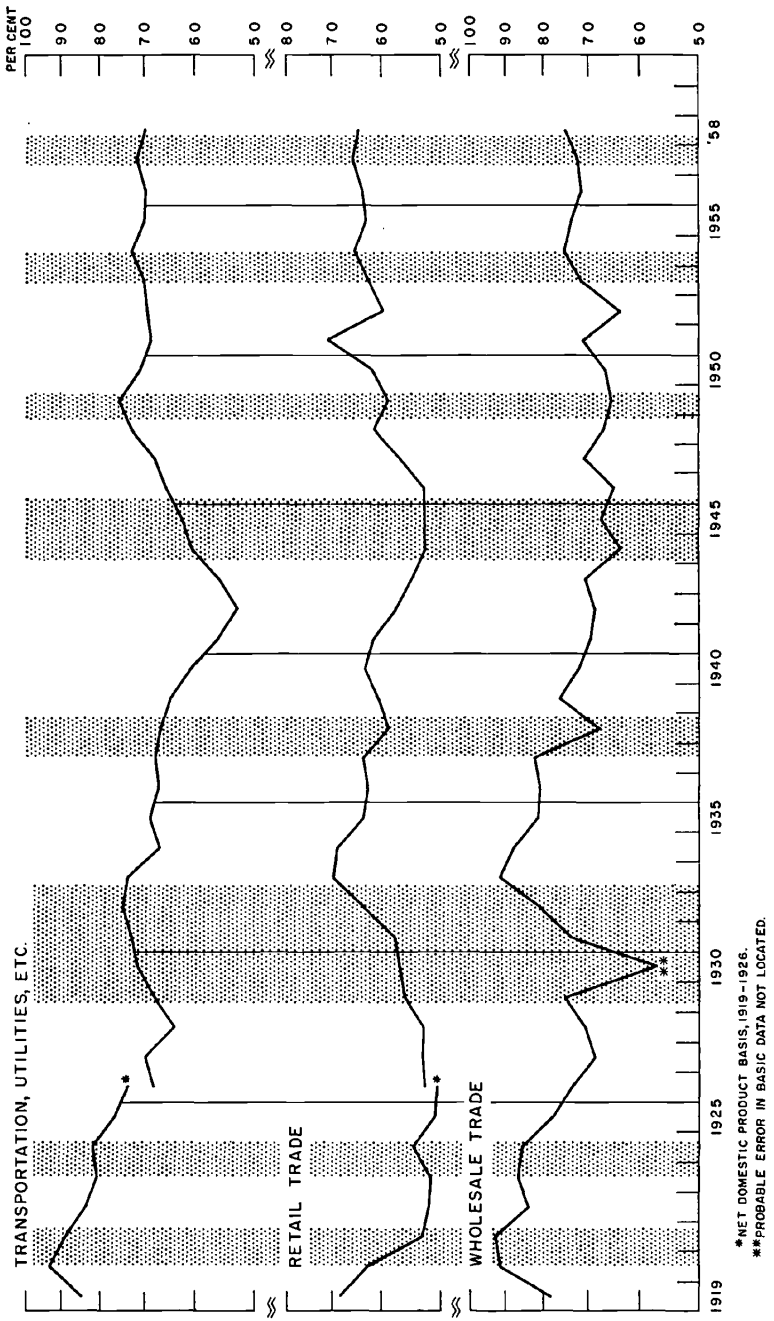
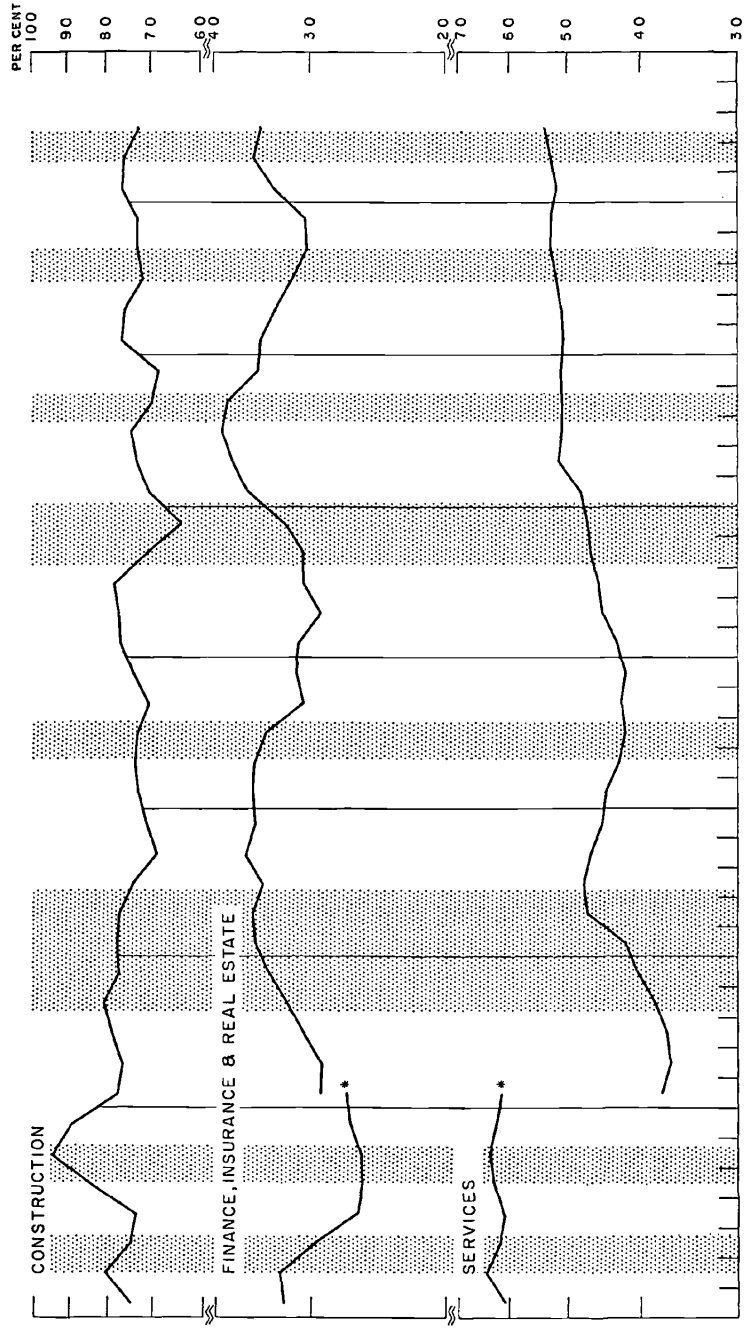


CHART 8. (concluded)



Despite the shortcomings of annual data for cyclical analysis, the chart and the following tables provide the initial suggestion that there is some degree of inverse behavior of wage shares during reference cycles. This is illustrated by the predominance of minus signs in Table 1 (part A) and plus signs in Table 2 (part A). This inverse behavior does not hold in the period 1938–48, nor does it hold strongly in the mild cycles of the postwar period.

TABLE 1
WAGE SHARES OF PRIVATE BUSINESS PRODUCT DURING EIGHT REFERENCE EXPANSIONS[a]

	May 1919 to June 1920	Sept. 1921 to June 1923	Aug. 1924 to Apr. 1929	May 1933 to July 1937	Oct. 1938 to Jan. 1944	Feb. 1946 to Oct. 1948	Sept. 1949 to May 1953	June 1954 to Apr. 1957
A Industries in which countercyclical behavior predominates								
Mining, quarrying, and oil wells	+	−	+	−	+	−	+	−
Manufacturing	+	−	−	−	+	0	+	0
Transportation, public utilities, etc.	+	−	−	−	−	+	−	−
Wholesale trade	+	−	−	−	−	0	+	−
Retail trade	−	−	−	−	−	+	0	0
B Industries in which cyclical conformity predominates								
Forestry	+	+	0	+	+	+	+	+
Construction	+	+	−	−	0	+	+	+
C Industries not displaying either behavior								
Finance, insurance and real estate	+	−	+	0	−	+	−	+
Service	+	0	−	−	+	+	+	0
D Total nonfarm private business product wage share								
Total nonfarm	+	−	−	−	+	+	+	+

[a] Change between beginning and ending level of annual average, plotted at mid-year.

Moreover, while it is evident in mining, manufacturing, transportation, communication and public utilities, and wholesale and retail trade, it is not evident in forestry, construction, finance, and services. Forestry and construction with very high wage shares appear to move in the same direction as reference cycle phases.[4] Finance and services, with relatively low wage shares, have very little cyclical volatility of either wages and salaries or private business product, and no particular correlation with reference phases can be seen. Manufacturing itself is a heterogeneous aggregate behaving very much like the nonfarm private business product, as far as reference cycle responses of wage shares are concerned. But there is sufficient hint of negative correlation here

[4] Our data are less adequate for these industries than for most others.

TABLE 2
WAGE SHARES OF PRIVATE BUSINESS PRODUCT DURING EIGHT REFERENCE CONTRACTIONS

	June 1920 to Sept. 1921	June 1923 to Aug. 1924	April 1929 to May 1933	July 1937 to Oct. 1938	June 1944 to Feb. 1946	Oct. 1948 to Sept. 1949	May 1953 to June 1954	April 1957 to April 1958
A Industries in which countercyclical behavior predominates								
Mining, quarrying, and oil wells	+	−	+	+	+	+	−	+
Manufacturing	+	+	+	−	−	−	+	+
Transportation, public utilities, etc.	−	+	+	−	+	+	+	−
Wholesale trade	+	−	+	−	+	−	+	+
Retail trade	−	+	+	−	+	−	+	−
B Industries in which cyclical conformity predominates								
Forestry	−	−	−	−	−	−	−	−
Construction	−	+	−	0	−	−	+	−
C Industries not displaying either behavior								
Finance, insurance, and real estate	−	+	+	−	+	−	−	−
Service	−	+	+	−	+	0	+	+
D Total nonfarm private business product wage share								
Total nonfarm	+	+	+	−	−	−	+	0

to make it seem worthwhile to go further. We next examine these data in specific cycles.

3. Specific Cycles in Wage and Salary Shares

NONFARM PRIVATE BUSINESS PRODUCT BY MAIN INDUSTRY DIVISIONS

The industrial parts of nonfarm private business product display some variety of timing behavior. The term "specific" implies that we are not now concerned with business cycle reference dates, but rather with the turning points of the total product of each individual series.

In percentage terms, wages and salaries vary less than the total product, and corporate profits after I.V.A. vary more than the total. The effect on the wage shares is that they vary inversely with the total during a majority of specific cycles. This behavior is most apparent in mining, less apparent in manufacturing (which contains some diverse elements), clear in the transportation, communication, storage and public utility group, and also quite clear in wholesale and retail trade. Additional confirmation of the

above is apparent from the study of postwar seasonally adjusted data below.

In order to condense these notes, the above findings will not be repeated for each individual industry. Rather we note exceptions and add comments on special factors.

Forestry, as noted above, has a very high wage content (90 per cent). Wages and salaries in this industry appear to vary in specific cycles just as the total industry product varies, with the result that the wage share appears to be positively correlated with output values. Despite the high level of wages and general agreement among short swings in wages and the total product, four lags of the shares behind the total are noted in the four most recent postwar turning points.

The *mining* industry, more than any other, displays a strong inverse correlation between the wage share and the total industry product. This appears to be associated with large variations in corporate profits after I.V.A., which on average are as large as wages and salaries.[5] The specific cycle turning points in the industry product (and profits) frequently lead the turning points in general business activity by a year or more.

The timing pattern of *manufacturing* wage shares is almost identical to that of the all-industry total. The wage share is inverse in the twenties, thirties, and fifties, but it moves in the same direction as total product in the forties. The group is large and heterogeneous, so that its total wage share reflects a great deal of cancellation of widely varying individual components.

Construction, like forestry, has a large (75 per cent) wage share which is quite flat and to a considerable extent positively correlated.

The *transportation, communication, storage and public utilities* group has been adjusted to exclude government-owned business enterprises, which represent an important proportion of the total in this group. Its private business content behaves quite like the general rule for the all-industry total, as well as manufacturing and mining, displaying negatively correlated wage shares and fairly large positively correlated profit variations.

Wholesale and retail trade wage shares vary countercyclically. In addition, both profits and net unincorporated income exhibit greater short-term variability than wages or industry product, accounting in the statistical sense for wage share inversion.

[5] Classification problems may affect this statement.

In *finance, insurance and real estate*, the wage and salary share is small, varying between 30 and 40 per cent of total product. The largest component of the product of this industry is net paid and imputed rents, and short cycles are not shown by either the total or its main components. Therefore, inverse behavior is not visible, except for the period 1928–34, when the total and main components declined and the wage share increased.

The combined *service industries* have approximately equal amounts of wages and salaries and net unincorporated incomes, which follow a similar and smooth path, increasing to 1928, decreasing to 1933, and rising thereafter. The wage share has no noticeable cyclical events except a rise from 1926 to 1933, a decline from 1933 to 1939 and a general rise thereafter.

The following table summarizes the above and in addition provides some indication of leads and lags of wage shares and profits, as shown by annual data.

TABLE 3
SUMMARY OF SPECIFIC CYCLICAL BEHAVIOR OF WAGES AND SALARIES AND CORPORATE PROFITS AFTER I.V.A.

	Do Wages Vary Less Than Total?	Does Wage Share Lag Total?	Is Wage Share Inversely Correlated with Total?	Does Profit Variation Exceed Wage Variation?	Do Profits Lead at Specific Peaks and Troughs?
Nonfarm private business product	yes	yes	yes	yes	occasionally
Mining	yes	yes	yes	yes	coincident
Manufacturing	yes	yes	yes	yes	occasionally
Construction	not clear	no	yes, in post-war period	not clear	no
Transportation	yes	occasionally	yes	yes	no
Wholesale trade	yes	no	yes	yes	no
Retail trade	yes	no	yes	yes	no
Finance, insurance and real estate	yes	no	yes	yes	no
Service	no	no	no	no	no

SPECIFIC CYCLES IN WAGE AND SALARY SHARES IN CENSUS VALUE ADDED—EIGHTEEN MAJOR GROUPS

We now turn to a brief description of the movements of the wage share in specific cycles of the eighteen major manufacturing

groups. The definitional aspects of census value added statistics were discussed in the preceding paper. At first sight it seems that the finer the industrial detail the more extreme the cyclical variability of wage shares—at least the cyclical cross-currents are so numerous that one is bewildered by their variety. However, closer examination indicates that it is possible to group the industries into several classes as far as the cyclical behavior of their wage shares is concerned.

It is suggested that the wage share patterns may be classified into four groups:

1. Foods and beverages, textiles, knitting mills and clothing, leather products, and printing are consumer nondurables with only a moderate amount of cyclical variation in wage shares, but all higher at the end than at the beginning of the series. Rubber products and miscellaneous manufacturing belong here, as far as demand factors are concerned, but their patterns are not alike and other reasons would have to be sought for their behavior, e.g., in terms of technology, markets and organizational structure in these industries. Tobacco has a downward share drift and unusual behavior throughout.

2. Electrical apparatus, chemicals, iron and steel, and transportation equipment, which are, of course, mainly producers' durable goods industries, all exhibit fairly strong amplitudes and considerable similarity of timing of wage shares at peaks and troughs.

3. Wood and paper products and nonmetallic minerals have only a moderate amount of wage share variation, despite the fact that they are related to the highly variable demand sectors of exports and construction.

4. Extreme variations are shown by petroleum, coal, and nonferrous metals; and, as was discovered earlier for mining, there must be large variation in some other factor such as corporation profits in these industries. They are also, except coal, related to exports.

A complete durable and nondurable classification was carried out, which showed greater cyclical variation in durable goods industries than in nondurables. The latter had a flat pattern reflecting cancellation of its parts. Much finer detail, together with an end-use classification, would be required to do the above analysis properly.

SELECTED PRIMARY AND EXPORT INDUSTRIES IN MANUFACTURING

As described in the preceding paper, it was possible to arrange the finest available industrial detail at the three-digit level according to (a) primary and secondary and (b) export and domestic groups. This rearrangement appears in Chart 7 where it will be noted that cyclical patterns of wage shares in primary and export industries display considerable amplitude by comparison with those of domestic and secondary industries. Since primary and export industries are largely overlapping in content and are dominated by sawmills, pulp and paper products and nonferrous smelting and refining, the cyclical patterns of their wage shares are very similar in amplitudes and turning points. On the other hand, the domestic and secondary industries display a remarkably unchanging pattern through time, the result of a substantial amount of cancellation of wide individual differences among their component groups.

4. Postwar Quarterly Data, for Net Domestic Product Originating in Major Industry Groups

In preceding sections we concentrated on the main hypothesis that wage shares display countercyclical behavior, as a concomitant of the lesser volatility of wages and salaries, by comparison with other factors that enter the total product. Not only were there numerous exceptions to the general rule in the form of increasing diversity as we looked into the various industrial groupings, but there were noted in passing a number of instances where even the annual data showed timing discrepancies at peaks and troughs. In particular, Table 10 showed several industry groups wherein wage shares turned up or down at a later date than the total product. Thus, it was suspected that the earlier hypothesis was oversimplified and should be supplemented by a more careful examination of leads and lags of factor returns and share ratios in specific cycles. Since annual data are not adequate for this sort of work, we were fortunate in obtaining preliminary and unpublished postwar quarterly data, seasonally adjusted, for four major industry groups (mining, manufacturing, transportation and public utilities, and trade). These data are on a domestic income basis and have not been adjusted to remove government-owned business

enterprises. They have been adjusted for inventory valuation, which alters turning points considerably.

SPECIFIC CYCLES IN WAGE SHARES AND RELATED ITEMS

Chart 9 for the mining, quarrying, and oil industry indicates that profits are quite volatile, that they are highly correlated with domestic income and have the same turning points. By contrast, wages and salaries lag at the three peaks and at one of the two troughs and are relatively stable. Although the wage share undoubtedly behaves countercyclically, it is not perfectly so; it is therefore suggested that the lag of wages is an extra complicating factor over and above relative wage stability in determining the countercyclical movement of the wage share.

Chart 10 for manufacturing indicates that there are four turning points in which profits turn ahead of wages. But the turning points in the industry product do not appear to be as strongly correlated with profits as was the case in mining. However, the conclusion is still possible that the wage share is inverted in such a manner that it goes up during contractions and goes down during the initial half of expansions, at least.

Chart 11 for the group of transportation, public utilities, etc. indicates that profits after inventory valuation adjustment are rather stable by comparison with the other charts. Also, other investment income (not charted) is large and quite stable. Wages and salaries move parallel to the industry product and although they are not much more stable than total product, some wage share inversion is noticeable. Again we see that the wage share goes up during all of the contraction in total product and declines mainly in the early half of expansion.

In Chart 12 for wholesale and retail trade combined, there is a considerable amount of wage share inversion accompanied by profit variability. The wage share increases right through the contraction phase of total output, and may then decline during the first half of expansion.

A reference cycle analysis was also carried out with the same four charts, leading to the general conclusion that wage shares decline during a considerable part of reference expansions and increase in reference contractions. However, the mining industry leads the 1953 reference peak by a year and one-half and recovers early as well. Another exception is for wholesale and retail trade,

CHART 9
Net Domestic Product and Selected Components: Mining

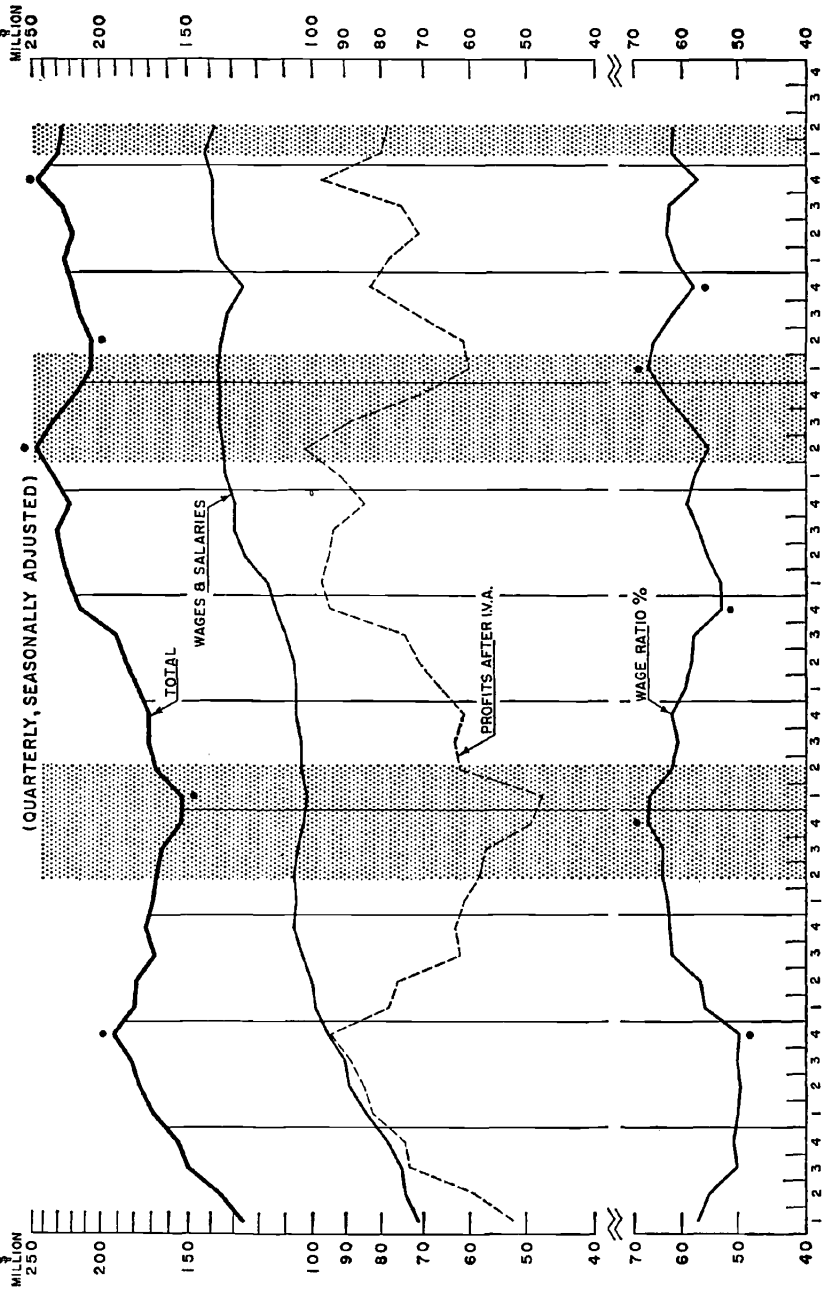


CHART 10

Net Domestic Product and Selected Components: Manufacturing

(QUARTERLY, SEASONALLY ADJUSTED)

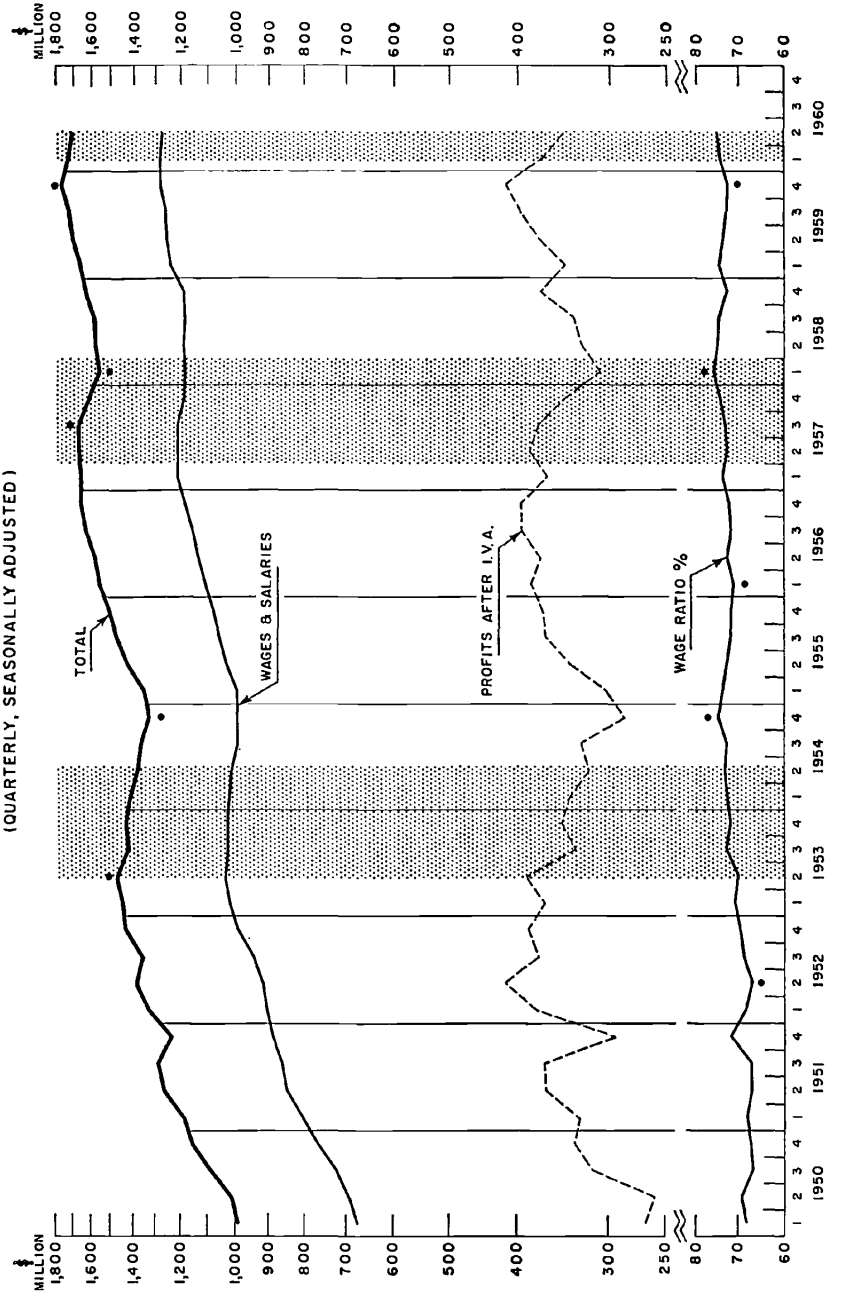


CHART 11

Net Domestic Product and Selected Components: Transport, Etc.

(QUARTERLY, SEASONALLY ADJUSTED)

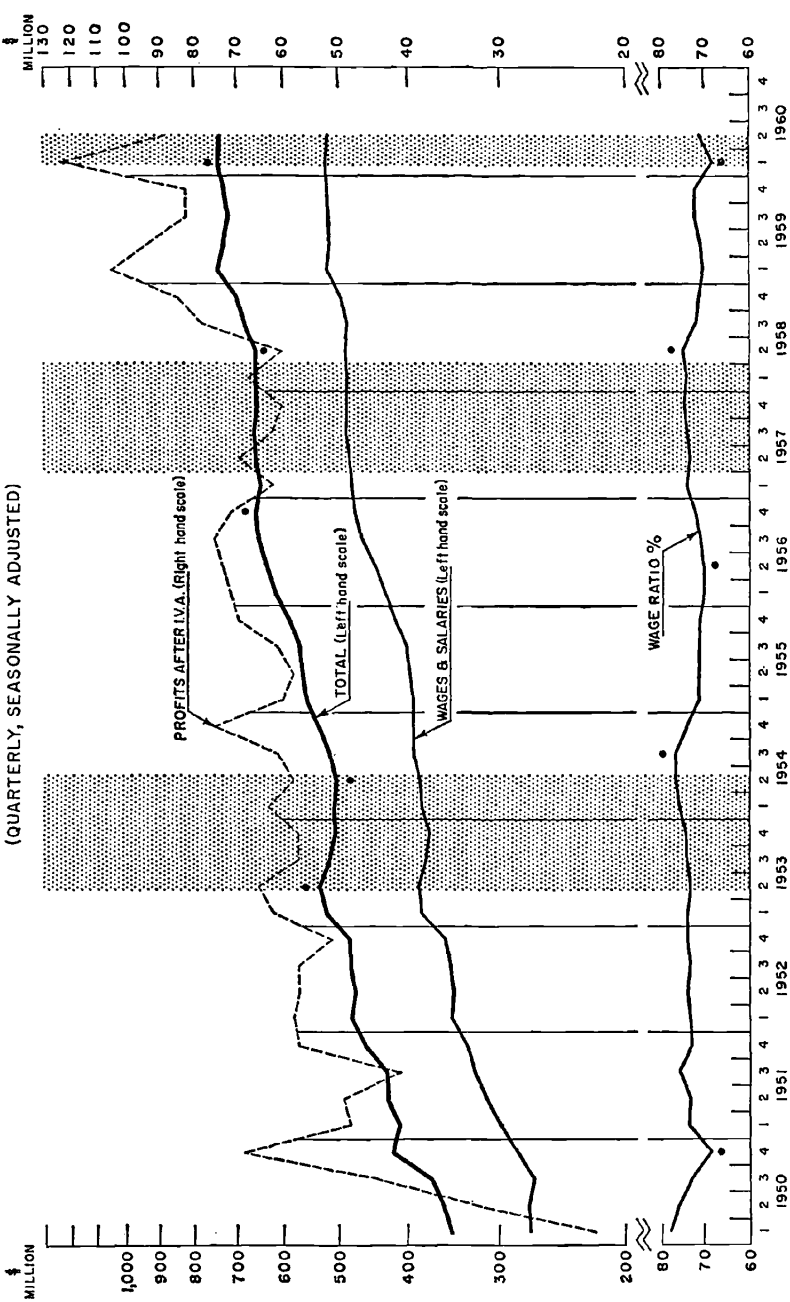
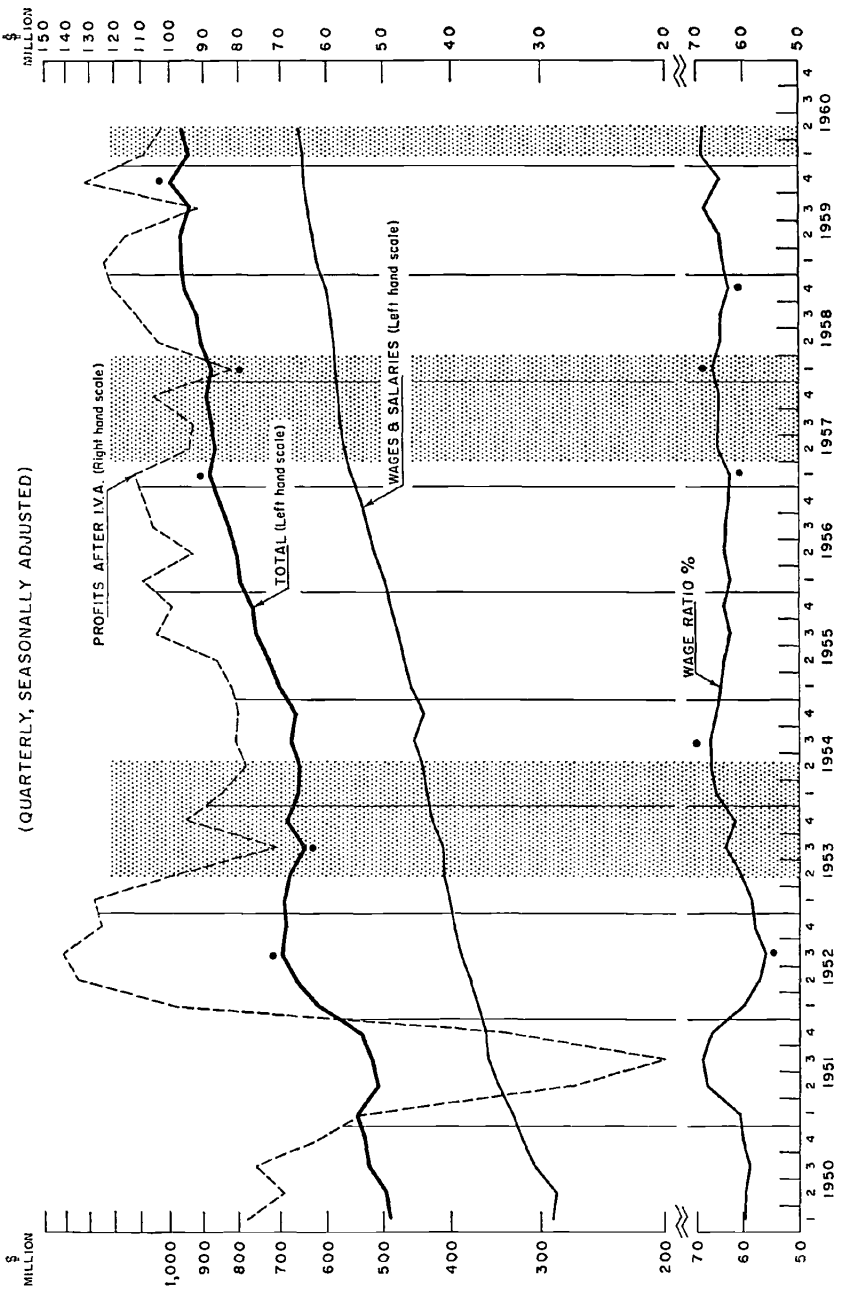


CHART 12
Net Domestic Product and Selected Components: Total Trade
(QUARTERLY, SEASONALLY ADJUSTED)



which leads the 1953–54 downturn. Since reference cycles are not as clear cut as specific cycles, the following conclusions will refer to specific cycles only.

In most of the above specific cycles, the reciprocal of the wage share is a leader of total product peaks. This is the result of the finding that wage shares generally declined only during the first half of these postwar expansions. The same claim cannot be made for the troughs in these data. Here the wage shares are usually at a maximum and are coincident.

It is very difficult to translate the above straightforward description of events, as portrayed by statistical charts, into some kind of generalization or hypothesis which might be easier to comprehend or to remember for future testing. The simple initial hypothesis of wage share inversion as a result of relative stability of returns to this factor, by comparison with profits, is not too far off the mark. But it must be qualified by the observation that, according to our data, there are frequent very short lags of wages behind total product, accompanied, usually, by short leads of profits. In addition to these short leads and lags of factor returns at peaks and troughs, there is also a differential rate of response of wages, mainly during expansions, which gives rise to a quarter-cycle lead of inverted shares at peaks.

Business cycle literature contains references to items closely related to wage shares, such as labor costs per unit of real output and net product price indexes (referring to the output minus input prices which are a by-product of the double deflation process sometimes used in arriving at real output). The closeness of this relationship is demonstrated by the fact that if weighting systems and procedures are properly chosen, the wage share is equal to a cost-price ratio.[6] It has long been known that unit labor costs "tend to rise in contraction and to fall at least during the earlier stages of expansion."[7] More recently there have been several additions to the list of leading indicators. Corporate profits before taxes and a price-unit labor cost ratio in manufacturing which

[6] Wage share $= \frac{\text{wages and salaries}}{\text{total product}} = \frac{\text{wages and salaries} \div \text{real output index}}{\text{total product} \div \text{real output index}} = \frac{\text{unit wage costs, index}}{\text{net product price index}}$

[7] Wesley C. Mitchell, *What Happens during Business Cycles*, N.Y., NBER, 1951, p. 133. Hultgren's *Changes in Labor Cost* contains a great deal of additional information on this point.

is the reciprocal of the wage share, are included as leaders, while unit labor costs are included as laggers.[8] Although we have not worked with product prices or deflated total product in this paper, it is suggested that this might be a suitable topic for future research.

Summary and Conclusions

Annual data from 1926 to 1958 for nonfarm private business product indicate that the cyclical variability of wages and salaries is frequently smaller than that of other factor returns, in terms of percentage variation. This is mainly true of the total and the groups of mining, manufacturing, transportation and public utilities, and wholesale and retail trade. It does not hold in the 1938–48 period, nor in the industries of forestry, construction, finance, insurance and real estate, and services. Wherever the above finding is true, the wage share displays inverted behavior and it is easier to see this in the specific cycles of each industry's total product than in reference cycles in business at large.

The eighteen major groups within manufacturing were grouped experimentally according to their common patterns of wage share behavior. No important findings can be claimed from this experiment, except that finer detailing and more examination of related factors is called for. At the finest level of detail available to us, we were able to separate (a) export versus domestic industries and (b) primary versus secondary industries. The export and primary groups displayed the most variation in wage shares.

Postwar quarterly data, seasonally adjusted, for four industry groups indicated that the initial hypothesis of inverted cyclical behavior of wage shares required further qualification. The wage share patterns were never the exact opposite of the total product patterns and at certain stages of cyclical phases the wage shares moved in the same direction as the total. No simple sine-curve or straight-line model containing various leads and lags, will serve to summarize the complicated behavior of wage shares. Nevertheless, it is suggested that an important thing about cycles in wage shares is that they continue on down for some time after the total product has begun to expand. Later in expansion, the wage shares turn up. According to our data, the wage shares continue in an upward direction right through the succeeding contraction. They

[8] Moore and Hultgren in *Current Economic Situation* (see note 1).

turn down only when total product turns up and therefore do not lead the trough as they had previously turned in advance of the peak. Taking the cycle as a whole, and subject to the above qualifications, wage shares may be regarded as an inverted series.

APPENDIX

Note on Tabular Material

Only a brief note on sources is provided here. The data for 1926–58 are based on official published sources and worksheets of the National Accounts and Labor Divisions of the Dominion Bureau of Statistics. For a detailed description of sources and methods reference should be made to *National Accounts, Income and Expenditure, 1926–56* and *National Accounts, Income and Expenditure, 1959.* In several cases adjustments were made to published information, the most important of which is the inclusion of imputed rent on government-owned buildings with the finance, insurance, and real estate industry, rather than services as in the published figures. Substantial rearrangement of worksheet data was involved in segregating the private business sector, as the worksheets had been set up to produce totals only for the private and government business sector as a whole. Some rearrangement of the information was also involved in securing data for domestic income, by industry, as the worksheets had been designed to produce industry distributions on a gross domestic basis only. The published figures of the inventory valuation adjustment were separated into incorporated and unincorporated, for each individual industry, on the basis of admittedly arbitrary judgments and scattered statistics on legal form of business organization. The taxation data used to calculate factor shares after taxes were based on various editions of *Taxation Statistics* published by the Canadian Department of National Revenue. Since 1946 the personal income tax payable for each income size class was split pro rata according to the ratio of wages and salary income to total taxable income assessed. For the earlier years, income tax paid by "employees" was taken as synonymous with income tax paid out of salary-wage income. The estimates of 1919–26 were carried out by D. H. Jones of the Central Research and Development Staff, Dominion Bureau of Statistics, and a memorandum on sources and methods prepared by him will be made available on request.

TABLE A-1
PERCENTAGE DISTRIBUTION OF DOMESTIC INCOME BY FACTOR SHARES

Year	Wages and Salaries	Investment Income	Net Nonfarm Unincorporated Income	Net Farm Unincorporated Income[a]	Total
			INCLUDING INVENTORY VALUATION ADJUSTMENT		
1926	54.7	19.8	11.5	14.0	100.0
1927	55.0	20.2	11.7	13.1	100.0
1928	54.8	20.6	11.8	12.8	100.0
1929	59.3	20.5	12.3	7.9	100.0
1930	59.6	20.6	12.5	7.3	100.0
1931	65.9	18.8	12.7	2.6	100.0
1932	68.2	16.3	11.9	3.6	100.0
1933	69.2	17.4	10.8	2.6	100.0
1934	65.0	19.2	10.2	5.6	100.0
1935	63.2	19.6	10.6	6.6	100.0
1936	62.4	21.2	10.9	5.5	100.0
1937	61.9	21.0	10.3	6.8	100.0
1938	59.5	21.0	11.2	8.3	100.0
1939	58.7	22.9	10.3	8.1	100.0
1940	59.2	22.4	9.3	9.1	100.0
1941	61.2	22.7	9.0	7.1	100.0
1942	59.3	21.4	8.1	11.2	100.0
1943	63.5	20.4	8.1	8.0	100.0
1944	62.0	18.7	8.2	11.1	100.0
1945	62.6	19.0	9.2	9.2	100.0
1946	59.5	19.2	10.5	10.8	100.0
1947	61.0	18.6	9.9	10.5	100.0
1948	61.2	18.2	9.4	11.2	100.0
1949	61.4	18.8	10.3	9.5	100.0
1950	60.3	21.2	9.5	9.0	100.0
1951	60.9	19.8	7.9	11.4	100.0
1952	60.7	20.6	8.4	10.3	100.0
1953	63.6	19.7	8.7	8.0	100.0
1954	66.3	19.8	8.6	5.3	100.0
1955	64.7	20.9	8.4	6.0	100.0
1956	65.0	20.7	8.1	6.2	100.0
1957	67.8	20.0	8.1	4.1	100.0
1958	67.4	19.5	8.4	4.7	100.0

(continued)

TABLE A-1 (concluded)

Year	Wages and Salaries	Investment Income	Net Nonfarm Unincorporated Income	Net Farm Unincorporated Income[a]	Total
	EXCLUDING INVENTORY VALUATION ADJUSTMENT				
1926	55.3	19.1	11.4	14.2	100.0
1927	55.3	19.8	11.7	13.2	100.0
1928	54.8	20.6	11.8	12.8	100.0
1929	59.1	20.6	12.4	7.9	100.0
1930	62.8	17.4	12.1	7.7	100.0
1931	69.2	16.2	12.0	2.6	100.0
1932	70.9	14.0	11.4	3.7	100.0
1933	68.7	18.0	10.8	2.5	100.0
1934	64.2	19.9	10.4	5.5	100.0
1935	62.8	19.9	10.7	6.6	100.0
1936	61.8	21.8	10.9	5.5	100.0
1937	60.6	22.1	10.6	6.7	100.0
1938	60.5	20.0	11.0	8.5	100.0
1939	58.0	23.6	10.4	8.0	100.0
1940	57.8	23.5	9.8	8.9	100.0
1941	59.7	23.8	9.6	6.9	100.0
1942	58.5	22.2	8.3	11.0	100.0
1943	63.0	20.9	8.2	7.9	100.0
1944	61.7	19.0	8.3	11.0	100.0
1945	62.3	19.2	9.3	9.2	100.0
1946	58.0	20.8	10.7	10.5	100.0
1947	57.8	21.7	10.5	10.0	100.0
1948	58.7	20.6	9.9	10.8	100.0
1949	60.9	19.3	10.4	9.4	100.0
1950	58.8	22.7	9.6	8.9	100.0
1951	58.7	21.7	8.6	11.0	100.0
1952	61.0	20.2	8.4	10.4	100.0
1953	63.5	19.8	8.6	8.1	100.0
1954	66.6	19.5	8.6	5.3	100.0
1955	64.1	21.6	8.4	5.9	100.0
1956	64.4	21.2	8.3	6.1	100.0
1957	67.6	20.1	8.2	4.1	100.0
1958	67.3	19.6	8.4	4.7	100.0

[a] Undistributed Wheat Board profits included.

TABLE A-2
PERCENTAGE DISTRIBUTION OF NATIONAL INCOME BY FACTOR SHARES[a]

Year	Wages and Salaries	Investment Income	Net Unincorporated Income (Farm and Nonfarm)	Total
1926	57.5	15.7	26.8	100.0
1927	57.7	16.2	26.1	100.0
1928	57.5	16.8	25.7	100.0
1929	62.6	16.1	21.3	100.0
1930	63.5	15.3	21.2	100.0
1931	71.4	12.1	16.5	100.0
1932	75.1	7.8	17.1	100.0
1933	75.8	9.5	14.7	100.0
1934	70.0	13.1	16.9	100.0
1935	67.4	14.3	18.3	100.0
1936	66.8	15.7	17.5	100.0
1937	65.5	16.4	18.1	100.0
1938	63.1	16.2	20.7	100.0
1939	62.2	18.4	19.4	100.0
1940	62.3	18.4	19.3	100.0
1941	63.3	19.9	16.8	100.0
1942	60.8	19.5	19.7	100.0
1943	65.0	18.6	16.4	100.0
1944	63.3	17.0	19.7	100.0
1945	63.7	17.6	18.7	100.0
1946	61.0	17.2	21.8	100.0
1947	62.6	16.4	21.0	100.0
1948	62.5	16.5	21.0	100.0
1949	62.9	16.9	20.2	100.0
1950	61.9	19.0	19.1	100.0
1951	62.1	18.2	19.7	100.0
1952	61.5	19.5	19.0	100.0
1953	64.4	18.7	16.9	100.0
1954	67.3	18.6	14.1	100.0
1955	65.7	19.7	14.6	100.0
1956	66.1	19.4	14.5	100.0
1957	69.0	18.5	12.5	100.0
1958	68.5	18.1	13.4	100.0

[a] I.V.A. included.

TABLE A-3

PERCENTAGE DISTRIBUTION GROSS DOMESTIC INCOME BY (GROSS) FACTOR SHARES[a]

Year	Wages and Salaries	Gross Investment Income	Gross Unincorporated Income (Farm and Nonfarm)	Total
1926	48.4	26.0	25.6	100.0
1927	48.5	26.5	25.0	100.0
1928	48.3	27.0	24.8	100.0
1929	51.9	27.2	21.0	100.0
1930	51.8	27.7	20.6	100.0
1931	56.1	27.3	16.7	100.0
1932	56.9	25.8	17.2	100.0
1933	57.5	27.1	15.4	100.0
1934	55.4	27.5	17.1	100.0
1935	54.4	27.3	18.3	100.0
1936	54.1	28.6	17.3	100.0
1937	54.1	28.0	17.9	100.0
1938	52.1	28.0	19.9	100.0
1939	51.4	29.8	18.8	100.0
1940	51.9	29.6	18.6	100.0
1941	53.8	29.8	16.4	100.0
1942	52.7	28.3	19.0	100.0
1943	57.0	26.7	16.3	100.0
1944	56.3	24.4	19.3	100.0
1945	57.0	24.4	18.7	100.0
1946	54.0	24.3	21.7	100.0
1947	54.7	24.5	20.9	100.0
1948	54.7	24.3	21.0	100.0
1949	54.5	25.2	20.3	100.0
1950	53.3	27.4	19.3	100.0
1951	53.9	26.2	20.0	100.0
1952	53.8	26.9	19.3	100.0
1953	55.9	26.5	17.5	100.0
1954	57.6	27.3	15.1	100.0
1955	56.0	28.9	15.2	100.0
1956	56.3	28.8	14.9	100.0
1957	58.2	28.8	13.0	100.0
1958	58.3	28.0	13.7	100.0

[a] I.V.A. included.

TABLE A-4

PERCENTAGE DISTRIBUTION OF DOMESTIC INCOME PLUS INTEREST ON PUBLIC AND CONSUMER DEBT BY FACTOR SHARES[a]

Year	Wages and Salaries	Investment Income Plus Interest[b]	Net Unincorporated Income (Farm and Nonfarm)	Total
1926	51.9	23.9	24.2	100.0
1927	52.2	24.1	23.6	100.0
1928	52.3	24.2	23.5	100.0
1929	56.6	24.2	19.3	100.0
1930	56.6	24.6	18.8	100.0
1931	61.6	24.2	14.2	100.0
1932	62.2	23.6	14.2	100.0
1933	62.3	25.7	12.0	100.0
1934	59.3	26.4	14.3	100.0
1935	58.2	26.0	15.8	100.0
1936	57.9	26.9	15.2	100.0
1937	58.0	26.0	16.0	100.0
1938	56.0	25.8	18.3	100.0
1939	55.2	27.5	17.3	100.0
1940	56.2	26.2	17.5	100.0
1941	58.5	26.1	15.4	100.0
1942	57.1	24.3	18.6	100.0
1943	61.0	23.6	15.4	100.0
1944	59.5	22.1	18.5	100.0
1945	59.4	23.0	17.5	100.0
1946	56.3	23.6	20.1	100.0
1947	57.9	22.7	19.4	100.0
1948	58.4	21.9	19.7	100.0
1949	58.8	22.3	18.9	100.0
1950	58.0	24.2	17.9	100.0
1951	58.8	22.5	18.7	100.0
1952	58.7	23.2	18.1	100.0
1953	61.5	22.4	16.2	100.0
1954	63.8	22.7	13.4	100.0
1955	62.4	23.6	14.0	100.0
1956	62.8	23.3	13.8	100.0
1957	65.5	22.7	11.8	100.0
1958	65.0	22.3	12.7	100.0

[a] Includes I.V.A.

[b] Interest on public and consumer debt.

TABLE A-5
PERCENTAGE DISTRIBUTION OF DOMESTIC INCOME BY FACTOR SHARES[a]
(after taxes)

Year	Wages and Salaries After Taxes[b]	Corporation Profits After Direct Taxes	Other Income After Direct Taxes[c]	Total
1926	55.0	9.7	35.3	100.0
1927	55.4	10.0	34.6	100.0
1928	55.3	10.2	34.5	100.0
1929	60.0	10.0	30.0	100.0
1930	60.1	10.0	29.9	100.0
1931	66.7	6.8	26.5	100.0
1932	69.2	2.5	28.3	100.0
1933	70.6	4.0	25.4	100.0
1934	66.2	6.5	27.3	100.0
1935	64.6	7.8	27.6	100.0
1936	64.0	9.6	26.4	100.0
1937	63.6	10.1	26.3	100.0
1938	61.0	10.7	28.3	100.0
1939	60.2	12.0	27.8	100.0
1940	63.2	8.5	28.3	100.0
1941	66.3	8.3	25.4	100.0
1942	63.4	7.7	28.9	100.0
1943	67.8	7.3	24.9	100.0
1944	65.4	6.8	27.8	100.0
1945	66.3	6.9	26.8	100.0
1946	63.0	7.0	30.0	100.0
1947	64.7	7.0	28.3	100.0
1948	63.9	8.1	28.0	100.0
1949	64.4	9.1	26.5	100.0
1950	63.9	9.5	26.6	100.0
1951	65.6	6.5	27.9	100.0
1952	64.3	8.5	27.2	100.0
1953	66.6	7.9	25.5	100.0
1954	69.2	7.4	23.4	100.0
1955	67.6	8.0	24.4	100.0
1956	67.9	8.4	23.7	100.0
1957	70.5	7.7	21.8	100.0
1958	69.8	7.2	23.0	100.0

[a] Includes I.V.A.
[b] In addition to taxes on wages and salaries, employer and employee contributions to social insurance and government pension plans have been deducted.
[c] Succession duties have not been deducted.

TABLE A-6
PERCENTAGE DISTRIBUTION OF DOMESTIC INCOME BY SECTORS

Year	Persons[a]	General Government	Government Business	Private Business	Total
1926	3.2	5.7	6.8	84.3	100.0
1927	3.2	5.7	6.7	84.4	100.0
1928	3.1	5.5	6.9	84.5	100.0
1929	3.4	5.9	6.9	83.8	100.0
1930	3.6	6.8	6.6	83.0	100.0
1931	4.1	8.6	7.3	80.0	100.0
1932	4.3	10.1	7.7	77.9	100.0
1933	4.3	10.2	7.8	77.7	100.0
1934	3.9	9.4	7.4	79.3	100.0
1935	3.7	8.7	7.1	80.5	100.0
1936	3.4	8.2	7.3	81.1	100.0
1937	3.2	7.6	6.6	82.6	100.0
1938	3.2	7.9	6.2	82.7	100.0
1939	3.0	8.0	6.5	82.5	100.0
1940	2.6	10.2	6.5	80.7	100.0
1941	2.2	11.4	6.4	80.0	100.0
1942	1.7	12.8	5.9	79.6	100.0
1943	1.4	15.4	6.6	76.6	100.0
1944	1.4	16.0	6.5	76.1	100.0
1945	1.5	16.8	7.0	74.7	100.0
1946	1.7	9.7	7.1	81.5	100.0
1947	1.8	7.0	6.5	84.7	100.0
1948	1.9	7.0	6.3	84.8	100.0
1949	2.0	7.5	6.3	84.2	100.0
1950	1.9	7.3	6.4	84.4	100.0
1951	1.9	7.6	6.4	84.1	100.0
1952	1.9	8.1	6.2	83.8	100.0
1953	2.0	8.7	6.6	82.7	100.0
1954	2.3	9.9	6.7	81.1	100.0
1955	2.2	9.9	6.8	81.1	100.0
1956	2.2	9.7	6.8	81.3	100.0
1957	2.3	10.5	6.9	80.3	100.0
1958	2.4	11.2	6.8	79.6	100.0

[a] Includes private noncommercial institutions.

TABLE A-7

PERCENTAGE DISTRIBUTION OF PRIVATE BUSINESS PRODUCT BY FACTOR SHARES[a]

Year	Wages and Salaries	Investment Income	Nonfarm Net Unincorporated Income	Farm Net Unincorporated Income[b]	Total
1926	48.9	20.9	13.6	16.6	100.0
1927	49.2	21.4	13.9	15.5	100.0
1928	49.3	21.6	13.9	15.2	100.0
1929	54.1	21.8	14.7	9.4	100.0
1930	53.5	22.6	15.1	8.8	100.0
1931	59.6	21.4	15.8	3.2	100.0
1932	61.8	18.3	15.3	4.6	100.0
1933	62.9	19.9	13.9	3.3	100.0
1934	58.8	21.3	12.9	7.0	100.0
1935	57.1	21.5	13.2	8.2	100.0
1936	57.0	22.8	13.4	6.8	100.0
1937	56.7	22.6	12.5	8.2	100.0
1938	53.4	23.0	13.5	10.1	100.0
1939	52.8	25.0	12.4	9.8	100.0
1940	52.9	24.3	11.6	11.2	100.0
1941	55.0	24.8	11.3	8.9	100.0
1942	52.4	23.4	10.1	14.1	100.0
1943	56.6	22.4	10.6	10.4	100.0
1944	54.0	20.6	10.7	14.7	100.0
1945	54.4	20.9	12.4	12.3	100.0
1946	54.1	19.8	12.9	13.2	100.0
1947	57.0	18.9	11.7	12.4	100.0
1948	56.9	18.8	11.1	13.2	100.0
1949	56.8	19.8	12.2	11.2	100.0
1950	55.8	22.2	11.2	10.8	100.0
1951	56.2	20.8	9.4	13.6	100.0
1952	55.6	22.1	10.0	12.3	100.0
1953	58.7	21.1	10.5	9.7	100.0
1954	61.3	21.5	10.7	6.5	100.0
1955	59.8	22.4	10.4	7.4	100.0
1956	60.3	22.1	10.0	7.6	100.0
1957	63.1	21.7	10.1	5.1	100.0
1958	62.3	21.2	10.5	6.0	100.0

[a] Includes I.V.A.

[b] Includes undistributed Wheat Board profits.

TABLE A-8
PERCENTAGE DISTRIBUTION OF NONFARM PRIVATE BUSINESS PRODUCT BY FACTOR SHARES[a]

Year	Wages and Salaries	Investment Income	Nonfarm Net Unincorporated Income	Total
1926	58.5	24.1	17.4	100.0
1927	58.1	24.5	17.4	100.0
1928	58.0	24.7	17.3	100.0
1929	59.7	23.2	17.1	100.0
1930	58.8	23.7	17.5	100.0
1931	62.2	20.5	17.3	100.0
1932	66.2	16.7	17.1	100.0
1933	66.5	18.1	15.4	100.0
1934	64.2	21.2	14.6	100.0
1935	62.8	22.0	15.2	100.0
1936	61.5	23.4	15.1	100.0
1937	62.0	23.8	14.2	100.0
1938	59.4	24.9	15.7	100.0
1939	58.4	27.2	14.4	100.0
1940	59.5	27.0	13.5	100.0
1941	60.3	26.9	12.8	100.0
1942	60.8	27.1	12.1	100.0
1943	63.0	24.9	12.1	100.0
1944	63.0	24.1	12.9	100.0
1945	61.8	23.8	14.4	100.0
1946	62.0	22.8	15.2	100.0
1947	64.8	21.5	13.7	100.0
1948	65.3	21.7	13.0	100.0
1949	63.6	22.3	14.1	100.0
1950	62.2	25.0	12.8	100.0
1951	64.8	24.2	11.0	100.0
1952	63.1	25.3	11.6	100.0
1953	64.8	23.4	11.8	100.0
1954	65.5	23.0	11.5	100.0
1955	64.4	24.2	11.4	100.0
1956	65.0	24.0	11.0	100.0
1957	66.4	22.8	10.8	100.0
1958	66.1	22.6	11.3	100.0

[a] Includes I.V.A. and farm rents paid and imputed.

TABLE A-9

RATIO OF SALARIES, WAGES AND SUPPLEMENTARY LABOR INCOME TO INCOME ORIGINATING IN THE PRIVATE BUSINESS SECTOR, BY INDUSTRY[a]

Year	Agri-culture	Forestry	Fishing	Mining	Manu-facturing	Construc-tion	Transpor-tation, Com-munications, Utilities	Trade	Finance, Insurance, and Real Estate	Service	Total
1926	14.1	92.2	21.2	58.3	69.2	77.1	68.0	59.0	29.1	37.5	48.9
1927	14.3	91.0	22.6	58.7	68.4	76.3	69.9	57.8	29.0	36.7	49.2
1928	13.7	92.9	21.2	59.5	68.2	78.6	64.0	58.0	30.6	37.0	49.3
1929	19.4	90.8	23.3	55.4	69.1	80.6	68.1	61.3	32.2	38.2	54.1
1930	19.2	89.8	27.3	62.6	67.3	77.0	71.4	56.2	34.0	40.1	53.5
1931	31.2	81.6	30.8	65.3	74.0	77.5	72.4	62.7	35.3	41.6	59.6
1932	25.2	88.5	33.3	69.2	81.5	76.9	74.9	69.6	35.7	46.9	61.8
1933	30.0	89.3	30.0	54.8	84.5	73.9	73.9	77.0	34.6	47.1	62.9
1934	20.9	91.9	28.6	48.2	77.5	68.8	69.8	75.0	36.6	46.3	58.8
1935	19.2	93.0	25.0	46.2	76.0	70.8	68.8	68.9	35.1	44.8	57.1
1936	21.5	92.6	22.2	43.2	73.3	72.3	67.2	68.2	35.5	44.2	57.0
1937	18.5	91.3	22.2	43.7	72.1	73.0	67.6	70.0	35.4	42.4	56.7
1938	15.9	84.9	25.0	47.3	69.7	73.0	66.7	61.6	34.2	41.9	53.4
1939	15.9	82.7	22.2	45.4	67.8	70.3	64.9	65.7	30.6	42.1	52.8
1940	13.5	86.7	22.7	44.7	68.5	73.6	60.5	66.2	31.3	42.0	52.9
1941	14.4	87.5	20.0	46.2	68.9	76.8	55.7	64.3	32.0	42.9	55.0
1942	8.9	87.5	20.5	48.3	70.6	77.0	52.8	61.1	29.2	44.9	52.4
1943	11.9	88.2	21.6	51.7	73.8	78.1	55.5	59.8	30.7	45.2	56.6
1944	8.7	93.0	21.8	59.7	74.3	70.5	60.6	56.0	30.6	46.3	54.0
1945	10.4	87.3	20.6	57.0	72.4	63.8	62.1	57.3	32.3	46.9	54.4

(continued)

TABLE A-9 (concluded)

Year	Agri-culture	Forestry	Fishing	Mining	Manu-facturing	Construc-tion	Transpor-tation, Com-munications, Utilities	Trade	Finance, Insurance, and Real Estate	Service	Total
1946	9.9	89.0	21.4	57.3	71.2	70.2	65.8	56.7	36.1	47.9	54.1
1947	10.1	90.8	28.0	54.6	73.1	72.8	68.0	61.3	38.0	51.1	57.0
1948	8.5	91.2	27.7	54.0	72.0	74.2	72.5	63.3	39.1	50.7	56.9
1949	9.5	81.6	27.0	59.0	69.7	69.8	75.6	61.1	38.7	50.7	56.8
1950	9.6	78.1	25.6	52.4	68.3	68.5	70.9	63.4	35.0	50.8	55.8
1951	7.4	90.5	25.9	51.7	69.6	76.5	68.4	71.0	34.9	50.4	56.2
1952	7.5	90.7	32.8	61.8	68.8	75.8	69.1	61.2	33.3	50.8	55.6
1953	8.9	86.0	35.7	65.8	72.3	71.9	69.9	65.4	31.7	51.8	58.7
1954	11.6	81.8	34.4	64.3	74.1	72.9	72.6	68.5	30.2	52.7	61.3
1955	11.0	80.6	33.9	58.5	73.3	73.0	69.9	66.6	30.3	52.7	59.8
1956	10.3	86.7	31.9	57.4	72.7	76.2	69.5	66.4	33.4	51.5	60.3
1957	14.2	90.9	34.4	59.9	73.9	75.9	71.5	68.0	35.7	52.7	63.1
1958	12.4	90.2	32.9	65.2	75.0	72.5	69.8	68.3	34.9	53.9	62.3

• Includes I.V.A.

TABLE A-10

WAGES, SALARIES AND SUPPLEMENTARY LABOR INCOME AS A PERCENTAGE OF INCOME ORIGINATING IN THE PRIVATE BUSINESS SECTOR—STANDARDIZED (1928, 1949, and 1956 weights)[a]

	Total			*Nonfarm*[b]		
Year	1928 Weights	1949 Weights	1956 Weights	1928 Weights	1949 Weights	1956 Weights
1926	49.8	55.3	57.0	58.6	61.4	61.0
1927	49.5	54.9	56.4	58.1	60.8	60.4
1928	49.3	54.8	56.4	58.0	60.7	60.5
1929	51.7	56.8	58.3	59.6	62.2	62.0
1930	51.1	55.7	57.2	59.0	61.0	60.8
1931	56.5	60.9	62.0	62.7	65.3	64.9
1932	59.2	64.8	66.1	67.6	70.6	70.0
1933	61.1	66.8	67.7	68.7	72.2	71.3
1934	56.5	62.2	63.4	65.2	68.2	67.4
1935	54.5	60.2	61.4	63.2	66.1	65.5
1936	54.0	59.2	60.5	62.0	64.7	64.2
1937	53.2	58.6	60.0	61.7	64.5	64.0
1938	50.7	55.8	57.3	59.2	61.6	61.2
1939	50.0	55.2	56.5	58.3	61.0	60.4
1940	49.7	55.2	56.7	58.6	61.3	60.8
1941	49.7	55.2	56.7	58.3	61.1	60.7
1942	48.3	54.4	56.1	58.0	61.1	60.6
1943	50.2	56.3	58.0	59.6	62.8	62.3
1944	49.7	55.8	57.4	59.7	62.6	62.1
1945	49.4	55.1	56.7	59.0	61.7	61.1
1946	50.1	55.6	57.4	60.0	62.3	61.9
1947	52.1	57.8	59.6	62.4	64.7	64.3
1948	52.4	57.9	59.9	63.1	65.1	64.7
1949	51.6	56.8	58.6	62.0	63.7	63.3
1950	50.4	55.6	57.3	60.4	62.4	61.8
1951	51.9	57.7	59.6	62.8	65.0	64.5
1952	50.6	56.2	58.0	61.2	63.2	62.8
1953	52.2	58.1	59.8	62.8	65.3	64.6
1954	54.2	60.0	61.5	64.6	67.0	66.3
1955	52.7	58.6	60.1	63.0	65.5	64.8
1956	52.8	58.6	60.3	63.2	65.6	65.1
1957	54.8	60.3	62.0	64.7	67.1	66.5
1958	54.6	60.4	62.1	65.0	67.4	66.8

[a] Includes I.V.A.

[b] Includes farm rents paid and imputed.

TABLE A-11

PERCENTAGE DISTRIBUTION OF NET DOMESTIC INCOME BY FACTOR SHARES—TOTAL BUSINESS SECTOR, PRIVATE AND GOVERNMENT[a]

Year	Wages and Salaries	Investment Income	Nonfarm Net Unincorporated Income	Net Farm Unincorporated Income[b]	Total
1926	50.3	21.7	12.6	15.4	100.0
1927	50.6	22.1	12.9	14.4	100.0
1928	50.5	22.6	12.9	14.0	100.0
1929	55.1	22.6	13.6	8.7	100.0
1930	54.9	22.9	14.0	8.2	100.0
1931	61.0	21.6	14.5	2.9	100.0
1932	62.9	19.0	13.9	4.2	100.0
1933	64.0	20.4	12.6	3.0	100.0
1934	59.7	22.2	11.7	6.4	100.0
1935	58.0	22.4	12.1	7.5	100.0
1936	57.6	23.9	12.3	6.2	100.0
1937	57.3	23.5	11.6	7.6	100.0
1938	54.4	23.6	12.6	9.4	100.0
1939	53.6	25.8	11.5	9.1	100.0
1940	53.2	25.7	10.7	10.4	100.0
1941	55.0	26.3	10.5	8.2	100.0
1942	52.4	25.1	9.4	13.1	100.0
1943	56.2	24.5	9.7	9.6	100.0
1944	54.0	22.6	9.9	13.5	100.0
1945	54.2	23.2	11.3	11.3	100.0
1946	54.2	21.7	11.9	12.2	100.0
1947	57.2	20.4	10.9	11.5	100.0
1948	57.4	20.0	10.3	12.3	100.0
1949	57.4	20.8	11.4	10.4	100.0
1950	56.3	23.3	10.4	10.0	100.0
1951	56.8	21.9	8.7	12.6	100.0
1952	56.3	22.9	9.3	11.5	100.0
1953	59.2	22.1	9.7	9.0	100.0
1954	61.6	22.5	9.9	6.0	100.0
1955	59.8	23.7	9.6	6.9	100.0
1956	60.3	23.5	9.2	7.0	100.0
1957	63.0	23.0	9.3	4.7	100.0
1958	62.2	22.6	9.7	5.5	100.0

[a] Includes I.V.A.

[b] Includes undistributed Wheat Board profits.

TABLE A-12
WAGES, SALARIES AND SUPPLEMENTARY LABOR INCOME AS A PERCENTAGE OF DOMESTIC INCOME—STANDARDIZED
(1928 and 1949 industry weights)[a]

Year	*Total Domestic Income* 1928 Weights	*Total Domestic Income* 1949 Weights	*Nonfarm Domestic Income* 1928 Weights	*Nonfarm Domestic Income* 1949 Weights
1919	56.0	60.0	64.4	65.5
1920	59.0	63.2	68.0	69.1
1921	60.4	65.1	68.7	70.7
1922	57.1	62.1	65.6	67.8
1923	58.0	63.2	66.7	69.0
1924	60.1	65.3	68.4	70.9
1925	56.8	62.2	65.7	68.2
1926	55.5	60.5	63.7	66.1
1927	55.2	60.1	63.4	65.6
1928	54.8	59.8	63.0	65.3
1929	57.1	61.7	64.6	66.8
1930	57.1	61.2	64.7	66.3
1931	62.1	66.1	68.3	70.2
1932	64.6	69.5	72.5	74.8
1933	66.3	71.3	73.6	76.3
1934	61.6	66.7	69.7	72.2
1935	60.1	65.1	68.3	70.6
1936	59.3	64.0	66.8	69.1
1937	58.6	63.5	66.6	68.9
1938	56.7	61.3	64.9	66.8
1939	55.8	60.5	63.7	65.8
1940	54.9	60.0	63.2	65.6
1941	54.4	59.6	62.4	65.0
1942	52.9	58.5	61.6	64.5
1943	54.1	59.7	62.5	65.5
1944	53.8	59.5	62.7	65.6
1945	53.4	58.8	62.0	64.6
1946	54.6	59.6	63.5	65.6
1947	56.5	61.7	65.8	67.9
1948	57.2	62.2	66.9	68.7
1949	56.8	61.4	66.2	67.7
1950	55.5	60.2	64.6	66.3
1951	56.8	62.0	66.6	68.6
1952	55.9	60.9	65.6	67.3
1953	57.3	62.6	67.0	69.0
1954	58.7	64.0	68.2	70.3
1955	57.5	62.8	66.8	69.0
1956	57.6	62.8	67.0	69.1
1957	59.4	64.5	68.5	70.5
1958	59.4	64.6	68.8	70.9

[a] Includes I.V.A.

TABLE A-13
WAGES AND SALARIES AND DOMESTIC INCOME, TOTAL AND NONFARM
(million dollars)[a]

Year	*Domestic Income*		*Nonfarm Domestic Income*[b]	
	Total	Wages and Salaries	Total	Wages and Salaries
1919	3,958	2,181	3,175	2,071
1920	4,541	2,602	3,617	2,470
1921	3,454	2,091	2,893	1,985
1922	3,589	2,028	2,946	1,934
1923	3,829	2,191	3,130	2,088
1924	3,641	2,194	3,067	2,090
1925	4,139	2,236	3,243	2,128
1926	4,337	2,373	3,542	2,261
1927	4,572	2,513	3,789	2,401
1928	4,966	2,722	4,141	2,609
1929	4,969	2,948	4,385	2,835
1930	4,688	2,794	4,166	2,694
1931	3,664	2,416	3,414	2,338
1932	2,906	1,983	2,664	1,922
1933	2,594	1,796	2,397	1,737
1934	2,994	1,947	2,697	1,885
1935	3,305	2,088	2,956	2,021
1936	3,603	2,250	3,273	2,179
1937	4,113	2,547	3,702	2,471
1938	4,242	2,524	3,758	2,447
1939	4,485	2,633	3,993	2,555
1940	5,324	3,152	4,707	3,069
1941	6,531	3,994	5,934	3,908
1942	8,301	4,923	7,231	4,828
1943	9,004	5,722	8,138	5,619
1944	9,776	6,066	8,544	5,959
1945	9,836	6,154	8,785	6,045
1946	9,793	5,827	8,582	5,707
1947	10,634	6,482	9,348	6,352
1948	12,258	7,496	10,712	7,365
1949	13,212	8,115	11,795	7,981
1950	14,545	8,766	13,044	8,622
1951	16,923	10,304	14,795	10,147
1952	18,922	11,478	16,763	11,316
1953	19,533	12,419	17,762	12,263
1954	19,308	12,799	18,109	12,660
1955	21,060	13,617	19,591	13,456
1956	23,547	15,314	21,877	15,142
1957	24,304	16,472	23,082	16,299
1958	25,122	16,925	23,697	16,749

[a] Includes I.V.A.
[b] Includes farm rents paid and imputed.

The manufacturing ratios are based on information shown in the various issues of *General Review of the Manufacturing Industries of Canada* published by the Dominion Bureau of Statistics and worksheets of the Industry and Merchandising Division. In a number of cases the published information was adjusted in order to render the data more comparable. For example, for the years 1952 to 1955, the published data on the value of shipments had to be adjusted for changing inventories. For years prior to 1926 substantial reallocation of individual industries was necessary in order to produce a comparable set of statistics.

COMMENT

M. C. URQUHART, Queen's University

I should like to begin my comments, as a user of Canadian data, by expressing my personal appreciation for the new data that are presented in this paper over and above those on factor shares. These data include new series on private product, which I am sure involved a great deal of work, and new estimates of national income extending backward from 1926 to 1919, an important period in Canadian economic history.

The following is an attempt to appraise the meaning of the results on factor shares that Goldberg has prepared. The comments should not be taken as being critical of the work itself.

My main contention, both for reasons given by Goldberg and for other reasons, is that if we include in labor share of income that part of the unincorporated enterprise income which should be attributed to it (in one way or another), while there is some presumption that the share of labor income in the economy as a whole may have risen very moderately in the last forty years, it is yet not clearly evident that this is so. Without applying high-powered statistical techniques, one might well maintain that the null hypothesis that factor shares have not changed has not been disproved. Goldberg's results show:

1. With the unincorporated income undistributed between labor and property shares but counted as a part of domestic income, in a comparison between 1926–30 and 1954–58: (a) the wage share rose considerably from 1926–30 to 1954–59; (b) the property share remained unchanged as a percentage of the total. This means that the property share as a proportion of that part which

had been separated into a return on labor and property had fallen.

2. When the data for private domestic product were standardized in the sense in which Goldberg uses the term, for shifts among industries, much of the increase in the wage share between 1926–30 and 1954–58 is removed (about 60 per cent of it). Most of this effect of standardization, though not all, is attributed to the decline in the importance of agriculture. Actually, insofar as agriculture is concerned, the standardization in large part adjusts for the fact that agriculture is predominantly unincorporated and that the actual wage share reported is accordingly very low. Had a wage been imputed to farmers and unpaid family workers it would, of course, have been greatly higher than shown though still, perhaps, somewhat less than in the rest of the economy.

3. When private domestic product is further corrected for the existence of unpaid labor in nonfarm unincorporated business only about a 2 point rise or a 4 per cent increase in the labor share remains.

4. Actually, Goldberg's tabulation of the unstandardized wage share for that part of production that corresponds fairly closely to the corporate sector of nonfarm private business shows a rise of only 1.7 points or 2.3 per cent. Standardization changes this very little.

5. The publicly-owned business sector actually showed a fall in the wage share (from 68.4 per cent to 62.1 per cent). The larger part of this sector, which is made up of the publicly owned railways and public utilities, is similar to private business in its operations. The operation of the liquor stores, on which a profit is recorded, really involves, however, a substantial element of taxation and is unlike operations in the private sector of the economy. If this sector were added to the private sector it would mean an even smaller increase in the wage share in the resulting total than that estimated for the private sector alone.

6. On the other hand, the direct government income created, of which a major share is for labor services, has increased considerably in relative importance; its growth in relative importance would tend to make the wage share rise.

7. The preliminary results for the data from 1919–25 (when standardized) cast further doubts on the firmness of an hypothesis that there has been a long trend towards a rise in the over-all share of labor income in the economy.

These results which Goldberg has pointed out, it seems to me, clearly cast doubt on there being a significant upward trend in the over-all labor income share (including imputed labor income) in the period under consideration. There are also other reasons that contribute to the uncertainty of inferring, from the data presented, a rise in the wage share.

The two periods which Goldberg has chosen for his main comparisons clearly and fortunately have many similarities, but considerable differences do remain. In pointing these out, I direct my remarks particularly to the property share of income, thereby, of course, making an inference about the labor share.

One point of difference between the periods is that prices were falling slightly in the 1926–30 period, particularly in the last year, and were rising in the 1954–58 period. Consequently, the inventory revaluation adjustment, which is included in investment income in these estimates, was positive (and in 1930 quite large) in the former period and negative in the 1954–58 period. The net inventory valuation adjustment amounted to about plus 9 per cent of investment income in the 1926–30 period, most of it coming in 1930, and about minus 2 per cent of investment income in 1954–58. Had the IVA been omitted the share of property income as well as the share of labor income would have risen between the two periods at the expense of unincorporated income. While I do not disagree with including the inventory valuation adjustment in making estimates of national income, two things should be kept in mind. The first is that the knowledge of accounting methods used in the evaluation of inventories, particularly in the first period, is limited, and the estimates of the inventory valuation adjustment are not as firm as other estimates. The second point is that the inventory valuation adjustments probably reflect windfall gains or losses on the part of business which may affect their behavior.

Another important point with regard to the firmness of the data used in calculating factor shares relates to the estimates of capital consumption allowances. The size of these allowances in all but the unincorporated sector bears entirely on the estimates of net property income. The estimates of capital consumption in the business sector rely heavily on data from income tax returns and are presumably based predominantly on historical cost. The amount of capital consumption allowances will, therefore, depend on the price history of the periods prior to the two periods for

which comparisons are being made. The general wholesale price index in 1926–30 was 50 per cent above that for 1910–14; prices in the 1917–20 period had risen much higher than in the 1910–14 period and were considerably higher than in the 1926–30 period. They were relatively stable from 1921 on after the decline in prices in 1920. The general wholesale price index in 1954–58 was 130 per cent above that for 1935–39 and there had been no intervening period of price decline.

The implications of the effects of this different price history on the estimates of depreciation is not entirely clear. One would expect it to cause capital consumption allowances, as recorded, to be relatively smaller, compared with allowances calculated on a replacement cost basis, for 1954–58 than for 1926–30. If this presumption is correct, it would mean that there might have been a tendency for net profits, as recorded, to have an upward bias in 1954–58 as compared with 1926–30.

Another point affecting the capital consumption allowances is that there was a change in the tax laws in 1949 which permitted the substitution of depreciation at a constant percentage rate on a diminishing balance for the older straight-line methods. For example, motor trucks could be depreciated at a rate of 30 per cent of the diminishing balance. This method, if used, means that higher amounts of depreciation than under the straight-line method are charged in earlier years of an asset's life and, consequently, less in later years. We do not know enough about how widely this method was adopted to be able to say for sure what its effect would be in the 1954–58 period. My guess is that with the very high rates at which capital goods were being put in place from 1950 onward, and particularly in 1954–58, it meant a considerable increase in the capital consumption allowances and a consequent lowering of stated investment income.

While I have not a clear judgment whether capital consumption allowances were relatively overstated in 1954–58 compared with 1926–30, the main point I would make is that more precise estimates of capital consumption allowances on a consistent replacement cost basis (and I do not suggest that it would have been possible for Goldberg to get these) might have altered the estimates of depreciation substantially and hence the estimates of investment income. The magnitude of the possible adjustments on this score is emphasized by the fact that capital consumption allowances have

recently run at between two-thirds and three-quarters of net investment income. It is interesting to note that gross investment income (Table 1 of Goldberg's paper) as a percentage of gross domestic income rose over the period under review.

A further point relates to how shares are affected by the fact that regulated companies' profit positions are affected by the prices they are permitted to charge. Regulated companies are apt to be more squeezed in periods when prices are rising than when prices are falling. This, of course, is evident from the time which it takes to have regulated rates changed. The rise in prices in the 1950's compared with quite stable prices from 1921 to 1930 would suggest that investment income in regulated companies, owing to the time that it takes to adjust rates, might have been relatively lower in the 1950's than in the 1920's.

My conclusion from Goldberg's paper is that, if there has been a change in factor shares in the last forty years in Canada, it has probably been toward an increase in labor's share in income. However, the evidence of an increase in labor's share is by no means conclusive. Goldberg's paper has provided much new and important information on this matter. There remains more work to be done, however, before a clear inference that there has been a change in factor shares can be drawn.

EDWARD C. BUDD, Pennsylvania State University

Simon Goldberg and Frank Leacy have produced a most interesting and worthwhile paper—one containing such a wealth of material that it would be impossible to comment on all aspects at length. I will therefore confine my attention to the longer-run changes in factor shares, by Mr. Goldberg.

The author has chosen to concentrate on those income concepts which are clearly most relevant for the analysis of distributive shares: domestic income (which excludes net income from abroad), private business product (which excludes income originating in households, nonprofit institutions, government and government enterprises), and nonfarm private business product. For these concepts, a comparison of the results in his paper with data for the United States shows that over the period as a whole (1926–58) the movement of Canadian income shares was quite similar to that for the United States. A comparison of the two countries for the terminal periods used in his paper is given in Table 1. While

TABLE 1

DISTRIBUTIVE SHARES IN ALTERNATIVE INCOME CONCEPTS, 1926–30 AND 1954–58, CANADA AND THE UNITED STATES[a]
(per cent of total)

	Canada			*United States*		
	1926–30	1954–58	Percentage Point Change	1926–30	1954–58	Percentage Point Change
1. *Domestic income*[b]						
Employee compensation	56.7	66.2	+ 9.5	60.3	70.4	+10.1
Net unincorporated income	23.0	13.6	− 9.4	17.4	12.9	− 4.5
Nonfarm	12.0	8.3	− 3.7	10.5	9.2	− 1.3
Farm	11.0	5.3	− 5.7	6.9	3.7	− 3.2
Corporation profits	10.6	12.2	+ 1.6	10.7	11.3	+ .6
Rent and interest[c]	9.7	8.0	− 1.7	11.6	5.4	− 6.2
2. *Private business product*						
Employee compensation	51.0	61.4	+10.4	56.2	65.2	+ 9.0
Net unincorporated income	27.3	16.8	−10.5	19.2	15.2	− 4.0
Nonfarm	14.2	10.3	− 3.9	11.6	10.8	− .8
Farm	13.1	6.5	− 6.6	7.6	4.4	− 3.2
Corporation profits	12.7	15.2	+ 2.5	11.8	13.2	+ 1.4
Rent and interest[c]	9.0	6.6	− 2.4	12.8	6.4	− 6.4
Business product originating in farms	17.8	7.7	−10.1	11.0	5.5	− 5.5
3. *Nonfarm private business product*						
Employee compensation	58.6	65.5	+ 6.9	61.4	68.3	+ 6.9
Net unincorporated income	17.3	11.2	− 6.1	13.0	11.5	− 1.5
Corporation profits	14.5	17.1	+ 2.6	13.3	14.1	+ .8
Rent and interest[c]	9.6	6.2	− 3.4	12.3	6.1	− 6.2

[a] Income and share concepts for the United States have been adjusted as closely as possible to the definitions used by Goldberg and Leacy. For 1929 and 1954–58, shares were computed from estimates of the National Income Division of the U.S. Department of Commerce. For 1926–28 (and earlier years) computations were made from estimates prepared by the author, based largely on Simon Kuznets, *National Income and Its Composition, 1919–1938*, New York, NBER, 1941.

[b] "Domestic Income" for the United States does not include imputed rent on government-owned buildings and the profits of government enterprises. U.S. estimates do not cover the former, and include subsidies with the latter. The profits of government enterprises rose from 1.2 per cent of Canadian domestic income in 1926–30 to 2.4 per cent in 1954–58; the wage and salary share in Canadian domestic income would have been .7 percentage points higher in 1926–30 and 1.5 points in 1954–58, were such profits eliminated from the income concept.

[c] Comprises net interest (exclusive of interest on consumer debt), net rental income of persons, and, for Canada, government investment income (for domestic income) and withholding taxes on interest, dividends, rents and royalties paid to nonresidents.

the wage share (that is, the share of employee compensation) is lower in Canada than in the United States, the percentage point change in this share for the period as a whole is virtually identical regardless of which of the three income concepts is used. There are, on the other hand, some interesting differences in the other shares. While in each country the share of corporate profits rose and the shares of unincorporated enterprises, rent, and interest fell, the relative fall in unincorporated enterprise income and the rise in corporate profits was much sharper in Canada, while the decline in rent and interest shares was more marked in the United States.

While the official Canadian statistics start with 1926, Goldberg has carried the estimates for domestic income, at least, back annually to 1919. These estimates indicate that the similarity in the behavior of the wage share for the two countries does not hold for the twenties as a whole. From the beginning to the end of this decade, the wage share in Canada fell slightly, whereas in the United States it rose. The data for this earlier period are summarized in Table 2.

TABLE 2
SHARE OF EMPLOYEE COMPENSATION IN DOMESTIC INCOME, SELECTED PERIODS, CANADA AND THE UNITED STATES
(per cent of total)

	Domestic Income		*Nonfarm Domestic Income*	
	Canada	U.S.	Canada	U.S.
1919	55.1	51.9	65.2	60.4
1920	57.3	55.6	68.3	62.4
1921–25	57.7	58.7	66.9	64.5
1926–30	56.7	60.3	63.9	65.4
1954–58	66.2	70.4	69.8	73.3

This paper, as well as the foregoing comparisons, is based essentially on an "institutional" classification of distributive shares. Wages (whether wages, salaries, or supplementary labor income) include only the compensation of hired workers, whether top management or unskilled labor. Property income is a residual—the difference between income and wages—and is itself classified primarily on a legal basis: income of unincorporated enterprises, corporate profits, and other investment income (rent and interest). While a further breakdown between rent and interest would be

desirable, since the rental income of persons is more analogous to unincorporated enterprise income than it is to interest, no distinction is made in the published Canadian statistics.

The usefulness of any classification is of course dependent on the purposes to which it is put. If one is interested in incomes accruing to particular social or economic groups, e.g., farmers, professional persons, stockholders or employees, an institutional classification such as the preceding is of interest. If, however, one is interested in production and in the distribution of income as it is derived from production—and hence is interested in income accruing or imputable to the services of particular kinds of productive agents (human labor, reproducible physical assets, and nonreproducible natural resources) and to intangible assets arising from monopoly positions—something more is needed. About all that can be done with national income data is to ignore monopoly, lump together all income from physical assets, exclude transfer payments from the income concept, and find some basis for allocating the income of unincorporated enterprises. For this last share, the labor and property components are too important simply to be ignored by treating the share as either all labor or all property or as perhaps something imputable to neither.

Attacks in recent years on imputation of this share seem to me to have been overdone, and I do not share the view of those who argue that what the self-employed entrepreneur has joined in holy union, let no economist try to split apart. On the demand side it seems reasonable to suppose that the farmer, for example, *can* employ varying amounts of his or someone else's labor with his land or capital, or even vary the amount of land with his own given amount of labor, so that conceptually, at least, a marginal productivity approach is possible. But even if it were not, there *are* markets for the purchase, sale, and rental of physical assets and for the employment of labor, and these markets *do* produce prices, wage rates, and rental rates which can be used for imputing returns to agents whose services are not bought and sold on markets. If the person who is employing both his own labor and his own capital and land has no preference for either do-it-yourself or let someone-else-do-it-himself, then an imputation based on market prices will add up to the total income of the self-employed. The problem arises because the person has some kind of preference for self-use of his resources, and we do not know to which of the

particular resources the preference is attached. Undoubtedly this is what Goldberg means when he states that "net unincorporated income should perhaps be likened . . . to a chemical compound in which the constituent elements have become transformed into something which is neither labor nor capital but a synthesis of both," or that "the unincorporated owner's *own* labor and the capital employed in the business may not be two independent factors whose services can be priced independently of each other, or on the basis of market criteria relevant to other sectors of the economy."

Nevertheless, it should be observed that the difference between a market price imputation and actual entrepreneurial income is considerably less than the error introduced by attributing all of it to one or the other of the agents. In fact, as Gale Johnson's article on the allocation of agricultural income showed some years back, whether we impute wages to farmers and treat rent as a residual, or impute rent and treat wages as a residual, over an average of years we get about the same result.[1] Kravis' results would also suggest that while the *levels* of shares would differ depending on the method of imputation used, the *trends* would not be much affected.[2] However, the data for making an adjustment by imputing either returns to labor or returns to the ownership of assets are apparently not available for Canada, and there is no point in continuing this particular quarrel.

While Goldberg confines his attention to an institutional classification, he properly stresses the importance of structural changes in the Canadian economy in interpreting the movement of shares. One of the most important of these is shifts in the composition of output. In both countries, for example, there has been a rise in the importance of general government, where, in common with households and nonprofit institutions, output is measured at labor input alone and hence the wage share is by definition unity. A glance at Table 1, however, shows that for both countries the percentage point rise in the wage share was about the same in private business product (where these sectors, together with government enterprises, are eliminated) as it was in domestic income. In fact, for Canada it was even greater in the former than in the

[1] D. Gale Johnson, "Allocation of Agricultural Income," *Journal of Farm Economics*, November 1948, pp. 724–749.

[2] Irving B. Kravis, "Relative Income Shares in Fact and Theory," *American Economic Review*, December 1959.

latter, arising in part from the inclusion in the Canadian estimates of the profits of government enterprises, which have risen as a per cent of domestic income over the period as a whole.

A far more important structural change was the drastic fall in the importance of agriculture's contribution to income, from 18 per cent to 8 per cent of private business product between the terminal periods in Canada, and from 11 per cent to 6 per cent in the United States. Eliminating agriculture from the income concept serves to reduce the rise in the wage share in both countries to the same 6.9 percentage points—in effect, the declining relative importance of agriculture accounted for about a third of the wage rise in Canada in private business product, compared with less than a quarter for the United States.

Another approach to isolating the effect of changing income composition is to determine what distributive shares would have been had the relative importance of various sectors or industries remained the same as in some given period. The author's "standardized series" is based on 1949 income weights. I have carried through the same computations for the United States data for three of the income concepts; the results are summarized in Table 3.[3]

The proportion of the wage share increase attributable to share increases within sectors (which can be measured by the ratio of the "standardized" share increase to the unadjusted share increase) differs noticeably for the two countries only for the nonfarm private business product. The greater proportion of the latter which appears to be due to weight shifts among sectors in the United States, however, can be accounted for by the much greater decline in rental income in the United States, the effect of which appears as a weight shift, since rental income is attributable en-

[3] For the analysis of sectoral changes in Tables 3 and 4, the first terminal period for the United States has been taken as 1929 rather than 1926–30, since data on industrial composition for 1926–28 comparable with subsequent years are not available. The year 1929 rather than the average of 1929 and 1930 has been used, since U.S. industrial composition in the latter year was affected much more by the depression than was Canada's. The wage shares unadjusted for changes in industrial composition of income for 1929, as compared with the Goldberg terminal period, are as follows:

	1929	*1926–30*
Domestic income	59.7	60.3
Private business product	55.6	56.2
Nonfarm private business product	60.9	61.4

Twelve sectors were used for the U.S. computations for private business product, compared with ten for Canada. This difference does not affect the results.

TABLE 3
STANDARDIZED WAGE SHARE, CANADA AND THE UNITED STATES
(per cent of total)

	CANADA				UNITED STATES			
	1926–30	1954–58	*Point Change* Stand.	Unadj.	1929	1954–58	*Point Change* Stand.	Unadj.
Domestic income	55.9	59.1	+3.2	+ 9.5	64.6	68.1	+3.5	+10.7
Private business product	55.5	59.6	+4.2	+10.4	59.6	63.4	+4.0	+ 9.6
Nonfarm private business prod.	61.2	66.5	+5.3	+ 6.9	64.0	68.3	+4.3	+ 7.4

tirely to the "real estate" industry. A rough calculation suggests that were rental income eliminated from the income concept, the proportion of the private nonfarm share increase attributable to share increases within industries would be the same for both countries—about four-fifths of the total. The hypothesis of share constancy cannot be rescued entirely by eliminating the effects of shifts in the industrial composition of income.

Another structural change considered by the author is the shift from unincorporated to corporate enterprise. After eliminating the shift implicit in the decline of the farm sector, which is, of course, dominated by the unincorporated form of enterprise, the shift for the United States has been minor. In 1929 nonfarm unincorporated enterprises accounted for 26 per cent of income originating in corporations and unincorporated enterprises combined; in 1954–58, their share averaged 25 per cent. The proportion of self-employed proprietors to total engaged in production in the private sector has shown only a minor decline, from 14 per cent in 1929 to 13 per cent in 1954–58. The change in the wage share within the two sectors was also quite similar: it rose in noncorporate enterprises from 46.1 per cent in 1929 to 50.4 per cent in 1954–58. The corresponding figures for the corporate sector are 74.6 per cent and 79.6 per cent.

Unfortunately, estimates of income originating by legal form of organization and of employees and proprietors are not available for Canada. As a substitute for the breakdown by corporate and unincorporated income originating, Goldberg has recomputed the wage share in nonfarm private business product after deducting income of unincorporated enterprises, and finds very little, if any,

change in the share for the period as a whole. As the author recognizes, it would be dangerous to assume from this fact that the increase in the wage share in "standardized income" can be explained almost entirely by the shift to the corporate form, for the share increase is biased downward by the inability to exclude wages paid by unincorporated enterprises from total wages and income.

A more revealing procedure would be to determine the change in shares for those sectors dominated by the corporate form: mining, manufacturing, transportation, communication, public utilities, and finance. Only 10 per cent of unincorporated income in Canada, and 12 per cent in the United States, originates in these sectors, whereas they account for well over a half of private business product in both countries. The comparative data, standardized to eliminate any effect of intersectoral income shifts, are summarized in Table 4. Data are also given for manufacturing, which

TABLE 4

SHARE OF EMPLOYEE COMPENSATION AND OF UNINCORPORATED INCOME IN STANDARDIZED INCOME ORIGINATING IN PREDOMINANTLY CORPORATE SECTORS, CANADA AND THE UNITED STATES

(per cent)

	Canada			*United States*		
	1926–30	1954–58	Point Change	1929	1954–58	Point Change
Predominantly corporate[a]						
Share of:						
Employee compensation	62.6	67.0	+4.4	64.8	69.7	+4.9
Unincorporated income	4.3	2.2	−2.1	3.2	3.0	− .2
Per cent of self-employed to total engaged	n.a.	n.a.	n.a.	2.4	2.9	+ .5
Manufacturing						
Share of:						
Employee compensation	68.4	73.8	+5.4	74.2	77.6	+4.6
Unincorporated income	4.9	2.2	−2.7	2.6	1.5	−1.1
Per cent of self-employed to total engaged	n.a.	n.a.	n.a.	1.2	1.1	− .1

[a] Predominantly corporate includes mining, manufacturing, transportation, communications and public utilities, and finance, insurance, and real estate. The shares of employee compensation and of unincorporated income are "standardized," being based on the weight of each of the preceding sectors in 1949 income originating in the predominantly corporate sector. The per cent of self-employed to total engaged is based on 1949 employment weights.

n.a. = not available.

comprises over 60 per cent of income originating in this "predominantly corporate" sector.

The share increase in Canada for this predominantly corporate sector (4.4 percentage points) is only a little less than that in the standardized private business product. The unincorporated income share has, it is true, fallen by 2.1 percentage points. Before one concludes, however, that a shift to the corporate form is implied, he should note that in the U.S. data a *fall* in the share of unincorporated income has been accompanied by a slight *rise* in the proportion of self-employed to total engaged. Even the author's extreme assumption, that no wages are paid by unincorporated businesses, yields a share increase for this sector equal to 3.1 percentage points; more reasonable assumptions (e.g., the unincorporated wage share is two-thirds of the corporate wage share) yield an increase close to 4 points.[4]

It may be concluded, by way of summary, that a substantial part of the rise in the wage share was due to the relative decline of agriculture, a development that was common to both countries, although somewhat more important in Canada. Other shifts in output composition, as well as any shifts from the noncorporate to the corporate form of business organization, appear to have been relatively minor in their effect on the wage share.

A final word of caution should be inserted on attempts, such as the above, to account for share changes by analyzing the behavior of the aggregate in terms of the behavior of its components. Random forces are bound to produce dispersion in the behavior of the

[4] Let W_c and W_e be employee compensation originating in corporations and unincorporated enterprises respectively ($W_c + W_e = W$); Y_c and Y_e, income originating in the two respective sectors ($Y_c + Y_e = Y$); U, net income of unincorporated enterprises ($W_e + U = Y_e$). Further, let small letters denote the respective shares of each in $Y(y = 1)$. Then, by definition, the share of corporate employee compensation in income originating in corporations (the "corporate wage share") is

$$\frac{W_c}{Y_c} = \frac{W - W_e}{Y - (U + W_e)} = \frac{w - w_e}{1 - (u + w_e)}. \tag{1}$$

Since estimates of W_e are lacking for Canada, w_e cannot be computed. If we make the "extreme" assumption that $W_e = 0$, the corporate wage share is given by

$$\frac{W_c}{Y_c} = \frac{w}{1 - e}. \tag{2}$$

If $W_e > 0$, the corporate wage share can be computed from (1) by assuming a specific value for W_e/Y_e [$= w_e/(u + w_e)$], which should typically be less than w, e.g., two-thirds of w, as in the text above.

components and, unless we want to attribute the change to such random elements, we are likely to lose sight of the more basic forces which may show up only at a more aggregative level. Furthermore, the greater the extent of disaggregation, the less reliable the estimates become, and the variability of the components may be due simply to errors of measurement.

These comments are designed simply to extend the coverage of the author's paper and his work, which have gone a long way in eliminating a gap in our knowledge of Canadian income shares.