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# STATISTICS CANADA MULTIFACTOR PRODUCTIVITY PROGRAM

By

René Durand

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1994

Paper presented at the International Conference on measurement of Productivity in Agriculture Ottawa, October 1992 and published in *Measuring Agricultural Productivity and Related Data for Regional, National and International Comparisons, Proceedings,* (S.Narayanan and J. King eds.), Agriculture Canada, 1994

## 1 - Introduction

I am very pleased to talk to you this morning about Statistics Canada multifactor productivity program. I 'll divide my presentation into three parts. First, I will sketch a broad picture of the program. Then, I will introduce some alternative measures of productivity at the industry level and a measure of productivity by commodity. I will illustrate these concepts with a few figures. I will finally talk briefly about ongoing efforts to solve productivity measurement problems in primary industries such as agriculture.

These primary industries make intensive use of natural resources which are not presently accounted for when measuring productivity and which, in some industries at least, may have a large impact on the estimates.

## 2- Overview of the program

### Description of the indices and dissemination media

The multifactor productivity program was launched in 1987 as a regular statistical program, and the first estimates were published in the 1988 issue of *Aggregate Productivity Measures, (catalogue 15-204).* The new indices of multifactor productivity have now been produced and released on an experimental basis for the third consecutive year and we are presently preparing the fourth issue of the productivity estimates to be disseminated through CANSIM and the productivity publication.

At the most detailed level, multifactor productivity indices are produced for the 110 industries for which capital stock data consistent with the Input-Output accounting framework are available. These indices are released for 13 one-digit industry groups and, for manufacturing industries at the two-digit level (19 industry groups), subject to quality restraint. The disaggregated indices are available on request.

Multifactor productivity indices are still considered experimental. The data are qualified as experimental in order to have the option to introduce methodological changes as needed and to revise historical series accordingly. For instance, this year, multifactor productivity estimates will be introduced based on hours worked instead of employment. Hours worked provide a better measure of the use of labour than employment and this change will improve our productivity estimates. The next release will include estimates based on both hours and employment in order to allow our users the possibility to evaluate the impact of the change.

Labour productivity indices are still released as partial productivity indices. Although multifactor productivity indices track the evolution of technology more closely, labour productivity indices have the slight advantage of being available on a more timely basis at the one-digit aggregation level. Multifactor productivity estimates rely upon the availability of complete current and constant prices input-output tables. These tables are usually completed three years behind the current date.

However results are not published for many industries even at the small aggregation level. This is the case for almost all primary industries and for several service industries. The main reason for this is that the quality of the estimates is deemed to be too low for regular release. Nevertheless, the estimates are made available upon request. The reasons behind the low quality of the

estimates are numerous, but in the case of primary industries, as will be discussed later, the main problem is the lack of appropriate measures of natural resources as inputs into the production process. With the ongoing development of the natural resources satellite accounts at Statistics Canada, we hope to finally come to grips with this problem in the coming years[1].

**Usefulness of the program**

The multifactor productivity program is useful for two major reasons. Productivity indices are useful structural indicators of economic performance which are often used in international comparisons. Secondly, the program is useful from a pure statistical perspective. The data integration exercise involves completing the constant price estimates of the Input-Output Tables. It adds estimates of capital and labour inputs by industry which are very useful for outside researchers.

In addition, the productivity program produces industrial indicators which are highly sensitive to errors in the data. Productivity estimates are small residuals computed from the difference between the growth of the outputs and the growth of the inputs. Errors made in measuring inputs or outputs have a strong impact on the estimates. This is a useful tool for the identification of weaknesses in the underlying input-output database.

## 2 - Alternative concepts of productivity

Let me now turn to the second part of my presentation and introduce alternative measures of productivity. All the productivity indices, including the labour productivity indices, are based on the unifying concept of the excess of output growth over input growth. The unexplained residual growth is called productivity growth. But productivity is also an analytical concept. Output growth is fully decomposable into the growth in the inputs included in the productivity formula and the growth in all other factors affecting output. These include items such as technical progress, economies of scale and errors of estimate.

Multifactor productivity indices attempt to take all production factors into account explicitly so that, in principle, the residual productivity term of the equation refers to pure technological factors. In practice, as we will discuss later, this may not be the case, as environmental factors such as the availability and the quality of natural resources are not accounted for. These factors may have a large impact on productivity, particularly for primary goods industries.

Unifying concepts such as productivity always conceal diversity. The same productivity formula can be applied to many alternative sets of outputs and inputs, resulting in as many productivity indices. For instance, labour productivity indices are based on real value-added as a measure of output and include only labour as an input. Multifactor productivity indices can be computed on many alternative measures of output and inputs to give either *industry* indices or *commodity* indices. These indices are described in the following paragraphs.

1. Both labour and multifactor productivity indices show very unsatisfactory results for most service industries and for all primary industries excluding perhaps agriculture. Hence, estimates published at the small aggregation level include only agriculture, manufacturing, construction, trade, transportation and storage, communications and community, personal and business services.

**Industry Productivity Indices**

At the industry level, multifactor productivity indices are generally based on a measure of gross output (total sales adjusted for inventory change) and include as inputs, intermediate inputs (raw materials and services), capital and labour. We also produce alternative measures of multifactor productivity indices based on net-gross output. Net-gross output is simply gross industry output net of intra-industry sales. One of the main reasons for producing indices based on net-gross output is comparability with similar estimates produced by the U.S. Bureau of Labor Statistics (BLS) for two digit manufacturing industries.

Estimates of productivity based on a value-added concept of output are also presently produced for total manufacturing industries and for the business sector. These estimates will eventually be extended to all industries. Productivity estimates at the industry level based on value-added have been criticized in the literature, notably by professor Denny from University of Toronto who is attending this Conference (see Denny and May (1978)). But these estimates were based on a quite different measure of real industry value-added, namely double deflated value-added, than the one standing behind our measure. The new measure of real value-added used in our estimates parallels the familiar notion of value-added in current prices taught to students of national accounting: the value-added of an industry is the sum of the values which it adds to the various commodities which it processes. Each industry only partly processes commodities, that is, shares in the production process of commodities with all other industries[2]. Industries jointly add nominal and real value to commodities, the latter being determined in all industries by deflating the nominal value-added by the commodity prices. Real industry value-added is the aggregate (Laspeyres sum or some other aggregate) of the industry's contributions to the real value of all commodities it processes.

**Commodity Productivity Indices**

We also produce productivity estimates for commodity bundles. The commodity bundles are industries' gross output of goods and services taken from the Canadian rectangular input-output tables. We call these measures, the interindustry productivity indices. The interindustry index, as its name indicates, is a measure that crosses industrial boundaries. It measures the productivity of a group of industries in the context of their interdependence. It corresponds to the productivity of all industries involved directly or indirectly in the production of a given bundle of goods and services as if the establishments of these industries were fully integrated together in a single establishment. In other words, contrary to industry indices which are both industry and commodity specific, after integration upstream over the industry dimension, the interindustry indices refer only to commodities. When that bundle of commodities is delivered to final demand, the index gives the productivity associated with the production of final goods and services. In effect, we make productivity indices by final commodity bundles.

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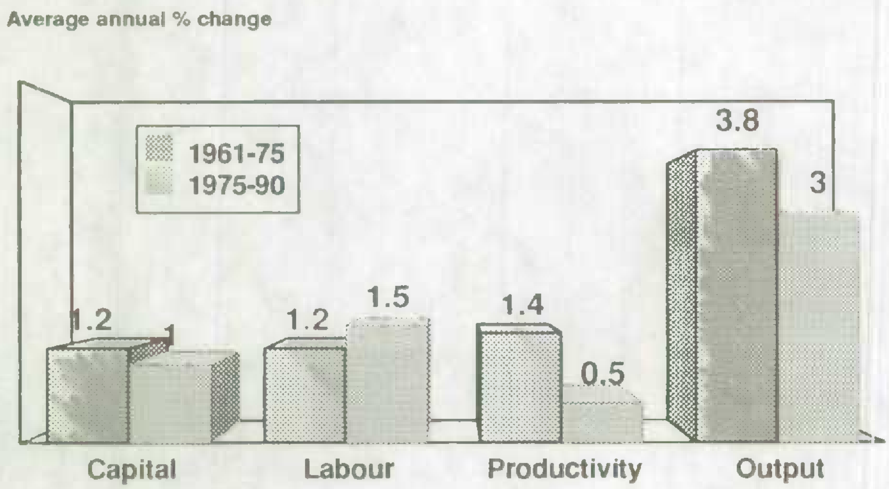
2. More technically, this notion of real value-added relies on the assumption that the production process is defined over commodities rather than industries. Each industry shares in total output (final demand deliveries) according to their nominal input share contrary to their constant prices input share as in double deflation. Industries' real value-added, therefore, depends on current relative input and output prices rather than on base year relative prices. For more details, see Durand R. (1991a).

## Graphical illustrations

To start illustrating the alternative productivity indices, the next figure shows aggregate business sector real GDP growth over two periods, 1961-75 and 1975-90. This aggregate growth in turn is decomposed into input growth on the one hand and a residual productivity factor on the other hand. Input growth at the aggregate level comprises only capital and labour as output is on a net basis. Output is net in the sense that it refers to the deliveries of the business sector to final demand of the economy: All interindustry sales have been netted out.

**Figure 1: Aggregate business sector growth decomposition**

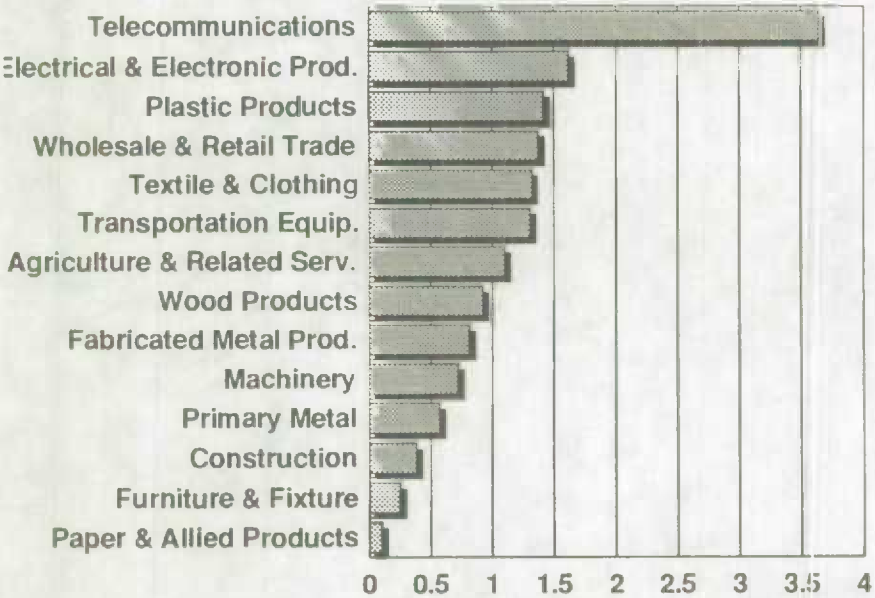



Productivity measures the contribution of all factors other than capital and labour to output growth over these periods. Analytically, this residual represents such factors as technical progress, scale economies, omitted inputs and other errors in estimates. In Canada, growth in total factor productivity has been substantial in the first period as illustrated on the figure in contrast with the second period. The decline in output growth during the second period appears essentially to parallel the fall in productivity growth; factor input growth remained almost the same as in the first period.

The next figure shows average annual multifactor productivity growth over the 1961-1988 period for selected industries. These estimates are *industry* estimates based on *gross output*. Productivity growth for these industries is measured as the difference between growth in their gross output and growth in their capital, labour, material and service inputs. This is different from the aggregate measure in which output is net of intermediate inputs and inputs comprise only capital and labour. This is because gross output is not generally considered a meaningful concept at the aggregate business sector level. But for that same reason, industry productivity indices are not immediately comparable to the aggregate business sector productivity index. The latter is a weighted average of the former but the weights sum to more than one contrary to what is usually the case for a weighted average.

This seems paradoxical but could be explained by the notion of vertical integration. By vertical integration of establishments, one means that establishments are producing some of their own

**Figure 2: Average annual productivity growth measured on gross output for selected industries, 1961-1988**




inputs of raw materials and services instead of buying them. Should establishments produce all of these inputs, we would say that they are fully integrated. Fully integrated establishments would still have to buy their capital and labour inputs.

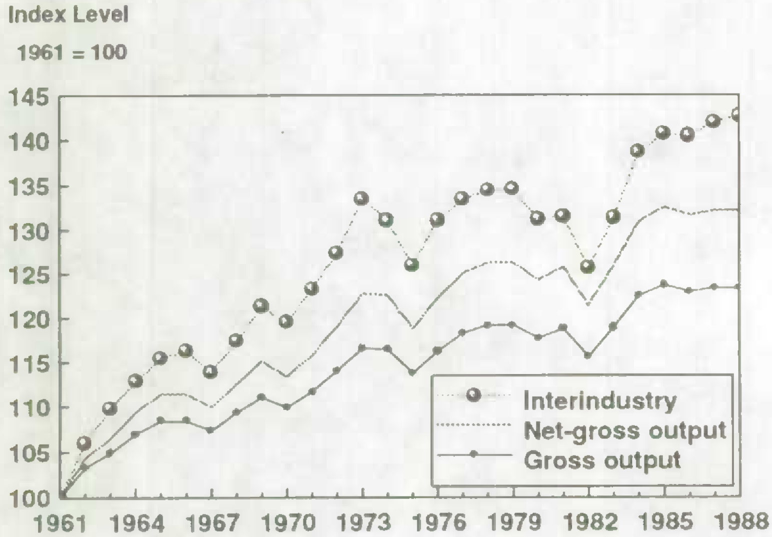
Vertical integration can be real or it can be a statistical construct. When the national accountant says that the output of the business sector consists of the final demand deliveries of the economy, he is conducting statistical integration. In the real world, the output of the business sector is the total output of all of its establishments which we refer to as their gross output. Gross output is equal to the sum of sales to final users and sales to business users as inputs.

Productivity measures can be defined for various industrial aggregation levels but also for various statistical vertical integration levels. Vertical integration changes the perspective from which productivity is measured and change the resulting estimates. This is a very fundamental notion which underlies all of our productivity measures and those published by others although it has never been put in that sharp a perspective before.

To illustrate the concept, let us look at the following figure which shows two alternative estimates of multifactor productivity for the same group of industries, namely all manufacturing industries grouped together. One estimate is based on the gross measure of output with associated inputs as in the previous figure; the second is based on gross output netted out of intra-industry sales. Output is defined as including only the sales of manufacturing establishments to non-manufacturing entities. Transactions between manufacturing establishments are eliminated on both the output and the input side. This is the net-gross output concept of productivity. This measure is constructed as if all manufacturing establishments were merged, that is integrated into a single large establishment buying all its inputs from outside the manufacturing sector and selling all of its production outside the sector. This is an intra-industry integrated measure of productivity. As you can see, the resulting estimate is different than productivity measured with gross output.

Aggregating all industries together using the net-gross output measure of productivity amounts to consider all intermediate sales as intra-industry sales and leads to the elimination of all interme-

**Figure 3: Alternative indices of multifactor productivity for manufacturing industries: gross output, net-gross output and interindustry**



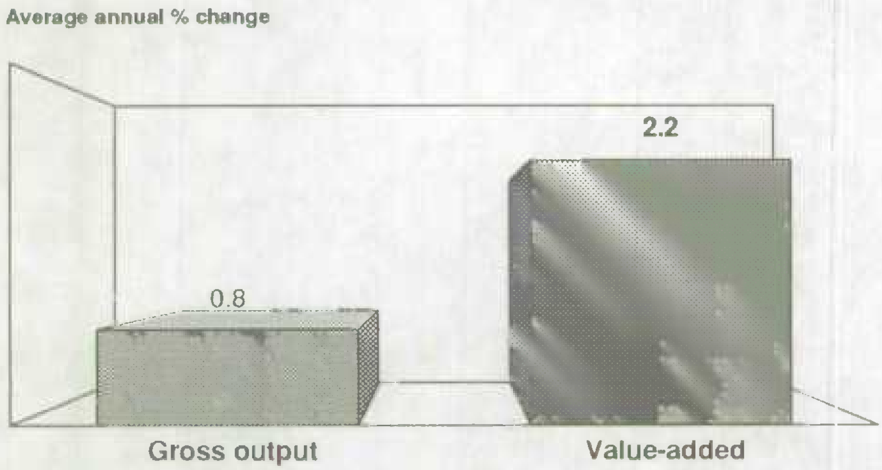

diate transactions in the economy. But this is just equivalent to the aggregate productivity measure described above which has value-added as the measured output and only capital and labour as inputs. Because of integration, the aggregate measure tends to be larger than the average of the industry measures.

Integrated productivity measures tend to be larger than non-integrated measures simply because integration increases the weight of primary inputs in relation to intermediate inputs in the computation of productivity. As intermediate inputs are ultimately produced in the economy with the direct and indirect use of primary inputs, that is, as they are also outputs of the productive system, they tend to grow faster than the primary inputs used in their production to the extent of the productivity gains realized in their production. The reduction of intermediate inputs (integrated industry measures) or the substitution of primary inputs for intermediate inputs (interindustry measures) automatically reduces the rate of growth of the inputs and, consequently, increases the estimated rate of growth of productivity.

The impact of integration on the measurement of productivity can also be seen on the next figure which shows average annual manufacturing productivity growth based respectively on gross output and net value-added. The estimates of productivity growth on value-added is almost three times as large as the estimate based on gross output.

At the industry level, the estimates of productivity on net-gross and on gross output differ as the first integrates over intra-industry sales and the second does not. What if, in addition, one integrates both on intra- and interindustry sales? This procedure leads to our interindustry measure of productivity. This fully integrated measure refers to the productivity of all industries directly and indirectly involved in the production of a given bundle of commodities. For instance, it may refer to the auto industry group which integrates the production of steel, tires, textile and all upstream suppliers of the auto industry. This measure of productivity, as can be seen on figure 3, tends to be higher than both the gross output and the net-gross output measures of productivity because it is at a higher integration level, depending only on primary inputs. But it is at the same full integration level as the aggregate business sector level productivity measure which also depends

**Figure 4: Alternative estimates of average annual productivity growth for manufacturing industries, 1961-1988**




only on primary inputs and, for that reason, the aggregate measure is, this time, a weighted average of the former with weights summing to one. This measure was suggested to us by professor Rymes[3] of Carleton University except that we limited the integration over the intermediate inputs only, while professor Rymes would also integrate over capital goods. Proper recognition of capital goods as *produced inputs* like intermediate inputs would lead us to an alternative dynamic formulation of productivity indices that we have not yet implemented empirically[4].

*Industry* measures of productivity are bi-dimensional in the sense that they refer to specific industries and specific bundles of commodities. Integrating over industries eliminates the industrial specificity of the measure resulting in the *interindustry* measure which refers only to a specific commodity bundle. It can be shown that this index is identical to the one associated with final demand deliveries of that commodity bundle. Hence interindustry productivity estimates provide estimates of productivity by commodity group rather than by industry and this productivity is the same whether output is taken to be gross output, gross output net of intra-industry sales or net output delivered to final users. That interpretation of the interindustry measure as a commodity productivity index is ours[5]. Hence, contrary to the opinion of other economists, we do not see the interindustry measure as a substitute to the industry measure. It is a complementary measure having a different meaning. It assumes that the production function is defined over commodity bundles rather than by industries. All industries associate their primary inputs of capital and labour to produce commodity bundles with a joint productivity gain.

The value-added measure of productivity relies on the same assumption of a commodity production function. In contrast to the interindustry index, it can be seen as measuring the productivity associated with the same industry commodity bundle net of the contributions of upstream suppliers of the industry. The gross output of the industry is partly delivered directly to final users and partly delivered to other industries which ultimately deliver their output to final demand. Each

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3. See Rymes, T.K. and A. Cas (1985) and Cas A. and T. K. Rymes (1991)

4. See Durand R. and Salem M. (1987).

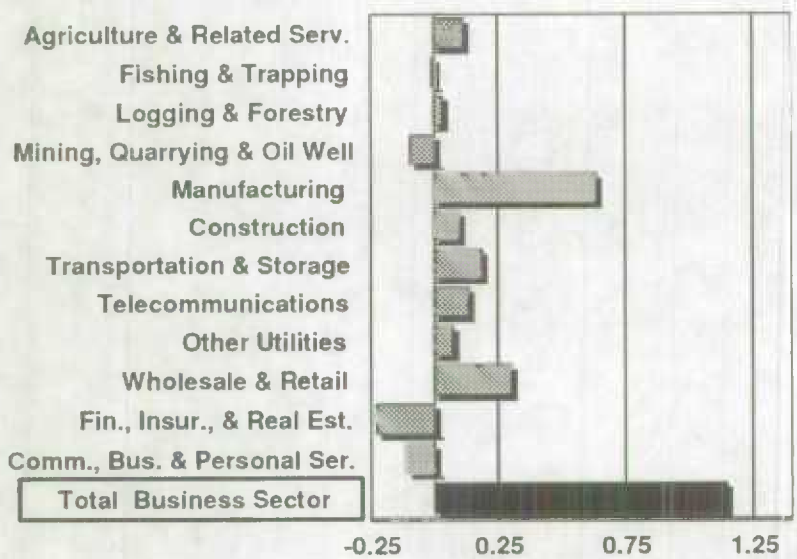
5. See Durand R. (1991b).

industry shares in the productivity gains associated with these final demand commodities in the proportion of their nominal input share. This is another intuitive interpretation of the value-added productivity indices.

The multiplicity of productivity indices I have discussed may be somewhat disconcerting but it takes little time to gain familiarity with all of them. They are all alike in the sense that they are all based on the same index number formula, which is the chained Törnqvist index. Their difference lies in that they refer to different set of productive activities. It is quite understandable that productivity estimates pertaining to two distinct activities give different results. Thus, productivity estimates differ because of aggregation. The productivity of an industry such as fabricated metal is different from the productivity of the larger group to which it belongs, say total manufacturing and this is usually well understood. What is perhaps new is that productivity differs depending on the level of integration. But there again, an integrated set of activities is different from the individual component activities. The productivity of the automobile industry is different from the productivity of the Canadian economy in producing autos. The latter also depends on the productivity of all related upstream activities producing auto parts.

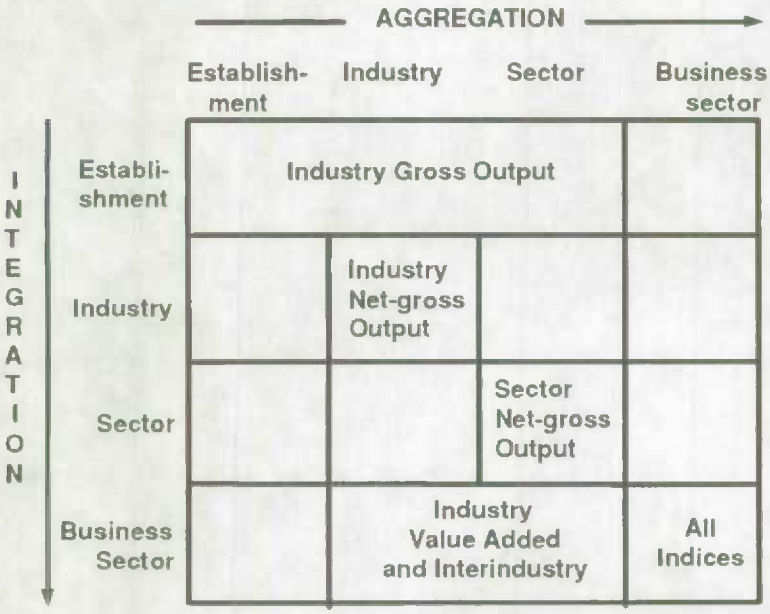
In addition, all of these productivity indices are well interrelated and fit together like the pieces of a puzzle. They can be reconciled and converted one into another by appropriate weighting. For instance, all industry measures can be expressed in terms of their contribution to aggregate business sector productivity growth. The contribution of an industry to aggregate productivity growth is its productivity weighted by the importance of the industry in the aggregate economy. The weighted productivities of industries are all identical whether productivity is measured on the basis of gross output, net-gross output or value-added. These contributions are illustrated in the next figure.

**Figure 5: Average annual contribution of industries to business sector productivity growth, 1961-1988**




The figure shows the average annual rate of growth of business sector multifactor productivity over the historical period 1961-1988 at the bottom. This productivity is the sum of the contributions of individual industries depicted just above. These contributions are average productivity growth weighted by the importance of the industry in the aggregate economy. As indicated in the

Figure 6: **Covering Productivity**



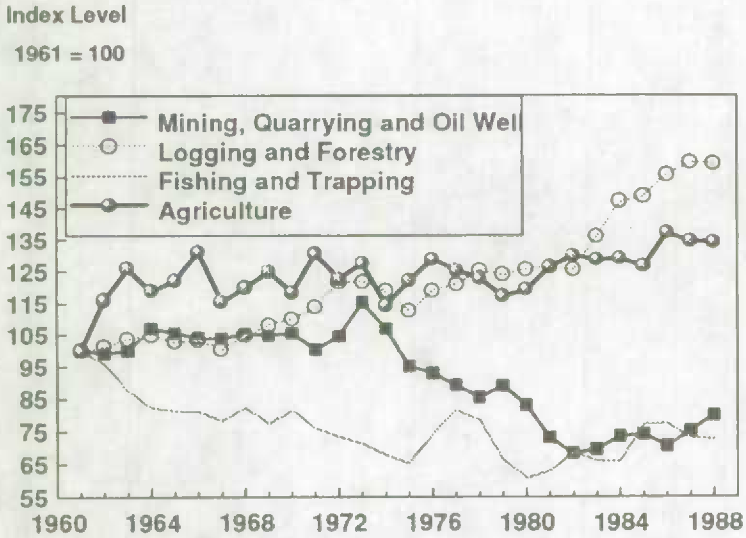

last issue of our productivity publication, it is interesting to notice the outstanding importance of the contribution of manufacturing industries to aggregate productivity growth.

One may summarize what precedes by saying that aggregation and integration are two independent dimensions entering into the definition of productivity indices. It follows that a convenient classification framework of the many indices can be established as shown on figure 6. On that figure, the horizontal axis represents the aggregation dimension and the inverted vertical axis, the integration dimension. Productivity measures can be defined on establishments, industries, industry groupings or sectors and for the total business sector. Similarly, integration can be at the establishment, industry, sector or aggregate business sector level. One may aggregate indices without integrating. This is what is traditionally done when aggregating establishments' indices in industry indices or industry indices into sector indices using gross output. In such a case, aggregation weights sum to one for integration stays constant at the establishment level. However, when these indices are aggregated at the business sector level, production is integrated from gross to net and the aggregation-integration weights then sum to more than one. Similarly, productivity indices on net-gross output are aggregated with weights summing to more than one as one integrates when aggregating along the descending diagonal on the figure. The value-added and the interindustry indices, on the other hand, are fully integrated measures obtained by weighting the industry measures with weights or sum of weights larger than one. When aggregating these indices, integration remains constant and the aggregation-integration weights sum to one. The aggregation-integration framework thus provides a clear intuitive interpretation of why aggregation weights may sum to more than one.

## 3 - Measuring the productivity of primary industries

I now turn to the third part of my presentation which pertains to the assessment of productivity for primary industries. As mentioned earlier, the results achieved for those industries are

**Figure 7: Multifactor productivity indices for primary industries based on gross output**



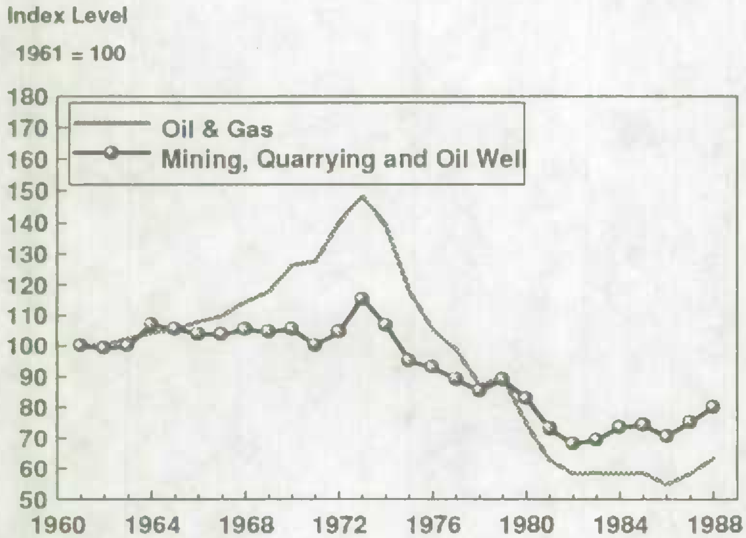

unsatisfactory in most cases. Only in agriculture do we obtain reasonable results which we publish. The estimates, however, could most likely still be improved.

The figure above shows productivity growth for the primary industries. As can be seen, mining industries exhibit a general decline in productivity as of 1973. But mining industries excluding oil and gas extraction do show positive results. The productivity decline in the industry since 1973 was induced by the declining productivity of the oil and gas extraction industry. If we interpret productivity as a measure of technical efficiency, this is clearly unacceptable. It is almost impossible to believe that technical progress has been negative in that industry over the long run. This would imply that less efficient techniques have been replacing former more efficient techniques.

Some other explanation must be found and we are presently investigating this issue. That explanation has to be found in either the quality of the data, or in the underlying measurement theory. Data quality appears to be as good for that industry and other mining activities as for other goods producing industries and very little of the observed productivity decline can be found to originate from that source.

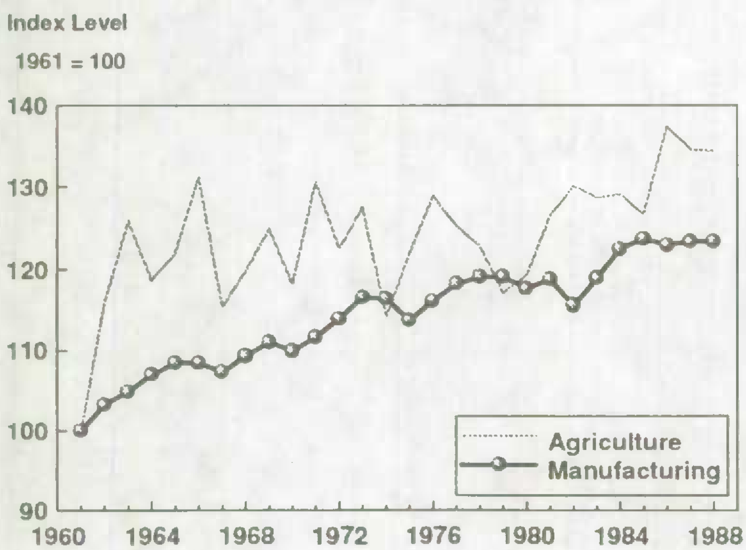
A much more plausible explanation for the productivity decline in that industry would seem to be the persistent deterioration in the quality of the natural resources being exploited over time. Following the energy crisis in 1973, the rent on these resources increased substantially making it profitable to look for and extract petroleum and gas from high cost sources previously found to be unprofitable. These lower quality sites, such as bituminous sands, require more capital and labour as well as other inputs per unit of output thus resulting in a fall in the observed productivity

**Figure 8: Gross output productivity indices in mining and in oil and gas extraction industries**




as measured (see figure 8). Techniques of extraction, in the meantime, have likely progressed, compensating in part but not totally the deterioration in the quality of the resources. Hence the productivity residual captures both technical change and change in the quality of natural resources. We have to find a way of separating these two components before publishing the results on a regular basis.

**Figure 9: Gross output productivity indices for agriculture and manufacturing industries**



If that explanation is true, this means that the productivity model actually used for the primary industries has to be amended. Natural resources have to be explicitly taken into account in such a model. Several related questions have yet to be satisfactorily answered. Are natural resources productive inputs? Are they primary or intermediate inputs? How do we estimate the quantity and value of natural resources? How do we account for quality changes in the resources? These are a few of the questions that we are presently investigating, keeping an eye on data requirements to extend the basic model.

For the same reasons but to a much lesser extent, likely biases also exist in our estimates of productivity growth for agriculture. Land and land quality are likely to be important variables in the explanation of productivity growth in that industry and these variables are not presently taken into account. Changes in the quality of land over time may not have been as dramatic as the changes in the quality of oil and gas reserves, so we believe that the productivity residual can be looked at as a reasonable approximation. Meteorological factors may have had a more important influence on the behaviour of agricultural productivity. The weather might explain the large fluctuations of productivity in that industry compared to manufacturing industries as depicted on figure 9.

## References


Bruno M. (1978), "Duality, Intermediate Inputs and Value-Added", in M. Fuss and D. McFadden (eds.) *Production Economics: A Dual Approach to Theory and Applications*, volume 2, North-Holland, pp. 3-16.

Cas A. and T. K. Rymes (1991), *On Concepts and Measures of Multifactor Productivity in Canada, 1961-1980*, Cambridge University Press, New York.

Denny M. and J. D. May (1978), "Homotheticity and Real Value-Added in Canadian Manufacturing", in M. Fuss and D. McFadden (eds.), *Production Economics: A dual Approach to theory and Applications*, volume 2, part III, pp.53-70.

Durand R. (1991a), "An Alternative to Double Deflation for Measuring Real Industry Value-Added", Statistics Canada, Input-Output Division, technical series # 38.

Durand R. (1991b), "Aggregation, Integration and Productivity analysis: An Overall Framework",- Statistics Canada, *Aggregate Productivity measures, 1989,* (catalogue 15-204), pp.107-118 (also available in Input-Output Division technical series # 42).

Durand R. and M. Salem, (1987, revised 1990), "On a Dynamic Productivity Index Number Formula", Statistics Canada, Input-Output Division, technical series # 27.

Rymes, T.K. and A. Cas (1985), "On the Feasibility of Measuring Multifactor Productivity in Canada", Statistics Canada, Input-Output Division.

April 21, 1994

## TECHNICAL SERIES/CAHIERS TECHNIQUES

## INPUT-OUTPUT DIVISION/DIVISION DES ENTRÉES-SORTIES

## STATISTICS CANADA/STATISTIQUE CANADA


(1)
Hoffman, *et al.*, *User's Guide to Statistics Canada Structural Economic Models*, Input-Output Division, Statistics Canada, Revised September 1980.

(2)
Hoffman, *et al.*, *Guide d'utilisation des modèles économiques et structuraux de Statistique Canada*, Division des entrées-sorties, Statistique Canada, Révisé septembre 1980.

(3)
Durand, R., and Rioux, R., *Estimating Final Demand Expenditure at Factor Cost and Net of Tax Price Indices in the Canadian Input-Output Tables*, Paper Presented at the International Round Table on Taxes and the CPI, Ottawa, Input- Output Division, Statistics Canada, March 3, 1987.

(4)
Siddiqi, Y., Murty, P.S.K., and Diena, J., *Highlights of the Public Sector Market Study, 1983*, Input-Output Division, Statistics Canada, September 1987.

(5)
Murty, P.S.K., *Size and Structure of the Public Sector Market, 1983, Sources and Methods*, Input-Output Division, Statistics Canada, September 1987.

(6)
Durand, R., *The Adding-Up Problem in the Computation of Aggregate Constant Price GDP*, Input-Output Division, Statistics Canada, October 1987.

(7)
Durand, R., and Markle, T., *Measuring the Variability of Input-Output Structures: A Progress Report*, Input-Output Division, Statistics Canada, December 1987.

(8)
Durand, R., and Markle, T., *On the Variability of Input-Output Structures: A Progress Report on the Constant Price Industrial Input Structures*, Input-Output Division, Statistics Canada, April 1988.

(9)
Durand, R., and Markle, T., *Structural Change in the Canadian Economy: The Supply Side in Current Prices*, Input-Output Division, Statistics Canada, July 1988.

(10)
Durand, R., *Statistics Canada's Price Model: A Detailed Description of the Structure and Simulation Capacities*, Input-Output Division, Statistics Canada, August 1988.

(11)
Durand, R., and Markle, T., *Structural Change in the Canadian Economy: The Supply Side in Constant Prices*, Input-Output Division, Statistics Canada, October 1988.

(12)
Durand, R., and Markle, T., *A Diversity Analysis of Structural Change Based on the Canadian Input-Output Tables*, Input-Output Division, Statistics Canada, January 1989.

(13)
Durand, R., and Diaz, A., *Input-Output Modelling of Commodity Indirect Taxes for Macroeconomic Analysis*, Input-Output Division, Statistics Canada, January 1989.

(14)
Murty, P.S.K., Généreux, P.A., Leblanc, D., and Greenberg, M., *Provincial Sales Tax Commodity Allocation Project, 1984 Sources and Methods*, Input-Output Division, Statistics Canada, January 1989.

(15)
Durand, R., *The Balancing Process of the Regional Input-Output Tables*, Input-Output Division, Statistics Canada, February 1989.

(16)
Siddiqi, Y., Murty, P.S.K., and Diena, J., *Highlights of the Provincial Sales Tax Commodity Allocation Project, 1984*, Input-Output Division, Statistics Canada, January 1989. Reprinted from Canadian Economic Observer, May 1989.

(17)
Durand, R., *Aggregation Formulas for Multifactor Productivity*, Input-Output Division, Statistics Canada, June 1989.

(18-E)
Mercier, P., Durand, R., and Diaz, A., *Specification of Parameters for the National Input-Output Model*, Input-Output Division, Statistics Canada, December 1991.

(18-F)
Mercier, P., Durand, R., et Diaz, A., *Spécification des paramètres du modèle d'entrées-sorties national*, Division des entrées-sorties, Statistique Canada, décembre 1991.

(19-E)
Siddiqi, Y., and Murty, P.S.K., *Commodity Indirect Taxes in the Canadian Input-Output Accounts, 1984*, Input-Output Division, Statistics Canada, July 6, 1989.

(19-F)
Siddiqi, Y., and Murty, P.S.K., *Impôts indirects sur les biens et services dans les comptes d'entrées-sorties du Canada, 1984*, Division des entrées-sorties, Statistique Canada, 6 juillet 1983.

(20)
Siddiqi, Y., and Murty, P.S.K., *Progress Report # 5: On the Temporal Variability of the Aggregate Input Structure*, Input-Output Division, Statistics Canada, September 1989.

(21)
Siddiqi, Y., and Murty, P.S.K., *Highlights of Commodity Taxes for 1984*, Input-Output Division, Statistics Canada, Canadian Economic Observer, September 1989.

(22)
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*Effective tax rates and net price indexes/Les taux de taxe actuels et les indices de prix net*, Feature Article/Etude spéciale, Canadian Economic Observer/L'observateur économique canadien, November 1990/novembre 1990.

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Salem, M., *Documentation of Capital Input and Capital Cost time series for Multifactor Productivity Measures*, Input-Output Division, Statistics Canada, reviewed and updated by R. Fortin and Y. Sabourin, December 1990.

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Murty, P.S.K., et Siddiqi, Y., *Portée de l'économie des subventions publiques au Canada*, Division des entrées-sorties, Statistique Canada, le 6 décembre 1991. Projet.

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*Effective tax rates and net price indexes/Les taux de taxe actuels et les indices de prix net*, Feature Article/Etude spéciale, Canadian Economic Observer/L'observateur économique canadien, November 1990/novembre 1990.

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Diaz, A., *The Statistics Canada Concepts and Measures of Productivity*, Input-Output Division, Statistics Canada, December 6, 1990. Reprinted October 1991.

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