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THE CONTRACTING-OUT PROBLEM IN SERVICE SECTOR ANALYSIS: CHOICE OF STATISTICAL UNIT

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The contracting-out problem in service sector analysis is defined and considered from the viewpoint of choice of statistical unit. It is shown that both the enterprise statistical unit and the establishment-based unit are unsatisfactory for economic analysis. This leads to the recommendation for an "intermediate" statistical unit, namely the "division." The division, by construction and definition, is shown to have desirable properties for analysis of the contracting-out problem (and own-account problem) relating to services. Some empirical evidence with respect to the Canadian service sector economy supports the analysis and suggests a new interpretation of conventional service sector growth statistics.

I. INTRODUCTION

Recently there has been considerable interest in service sector analysis. An important aspect of this analysis is the "contracting-out problem" (and the complementary "own-account problem") for services. This note will first define what is meant by the contracting-out problem in service sector analysis. There are, in fact, two traditional approaches to the problem: (1) the industrial-organization approach which is rich in theory and is based on the economic concept of the ownership unit, namely the "firm," and (2) the input-output approach which is essentially empirical and is based on the statistical concept of the production unit, the "establishment." The two approaches work well and, indeed, support each other in the special case where the firm is small and effectively composed of one industrial establishment.

If, on the other hand, the business economy is dominated by a collection of large enterprises each of which is typically composed of many different establishments (and industrial companies), then the two approaches to the "contracting-out problem" no longer support each other. It is necessary, therefore, to fashion a new approach to the problem that recognizes the dominant economic reality and yet also preserves the theoretical and statistical insights of the two traditional approaches mentioned above. This is, in essence, the main goal of the present note.

The orientation of this note is largely conceptual rather than empirical and is directed towards national economic accountants and statisticians with a special interest in the service sector. The empirical content of this note, though limited, is always with reference to the Canadian economy and Canadian statistics. We do, however, provide concrete guidelines as to how presently available service sector statistics ought to be interpreted. We also provide some instructions as to

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how future empirical analysis of the service sector might proceed (e.g. the "correct" choice of statistical unit). The emphasis is on new or "neglected" aspects of the contracting-out and own-account problems for services that appear to be of growing importance. Since the treatment here is rather brief and introductory it will be evident that a more definitive account of the subject matter is really called for. In the meantime, the subject illustrates a good example of theoretical/statistical interaction in the field of economics aided by some knowledge of business accounting practices and structures.

II. What is the Contracting-Out Problem for Services?

In this section we will first briefly state the nature of the contracting-out problem in service sector analysis. It will then be shown why the "true" nature of the problem has often been overlooked in the service sector literature and why a more profound treatment of the issues is required. Indeed, it turns out that there may not be "one correct" resolution of the problem to suit all circumstances. Rather, there may be a limited range of resolutions, and the "correct" choice from within this range may depend upon the particular purpose of a service sector analysis.

The contracting-out problem arises in the economic analysis of service sector growth *vis-à-vis* the growth of the goods-producing sector. The analysis is strictly with respect to the *market* economy of both sectors. (For ease of exposition, the term "growth" is used here mainly with respect to "employment growth.") It has been argued that the alleged growth of services employment relative to goods-industries employment (in the market economy) is merely a statistical artifact. The reason is that essential serivce activities, formerly performed within goods-producing units on "own account," are now being increasingly transferred outside these units to new service sector specialists, i.e. the service activities are now being "contracted out." Therefore, the available industrial statistics, being establishment based, reveal a rapid growth of producer services inputs and outputs and related producer services employment—that merely replace part of the value added and associated employment of many goods-producing industries. Furthermore, if this is appropriately considered, it is argued that the recent surge of producer services employment, significantly responsible for the relative growth of services employment in recent years, is *not* a statistically "real-change" phenomenon for a national economy. Rather, it is merely a "superficially" different way for business to operate and can be reasonably explained within the economic literature on industrial organization [e.g. Williamson (1985)]. An extreme version of the argument claims that no new producer services employment, particularly business services employment, have really been created in recent years!

Before continuing, it might be noted that the current statistical trends on goods and services employment in Canada, together with their industrial disaggregations, can be found in Grubel and Walker (1989) and Economic Council of Canada (forthcoming). Also note that the brief description of the issues, given in the preceding paragraph, shows that the two services-related problems, "contracting-out" and "own-account," are complementary to each other and should

be analyzed together. In addition, it is evident that the economic literature providing some explanation for the contracting-out phenomenon is essentially based on the ownership unit, the "firm." This literature is rich in concepts such as: "governance of contractual relations," "monitoring performance," and "transaction costs economizing," that are invariably linked to the market boundaries of the "firm." On the other hand, the statistical evidence exhibiting the contracting-out phenomenon, is invariably linked to the production-unit boundaries described by the "establishment."

Most analysts recognize the distinction between contracting-out *per se* and the contracting-out *problem.* The latter problem must also embody the claim that contracting out of services replaces services activities formerly performed "in house" (on own account) by goods-producing units. Therefore, it is necessary to construct statistical evidence to support this claim. The establishment statistical unit is difficult to utilize for this purpose because the unit does not normally yield evidence with respect to such intra-establishment activity. Some writers, e.g. McFetridge and Smith (1989), have tried to resolve this particular problem by appealing to occupation-by-industry matrix data and their changes over time. The general idea is to compare changes over time in services-occupational employment in goods-producing units *versus* such changes in services-producing entities, particularly with respect to business services occupations and their corresponding entities. The use of such data, however, are limited by two factors: (1) the occupational data are on a self-reporting household basis that is inconsistent with establishment-based production data [see e.g. Postner and Wesa (1987)] and (2) occupational analysis reveals only part of the total services activities performed within observed units; the activities should also include related overhead expenses and other direct purchase costs. There is also the issue that the usual measurements of producer service inputs (as described in input-output statistics) are probably the least reliable of all statistics [see Postner (1982)]. Therefore, the variations over time of services contracting out by goods-producing units and the corresponding replacement of own-account service activities are difficult to identify within the establishment-based framework. The necessary statistical accounting records are typically not available at that level of observation.

In addition, there exists a more basic conceptual problem. We already know that the economic theoretical background, supporting the choice of contracting-out (market) transactions *versus* own-account (internal) transactions, derives from the industrial-organization concept of the "firm." The official industrial statistics, nevertheless, measure contracting out at the establishment-based level. This would mean that much of observed "contracting-out" may actually represent intra-firm (internal) transactions and, therefore, should be "discounted" from the strictly theoretical point of view. The issue described here is *not* of minor importance since, e.g. the Canadian business economy is presently dominated by a collection of large enterprises each of which is typically composed of many different establishments operating in different industries. Indeed, it is increasingly common for the large enterprises to operate establishments in both the goods-producing and services-producing sectors [see Statistics Canada (1989a) and related references in Niosi (1987)].

But this is not all! Some of the large Canadian enterprises are of the conglomerate type or are loosely held together by means of a holding-company structure. There may even be various layers of intermediate holding companies [mentioned in Postner (1984)]. Therefore, when producer service transactions occur between diverse production units within conglomerate or holding-company corporate structures, we may want to "count" these transactions as theoretically *bona-fide* examples of contracting out (assuming that the complementary own-account replacement condition is satisfied).

In a nutshell, the critical problem posed in this note can be stated as follows. How can we decide when a contract is "outside" or "inside" the firm, and how should the "firm" be defined and observed with respect to our particular context? Note that it is of crucial importance that the "firm" be defined in such a way that *both* aspects of our subject matter (contracting out and own account) can be reliably observed from the statistical viewpoint and, yet, at the same time conceptually preserve the theoretical apparatus and insights of the industrial organization literature. We might, in addition, want to define the "firm" so that it can be easily related to the establishment unit, which is still our main source of industrial employment statistics.

It will be evident that in order to satisfy the apparently "conflicting" goals of economic statistics and economic theory, we must step outside the "confines" of economics *per se.* There is also an important distinction to be made between the "correct" statistical unit, for our purposes, and the "correct" reporting unit; the two sets of units need not coincide! These are the technical considerations that are briefly covered in the next section of this note. The final section, the Conclusion, will take a somewhat broader and less technical approach to the whole issue and present some very tentative results that may aid interpretation of the traditional industrial statistics.

III. Choice of Statistical Unit

In this section the present writer builds upon his previous work on new accounting developments in order to resolve the "enterprise-establishment problem." Since this work has already appeared in two publications [Postner (1984) and (1986)] the exposition is kept brief in order to avoid repetition. Only the essential aspects of the previous analysis are summarized here.

It seems clear, from the discussion in the preceding section, that neither the establishment statistical unit nor the enterprise statistical unit are appropriate candidates for measuring the contracting-out phenomenon in service sector analysis. One must search for some "intermediate" statistical unit that, at least potentially, furnishes the array of statistical and theoretical characteristics (perhaps, in compromise form) required for analysis. The search for such a unit takes one inside the hierarchy of accounting mechanisms that typically control the large goods-producing enterprises [an excellent example is provided by Eliasson (1988)]. In Canada, the internal accounting structures of the large enterprises are investigated by special "profiling" procedures and are complemented by a complete business registration system [as in Statistics Canada (1985) and (1987)].

The result leads to the delineation of a new statistical unit, namely the "division" (also sometimes called the "investment center" or the "statistical company").

Briefly, the "division" represents the smallest *operating* entitity capable of possessing both a complete set of production and income accounts and a set (not necessarily a complete set) of related balance-sheet accounts. The division is an intermediate link between the parent enterprise and its constitute establishments, and only coincides with the individual company or subsidiary of an enterprise in special cases. By definition and construction, the division includes *inter alia* all ancillary units' and (divisional) headquarter's expenditures, primary and intermediate, that are directly or indirectly associated with the division. Both own-account (primary) service activities and purchased (intermediate) service inputs such as: advertising, computer rentals, information processing, market research, payroll activities, and telecommunication services, are covered in this context. Moreover, the division is also capable of possessing information with regard to service activities, both primary and intermediate, such as: accounting, banking, finance and legal services, and insurance and real estate activities. Why? Because the division, by definition and construction, embodies an "investment base management center"—accounting for all current expenses involving controllership and treasury function services related to the division. This is why the division is also called an "investment center" and reflects its responsibility for the capital asset side of related balance-sheet accounts. Note that our description of the operating division presents no special problems concerning the enterprise central head office and central ancillary units as long as the expenditures, both primary and intermediate, of these entities are allocated to the operating divisions. The problem of correctly "keeping track" of these allocations will be discussed shortly. There could remain, however, some central head office service activities that cannot easily be associated with operating divisions. These are best considered as a residual "general corporate division"—the *non-operating* portfolio activities and expenditures of the enterprise. This latter complication will not be treated in the present note [see again Postner (1984) and (1986)].

With this background we are now prepared to connect the suggested statistical unit, the "division," to the contracting-out problem treated in the note. A number of considerations are relevant. The complete production account statements of the divisions are on a *consolidated* basis. This implies that all intra-divisional transactions, involving different estabishments and other units within the divisions, are consolidated out. So no "contracting out" of service activities can be registered between establishments (and other units) belonging to the same operating divisions. On the other hand, the production account statement of the corporate enterprise as a whole, which is typically on a consolidated basis, becomes *deconsolidated* on a divisional basis. This implies that all transactions between operating divisions within the enterprise are preserved and accounted for. So "contracting out" of service activities between different divisions (or between establishments belonging to different divisions) are counted and registered. In addition, of course, all contracting out of service activities between the establishments of the enterprise and establishments of other enterprises are maintained in the usual way.

So far so good! But how are we to know whether changes in the contracting

out of services represent a possible replacement of service activities formerly performed on own account? The division, as a statistical unit, typically possesses the required information. Such in-house (primary) service activities are normally performed directly in divisional ancillary units and divisional headquarters (also called discretionary expense centers) or indirectly by allocation of central head office expenditures on primary service activities. All these primary service expenditures are identified and reflected in the fact that the division possesses complete production and income account statements [see Postner (1984)]. The division typically has the performance incentive to calculate the most profitable marginal changes with respect to "make or buy" decisions affecting services. Therefore, reasonably reliable data with appropriate properties are available at the divisional level to gauge both sides of our service sector analysis problem. However, more is needed for a full treatment of the problem.

In the case of a highly decentralized enterprise that is decentralized along divisional lines, the roles of the central head office as a primary producer of services and as an intermediate purchaser of services, may be minor. In this case we need not "keep track" of the indirect allocation of such service expenditure, both primary and intermediate, to the individual operating divisions. Indeed the operating divisions become sufficiently independent to be regarded as "quasi-firms," motivated to maximize the rate of return on their captial asset investments. Indeed, an alternative definition of the division is: the smallest operating entity of the enterprise capable of possessing "rate of return" statistics. This implies that the theoretical apparatus of the industrial-organization literature, mentioned earlier in this note, is clearly applicable. It also implies that in this case the division is not only the correct statistical unit for our purposes; the division is also the appropriate reporting unit. Indeed the correct reporting unit is merely the division's *own* head office.

We must, however, also consider the case where the servicing role of the central head office (and its associated central ancillary units) is *not* a minor one. We assume that the typical large enterprise is still motivated to break down operations into units of manageable size. This calls for special accounting information and allocations needed to appraise the performance of the operating units—our statistical unit, namely the "division." Nevertheless, there is a substantive problem of "keeping track" of primary and intermediate service activities, located at and channelled through the central office, but indirectly allocated and charged to the divisions. All such allocations and charges can be regarded *as if* they originated with the individual operating divisions, both with respect to primary service activity and intermediate service inputs. The divisions, in effect, merely reflect the contracting-out and own-account service activities of their central head office and the magnitude of the "reflection" is guided by the central corporate service (indirect) allocation procedures. Indeed, when the services role of the central head office becomes predominant in this respect, there may not be much scope for inter-divisional services transactions. However, the operating divisions can still be considered as decision-making units ("quasi-firms"), motivated to maximize their rate of return on investment capital, as measured by their balance-sheet accounts. In this way, the economic apparatus of industrial organization theory is maintained.

There is, however, one key difference with respect to the case considered in the preceding paragraph. Though the operating division is still an appropriate statistical unit, in this case, the division is *not* a recommended reporting unit. Due to the predominance of indirect service allocation procedures, it would be more natural to call upon the enterprise's central head office to perform this reporting function. Indeed it is easy to imagine "mixed cases" where the function of the reporting unit is shared by the enterprise's central head office and the various divisional headquarters. In all cases though, the operating division can be chosen as the "correct" statistical unit.

There is an additional complication that should be mentioned. Thus far we have drawn a simple distinction between primary (own-account) service activities and intermediate (contracted-out) service inputs. It is also possible, however, for intermediate purchased services to undergo further "service processing" particularly at the central head office. So own-account service activities become mixed with contracted-out services inputs and the analysis of our problem can become more complex.

Finally, concerning the collection of divisional-unit data, there is a question of statistical profiling and self-profiling of large corporate enterprises. In some industries, the statistical requirements for a "division" are already satisfied by establishment or kind-of-activity units. In other industries some of the enterprises' constituent companies (or subsidiaries) may approximate operating divisions. It will also be necessary to examine the specific divisional and segmented data that enterprises *per se* deploy for internal and external financial-accounting reporting purposes. Indeed divisional-unit data, in one form or another, are precisely the ones that often serve corporate management decision-making with respect to: mergers, acquisitions, disacquisitions and new venture formation. The divisional unit is a source of statistical stability since the unit *per se*, is relatively immune from the impact of e.g. mergers and acquisitions on corporation-based time series.

IV. Conclusion

To return to the major empirical problem that inspired this note: Is the contracting-out phenomenon a significant explanation of producer service employment growth in Canada (and, perhaps, other industrial nations)? Also, is it true that no new producer services employment, and particularly no new business services employment, has occurred in recent years? If this were true, the official industrial employment statistics would be misguided and would merely reflect an industrial reallocation of a more or less constant level of business services sector employment. It would also follow that the claim that most new employment in recent years has been generated in the market economy by (small) service sector specialists, is without substantive foundation since the "new employment" has merely been transferred from (large) goods-producing firms.

At the present time we have no definitive answers to these important empirical questions. However, some inferences can be made. Almost all research performed on the contracting-out problem in service sector analysis has been conducted at the level of the establishment-based statistical unit. In our view the results of such establishment-based research can be significantly biased since the required

statistical data for a full treatment of the problem are unavailable or unreliable and the data that are available are not amenable to economic-theoretic interpretation. Some experiments have been carried out, on the problem treated in this note, utilizing a statistical unit somewhat related (but not identical) to the one recommended here. However, these experiments have had a limited coverage and scope [see Statistics Canada (1989b) and discussion to follow]. It is clear that the *level* of contracting out *per se* would tend to be larger when measured by means of the establishment unit compared with the divisional unit (all intra-divisional unit transactions are consolidated out). There is also corresponding evidence that own-account service activities would more often be pictured as being "replaced" by the contracting-out process when viewed through the establishment-based perspective rather than through the "more correct" divisional-unit perspective. Thus for these reasons, the contracting-out phenomenon would be exaggerated and measured as being more important at any moment of time when examined *via* establishment statistics. On the other hand, this logical inference does not tell us anything about comparative "changes over time," when viewed from the establishment and the divisional perspectives. If, however, a phenomenon is really of lesser importance than commonly thought, then its impact changes over time are potentially also of lesser importance.

It was noted, in the preceding paragraph, that Statistics Canada recently conducted an experimental survey of the contracting-out phenomenon for services (together with the own-account aspect of the problem). Generally speaking, the survey showed that *both* total value of purchased (contracted-out) business services *and* total consumption of own-account business services grew over the time period covered by the survey. Therefore, it is not valid to claim that no new business services (broadly defined) are being created within the Canadian market economy. The survey also suggests that intermediate purchased services, as a proportion of all services consumed (both own-account and contracted-out), has been growing moderately over the time period concerned. There is an inferred trend towards more contracting out, although we do not yet have definite evidence that increased contracting out has specifically "replaced" own-account service activities. Most important, for our purposes, is the fact that the Statistics Canada survey utilized a statistical unit (and reporting unit) essentially equivalent to the enterprise. This means, in effect, that intra-enterprise inter-divisional service transactions are consolidated out, and this would tend to diminish the measure of the contracting-out phenomenon. The Statistics Canada special survey, then, is even further removed from the establishment-based unit than our suggested divisional statistical unit. This may not be a desirable property of the special survey, since the establishment unit will probably remain as the basis of most industrial statistics (including measures of industrial employment) in the foreseeable future.

What can be concluded from all this? First it should be noted that the phenomena of contracting-out of services and own-account production of services by goods-producing units, are only part of the "story." There are also phenomena of contracting-out of goods activities and own-account production of goods by services-producing units. These latter designations may also "bias" the official (establishment-based) statistics on relative employment trends in goods-

producing *versus* services-producing industries. However, most analysts appear to agree that this "other side of the story" is probably of minor importance.

In summary, our major conclusions can be tentatively stated as follows. The official industrial statistics probably underestimate the *level* of total services employment (including own-account services activities in goods-producing units) *vis-à-vis* the *level* of total goods employment (even including own-account goods activities in services-producing units) with respect to the Canadian market economy. There are some technical subtleties involved in how the "true" levels of services employment activities and goods employment activities should be measured, but these are not our main concern (see further comments to follow). In any event, services employment in Canada is probably more important than we may think! On the other hand, the *growth rate* of total services employment *vis-à-vis* total goods employment in Canada is probably overestimated by the official statistics. This latter point is mainly a reflection of the relatively increasing importance of contracting out in recent years, at least as revealed by the Statistics Canada special survey (and subject to the limited scope and coverage of the survey). Our conjecture is that these two sets of conclusions would continue to hold *a fortiori* if evidence based on the divisional statistical unit were to become directly available.

In order to close this note, there are two final comments that deserve some mention. First, are there limits to what can be contracted out? Any production unit, and certainly any operating decision-making unit, must be characterized by some minimum degree of own-account administrative and managerial services in order to simply exist. While technological change, and particularly the information/communication revolution, can modify the magnitudes involved, it still appears reasonable to claim that some minimum own-account production of essential services is required to maintain the existence of observed statistical units. This would imply that essential own-account services activities cannot become candidates for contracting out to service sector specialists. It may also imply that these essential service activities are best identified within their particular context. Therefore, such service activities can be correctly counted as goods-industries employment if performed within production units (or operating decision units) officially classified to the goods-producing sector.

The second comment is of more interest to national economic accountants concerned with the latest proposed revision to the United Nations System of National Accounts (SNA) as seen in United Nations (1989). The present proposals appear to favour the continuation of the *dual* system of statistical units: (1) the establishment-based production unit and (2) the enterprise-based ownership unit. There has been no serious consideration given (at least to this writer's knowledge) to the idea of an intermediate statistical unit, such as the "division." This would mean that a good opportunity to *link* business accounting reporting practices to economic accounting procedures has been overlooked. It also means that the SNA, as presently proposed, will not furnish an appropriate vehicle to analyze important economic problems such as the contracting-out phenomenon and related issues. Perhaps this note could serve as a reminder that (intermediate) statistical units other than those of the traditional dual system do exist and have specific advantages for purposes of economic analysis.

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