



MINISTRY OF FINANCE

# Productivity Trends in the Public Sector in Sweden

Report to

**ESO**

The Expert Group  
on Public Finance

# 1 Summary and Conclusions

## 1.1 Productivity Trends 1960-1992

### 1.1.1 Previous Study for the Period 1960-1980

Between 1982 and 1986, the Expert Group for Studies of the Economy of the Public Sector (ESO) conducted a development project under the former Director General of Statistics Sweden (SCB), Ingvar Ohlsson. The purpose of the project was to provide calculations of production and productivity in the public sector to complement the national accounts. In the national accounts, production in the public sector was measured and is still measured in terms of expenditures.

A consequence of this is that, by definition, there can be no changes in productivity in the public sector. Due to the large and growing share of the gross national product comprised by the public sector - about 30 % (public consumption in relation to GNP) - this assumption has considerable importance for GNP trends. In several other countries the zero-productivity assumption has been replaced with an assumption that changes in productivity in the public sector - which is primarily comprised of the production of services - are similar to those in the private service sector, i.e. improving by a per cent or so annually.

The estimate of public consumption trends is also based on expenditures. An interesting question is whether estimates of public consumption will be different if instead the services themselves are measured.

It was therefore of interest to make these calculations in order to see whether it was possible to measure productivity in the public sector and what these measurements indicated concerning productivity trends.

The results were summarized in *Offentliga tjänster - sökarljus mot produktivitet och användare* (Public Services - Searchlight on Productivity and Users, Ohlsson *et al.* 1986) and later in the report to the Long-Term Planning Committee (Murray, 1987). The results indicated that it was possible to make productivity calculations for large parts of the public sector. This is perhaps not particularly surprising since a great portion of

public sector services are presently of an individual nature. But even in areas of the night-watch state – police, courts, prisons – it was possible to make productivity calculations. The norm applied was that of measuring output and costs in the private sector as used in the national accounts. The results also indicated a considerable decline in productivity, even when taking into consideration changes in quality, which could only be partially included in the calculations. For the 1970s an aggregate change in productivity for the public sector as a whole was calculated to be minus 1.5 % per year. The calculations included approximately 70 % of the public sector. For the 1960s a somewhat smaller percentage of the public sector was included. The results from the various component studies indicated that changes in productivity during that period were even more negative.

The incorporation of quality into the measurements naturally provided the greatest methodological difficulty. Certain adjustments for quality were made, primarily by weighting outputs in accordance with additional costs for differences in quality (which is the way production values and price indices in the private sector are adjusted for quality change by Statistics Sweden). However, changes in quality were primarily studied independently and were judged to be insignificant, thus not justifying any adjustment of production values. In some areas changes in quality were judged to be significant but not able to be incorporated into measures of productivity. This was the case for health and medical care, road operations and the Swedish Meteorological and Hydrological Institute (SMHI).

### 1.1.2 New Study – 1980–1992

The previous measures of productivity aroused considerable interest and met with extensive criticism. When in the spring of 1993 the Expert Group for Studies of the Economy of the Public Sector (ESO) commissioned the Agency for Administrative Development (*Statskontoret*) to conduct a study of productivity trends in the 1980s, it was in the hope of further developed calculations. In specifying the assignment, the importance of including changes in quality in the calculations was emphasized, as was the use of other methods of productivity measurement, in addition to those based on the national accounts, such as DEA.

In the present study two contributions to this kind of methodological development are made. First, a very comprehensive study has been made of quality trends in the health and medical care sector. That study is presented in an abbreviated form in Chapter 6. Second, panel data with the DEA method have been analyzed in order to compare the results with

measurements made according to the so-called national accounts (SNA) method.

The present follow-up of the previous studies covers the period between 1980 and 1992. It is somewhat less comprehensive than the former study, covering only 61 % of the public sector.

The same method has been used to measure productivity as in the previous study, but the calculations have been developed by utilizing additional information. Furthermore, alternative calculations are presented in order to view trends in productivity from different perspectives and to determine how sensitive the calculations are to different assumptions.

Changes in quality have been described when possible and in some cases it has been possible to incorporate these changes into measures of productivity. By weighting different products in the total production measure, changes in the composition of total production have been captured. In most cases, however, it has not been possible to incorporate other recognized changes in quality into the measure of productivity. The question is whether these changes in quality are so great that there is reason to believe they would significantly affect the results. Within one particular field there is reason to believe this to be the case. This is the area of health and medical care, in which a special study of quality has been conducted within this project. It indicates that there has been a significant improvement in quality regarding treatment results. It has not been possible to incorporate this improvement in quality into the measure of productivity. Shortcomings in adjustments for quality are not unique to these studies. Estimates of productivity within the private sector, concerning both goods and services and price indices suffer from the same difficulties.

Despite the deficiencies in adjustments for quality, we will speak about changes in productivity throughout the study. The shortcomings in adjustments for quality will be commented on in each component study.

Alternative calculations also shed more light than previously over the causes of changes in productivity. The results themselves naturally provide no explanations for the trends. The results must be interpreted. One way in which this is done is by following the changes over time and comparing them to other observed phenomena or changes. Explanations of changes in productivity, whether it increases or decreases, can be found on many levels, from changes in society which facilitate or impede the provision of services, to the management and motivation at individual workplaces. The previous studies of productivity in the public sector were interpreted by many as an attack on staff motivation. There is no basis for this interpretation in the calculations which were made. In the studies undertaken, social changes, similar tendencies in other countries and systems of management and incentive within the public sector were emphasized. Plain ignorance could also be said to have been a significant

explanatory factor. Since no productivity studies had previously been conducted, there was no knowledge about trends in output and costs of production. Consequently, there was no basis for directing government agencies towards increased productivity.

The follow-up of productivity trends in the public sector between 1980 and 1992 indicates a continued decline. However, the trends are less homogenous than before and contain many interesting deviations from the dominant tendency. Between 1980 and 1990 productivity in those activities included in the studies for these years (96 % of the sample) declined by 0.4 % annually. Most of these activities are on the local government level. The change in productivity measured in the local government sector was minus 0.6 % annually between 1980 and 1990. In the central government sector, on the other hand, productivity increased by 0.7 % annually. A number of cultural activities – libraries, museums, theaters and concert halls – which fall under both national and local government authorities, are not included in these figures. They comprise a very limited portion of the sample (2 %) and of the public sector as a whole. During the period of 1981-1991, productivity declined in the cultural sector by 2.9 % annually. This is approximately the same decline in productivity within the cultural sector as occurred during the preceding decade, although in the previous study the cultural sector was represented solely by public libraries.

## 1.2 Has Development Taken a New Course?

Two results of the study of productivity trends in the public sector during the 1980s stand out as more interesting than others. First, the decline in productivity seems indeed to continue, but the rate of decline is only one-third of what it was during the previous decade. Second, nearly all central government agencies studied managed to increase productivity throughout the 1980s, and thereby sustain a trend which began in 1975.

Given that local government activities comprise such a large part of the production of services in the public sector – 76 %<sup>1</sup> – productivity trends in the local government sector are extremely important for the ability of the public sector to meet future tasks within increasingly stringent financial constraints. On the basis of the 1992 Long-Term Planning Report, it was determined that productivity in the local government sector would have to increase by a few per cent annually throughout the 1990s. Other studies – those of the Productivity Delegation and the Lindbeck Commission – have made the same assessment. According to what has been

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called the financial reconstruction program, public consumption should be cut back by 35 billion SEK as a part of the total cut-backs.

Local governments have not yet succeed in reversing the negative productivity trends. There are, however, a few noteworthy and promising results within the local government sector.

First, the decline in productivity has drastically slowed. Health care is an important part of the local government sector, and its registered decline in productivity was limited to 0.8 % per year during the 1980s, as compared with almost 2 % per year during the 1970s. If the time perspective is broadened so as to include the first two years of the 1990s, productivity can be seen to increase 1.8 % annually for those years. At the same time, extremely significant improvements in the quality of health care were noted during the 1980s, which should be added to the production value. For reasons which are made clear in the special report on improvements in quality within the health care sector (Ds 1994:22), this is not so simple. It is left to speculation that the productivity trend during the 1980s would have been positive if improvements in quality could have been included. Unfortunately, though, improvements in quality do not ease the need for financing.

A notable result is the increase in the productivity of day-care and after-school facilities for children in primary education over a period of 22 years, from 1970 to 1992. The increase in productivity during the 1970s was not particularly great – a total of approximately 3 %. The increase in productivity between 1980 and 1992, however, was an impressive 36 %. This is a kind of activity in which it was not thought to be possible to increase productivity, at least not without affecting quality. There are, however, many ways of at least marginally increasing productivity without quality having to suffer, particularly if the initial situation is one of very expensive child care (Murray 1989).

The other interesting result concerns the central government administration. At the end of the 1970s, the productivity trend within central government administration changed from being negative to positive. In the previous study of productivity trends, productivity increased by just over 2 % per year between 1975 and 1980 in a sample corresponding to approximately 30 % of the central government administration. It is not possible to determine the exact year that proved to be the turning point since the study was based on measurements taken every five years. The further trend of this sample was followed up and indicated a continued increase in productivity up through 1984 (Murray 1987, p. 49).

In the present study, the positive trend discerned in the early 1980s is confirmed. This trend is, however, very dependent on the dramatic increases in productivity within the Labor Market Administration (the employment exchange, employment training and the employability institutes) in the first years in the 1980s. Throughout the 1980s productivity

increased by 0.7 % per year. If the period is extended to include the years 1991 and 1992 as well, the trend is even more positive. At the same time, it becomes even more evident that the observed productivity increases can be attributed to the beginning and end of the period and largely to the dramatic increases in the productivity of the Labor Market Administration, which occur again at the start of the recession in the beginning of the 1990s. This should not, however, overshadow the fact that virtually all of the central government agencies in our study reported increased or unchanged productivity throughout the 1980s.

In this study changes in productivity can be followed from year to year. In the previous study there were only measurements for every fifth year. An interesting observation is that the entire change in productivity over a longer period of time may sometimes be attributable to changes during one or two years. Productivity does not change very much for several years, and then follows one or two years of marked increase or decrease in productivity. Such observations make it possible to go further in explaining the trends than if one has access only to averages for the period. Despite access to annual data, there has not been time in this project to analyze these variations in more detail. This is left to future researchers. However, it has been possible to make certain observations. Within the realm of the Labor Market Administration, sudden surges in productivity, related to a clear increase in capacity utilization, have taken place. A significant portion of the increase in productivity of the enforcement service took place toward the end of the period, when it was charged with a new task - summary proceedings - and when it experienced a marked increase in demand in the form of incoming cases. A large portion of the increase in productivity in higher education occurred in 1982/83 when there was a sharp decrease in costs of universities and colleges - minus 13 %. Cost trends for that year have, therefore, been analyzed very closely, but without finding cause to question the figures. However, neither has any good answer been found to the question as to what happened.

When increases in productivity are more even there is reason to seek other explanations, such as continual economization, successful computerization, simplification of regulations, increasing demand, economies of scale or budgetary restraint.

The abatement of the decrease in productivity that has been achieved is not sufficient to solve the equation of public sector financing. What is needed in addition is a positive productivity trend in the public sector as a whole. If the SEK 35 billion in savings called for in the financial reconstruction program were spread out over a ten-year period as an increase in productivity, productivity would have to increase by about 1 % per year. This would not appear to be an unattainable goal. However, it must also be considered that at the same time the demand for and need

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of public services increases. That increase must also be either held in check or accommodated within the more stringent financial constraints. The Productivity Delegation assumed unchanged per capita expenses for each age group in their basic formula. Public consumption would then increase by 1-1.2 % annually up until the year 2000 and subsequently level off (SOU 1991:82, p. 158). In our calculations we found that the total production of the public sector, the gross production value, increased by 1.4 % annually during the 1980s. Both of these observations indicate that productivity must increase by just over 2 % per year for the equation to work. The alternative is for the public sector to finance its services through increased user fees.

On the other hand, if productivity had been held constant between 1980 and 1990, the level of public consumption in 1990 would have been SEK 14.5 billion lower. That is, a very large part of the public consumption part of the financial reconstruction program would already have been accomplished. This shows how important even a modest change in productivity can be in the slightly longer term.

These observations concerning public sector trends must, however, be supplemented by the effect of the relative price changes. Between 1980 and 1990, the price of both state and local consumption became 11 % lower in relation to the total price of labor in private industry. The price of resources in the public sector in relation to the price of labor in private industry (salaries plus employer fees) is of importance for changes in tax ratios. This change in prices has thus helped to reduce the problem of financing created by declining productivity. But the question is whether it is possible to rely on this advantageous price trend in the future.

### 1.3 Is it Possible to Increase Productivity in Public Sector Activities in the Long-Term?

The preceding productivity study indicated that there should be a productivity potential in the public sector. After such large and long-term declines in productivity – without visible improvements in quality other than in a few cases – there ought to be a considerable potential to draw on. Is this the explanation for why many activities demonstrate a positive productivity trend during the past decade?

The central government agencies which have experienced positive productivity trends have tended to be large, administrative systems. In these, computerization offers opportunities for economization. Considerable investments in computers were made previously, however, without visibly contributing to an increase in productivity. One way of interpreting the trend during the 1980s is that investments in computers – both those made previously and those made more recently – began to pay off during this

time. Another interpretation is that simplification of regulations and streamlining of activities has made it possible for these agencies to increase productivity. The tax administration, social insurance service and other agencies provide examples of this.

But other sorts of operations have also experienced positive productivity trends. Computers offer only limited opportunities for economization within the court system. Still, productivity has continued to increase somewhat during the 1980s after having increased considerably during the preceding decade. Several central government educational activities have also shown positive productivity trends. This is the case for undergraduate studies at universities and colleges, employment training and employability institutes. In the case of universities and colleges, a considerable portion of the productivity gains came about as a result of students studying more effectively and completing more courses. In other parts of the education system, the increase in productivity is related to increased utilization of capacity and a greater awareness of costs. Two significant central government care activities have also managed to increase productivity – the Swedish Immigration Board and the National Prisons and Probation Administration. In the case of the Swedish Immigration Board, productivity gains are based on efficient management and operation of refugee centers. In the case of the National Prisons and Probation Administration, productivity is highly dependent on the degree of occupancy.

The DEA studies have provided a more detailed picture of changes in productivity and productivity potentials. A consistent finding in these studies is that the individual production units – hospitals, district courts, etc. – have on average moved closer to the most successful units within their fields in terms of productivity. This is referred to as an improvement of technical efficiency in the DEA studies. A more efficient internal budgetary process and increased demands on performance is likely to lie behind this trend. The remaining potential varies greatly from field to field. The results indicate that district courts, on average, have a rather limited potential to increase their productivity. By comparison, theaters have, on average, a rather large potential.

At the same time, a few of the DEA studies indicate that the best units have become less efficient. In the DEA studies this is referred to as a retreat of the front-line of production or a decline of the efficiency frontier. The front-line of productivity in the courts, on the other hand, has moved in a positive direction at the same time as the district courts are in general situated closer to the front-line of production.

In the present study it has been possible to show that several component sectors within the public sector have experienced a protracted positive productivity trend and that this has even been the case for such activities as care and education, which are not easily automated and rationalized.

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The most obvious explanation for these examples of increased productivity is probably that greater budgetary restraint in conjunction with increased external demands on performance (more patients, more school children, more court cases, etc.) has forced a greater utilization of capacity and increased awareness of costs.

The year 1984 proved to be something of a watershed. From that year onward, the costs of public consumption increased more rapidly than during the period of 1980-1983. Up to and including 1983, productivity in the public sector increased. Beginning with 1984 it began to decline, and this continued until 1990. During 1991 and 1992, the increase in public consumption declined to a lower rate. Productivity increased during both years. This underlines the importance of maintaining firm control over public budgets. The same recommendation is found in the previous study based on the experiences of central government activities. The rate of increase of costs in fixed prices varied from 6.5 % per year during the period of 1970-1975 to 1.8 % per year during the period of 1975-1980. At the same time, the productivity trend reversed from minus 5.2 % per year to plus 2.5 % per year (Statskontoret 1985).

Health and medical care constitutes a special case. It is an area of public activity which is unusually intensive in terms of knowledge and technology. Productivity – as it has been measured – has continued to decline, albeit at a much slower rate than previously. On the other hand, quality within the health care sector has improved significantly. It has not been possible to include this improvement in quality in the measure of productivity.

It is conceivable that it is only through improvements in quality that productivity can be improved within health and medical care. If so, the future prospects facing decision-makers are problematic. If quality increases, productivity increases as well, but not in a way that will save money. Increased quality has a price, both in terms of new and improved methods of treatment and in terms of new groups of patients which can be treated. This being the case, it would mean that a choice must be made between either continuing to stimulate improvements in quality and productivity in health and medical care and allocating more funds or attempting to save money but halting improvements in quality or, at worst, lowering quality.

There is much to suggest that this is the current dilemma. In our study of quality trends in medical care, the majority of new methods of treatment methods resulted in substantially increased costs, due to both increased costs per treatment and an increase in the possibility of treating new groups of patients. On the other hand, there are two observations which provide a glimmer of hope. They suggest that increased quality need not always lead to higher costs per treatment. The first observation in our study of quality trends in health and medical care is that several

significant examples of improved quality can go hand in hand with reduced costs. The second observation is that it would appear that improvements in quality occurred largely during the 1980s, when the costs of care per treatment increased at its slowest rate and even decreased in some years. During the 1960s and 1970s, improvements in quality were not as great. The cost of each treatment, though, increased more rapidly during those decades. This would suggest that both budget restraint and control of technological developments within the health and medical care sector can have an effect, bringing about both better and more inexpensive care under the proper conditions.

There is apparently a potential for increased productivity in the public sector. But it is not realized automatically. In order for this potential to be realized, assiduous and goal-oriented efforts are required. What is needed, above all, is to provide government agencies and local government programs with working conditions which promote positive productivity trends. Traditional budgetary mechanisms do not provide the proper incentives. They focus solely on financing. Central government agencies and local government programs have now learnt budgetary discipline, and budgets and allocations are seldom exceeded. This testifies to the fact that signals sent from the political level to the implementation level are in fact effectual. On the other hand, expenditures do not fall short of budgetary projections and allocations, and central government agencies and local government operations have no incentive to request reduced funding for the coming year. On the contrary, they have every reason to argue in favor of increased funding, since it thereby becomes easier to operate within the existing financial framework. For this reason budgetary controls must be complemented with result-oriented management so that it also becomes important for public agencies to economize and reduce expenditures. By quite simply being forced to account and be responsible for productivity, the agencies are given entirely new incentives. This requires – just as was the case with budgetary discipline – that the political level attach importance to productivity and that public agencies be given sufficiently great freedom to be able to make use of opportunities to increase efficiency and be rewarded for the results achieved.

It was stated earlier that a continuous growth of output leads to problems of financing. How can this growth in demand and need for public services be restrained? There is no incentive for public agencies to limit the external demands placed on their activities. It thus does not suffice to draw attention to productivity. But without some idea of production trends, it is not even possible to discuss the matter. Therefore, a first prerequisite is at least to measure the volume of production. By accounting for productivity, a picture of production trends is also obtained. Only then is it possible to discuss various means of controlling

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The importance of a strict budgetary restraint has already been pointed out. Naturally, it is conceivable that budgets can be cut at the political level without knowledge of the preconditions different activities have for achieving the cuts and the consequences of the cuts. In this way, cuts are made in inefficient activities in the same way as in efficient ones. It can, however, be difficult to make decisions on allocations and financing without discussing the actual activities. The principal – the political level – runs the risk of ending up in a disadvantageous position. The political level needs to be able to place proper demands on the administration: neither unrealistic demands, which will never be met in any case, nor meaningless demands. The only way for the political level to assert itself is to acquire more knowledge about production. Measurements of productivity considerably increase the political control of administration.

#### 1.4 Working More Intelligently and Making System Gains

Economic growth is largely comprised of new businesses and new products with a higher value added growing in relation to businesses and products with a lower value added. When production resources are transferred from operations with low value added to operations with high value added, an allocation gain results. The growth of the industrial sector and the decline of the agricultural sector is an example from our economic history.

The same process takes place on several levels in the economy. Some industries grow while others contract. Structural transformation within one industry eliminates enterprises with low productivity, thereby raising the average level of productivity. Instead of attempting to force down costs in the manufacturing of existing products, firms introduce new products and services with higher functional quality in order to extract a higher price in this way, and thus increase their profit margin. The equivalent in the public administration could be an attempt to resolve a specific care problem in a completely new way instead of through economization within the old procedures. Phenomena such as these are difficult to incorporate into measures of productivity.

The problem is in principle the same in all cases and has to do with how to compare and weigh together different types of outputs and products. A qualitatively superior and more valuable product should be given a higher price. The protracted, weak productivity trend within the hotel and restaurant industry can be related to a failure to incorporate a continuous improvement in quality in the price index for these services – "a hotel