

# Research Memorandum

**No 159**

**Firm turnover in Dutch Business Services**  
The effect on labour productivity

**H.P. van der Wiel**

CPB Netherlands Bureau for Economic Policy Analysis  
Van Stolkweg 14  
P.O. Box 80510  
2508 GM The Hague, The Netherlands

Telephone +31 70 33 83 380  
Telefax +31 70 33 83 350

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the author(s)

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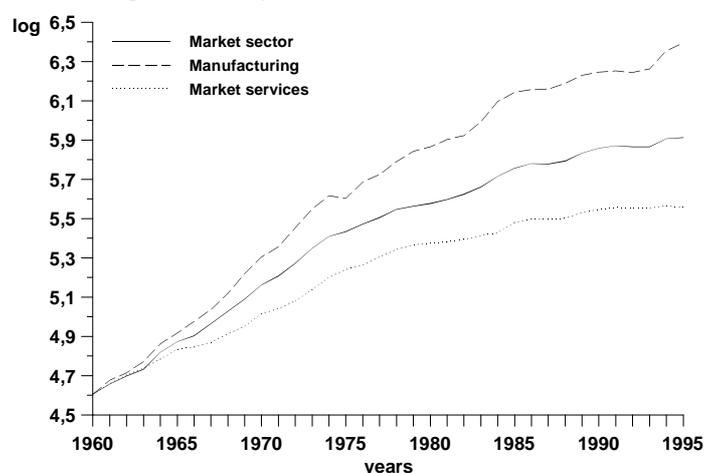


## 1 Introduction<sup>1</sup>

Growth in labour productivity is essential to improve standards of living. Recent developments in the Netherlands, however, have been discouraging. Although market services show an impressive track record in generating jobs during the 1990s, the track record in productivity is rather poor (see figure 1.1). While labour productivity growth in the manufacturing industry improved gradually in the 1990s compared to the second half of the 1980s, it dropped back sharply in market services, especially in business services. As a result, overall labour productivity growth in the market sector declined further in the first half of the 1990s (van der Wiel, 1999).

Dutch labour productivity performance in services is also quite disappointing compared to that in other OECD countries since the mid-1980s. Such a result could signal that inputs in services are used inefficiently, possibly due to a lack of competitive pressure in Dutch market services. However, a clear view of the forces behind the poor productivity performance in services is still lacking.

Figure 1.1 Labour productivity in the Netherlands (1960=100), 1960-1995



<sup>1</sup> An abbreviated version of this research memorandum was recently published in CPB Report 1999/2. I would like to thank Kees Burk, Henk Don, Henk Kox, and Frans Suijker (all CPB), Bart van Ark (RUG), Eric Bartelsman (Ministry of Economic Affairs), Kevin Stiroh (Conference Board and discussant at the conference on *Productivity and Standards of Living: Measurement, Modelling and Market Behaviour*, 23-25 September 1998, Groningen, The Netherlands) and two anonymous referees for their fruitful comments on earlier versions of this research memorandum and the CPB Report article. Thanks to Theo van Reijssen and Harold Creusen for their statistical support. I am also very grateful to Statistics Netherlands for providing detailed data.

In order to assess the meagre productivity performance of Dutch services industries, I have – for a number of reasons – selected business services for further research. As the share in employment of business services increases continuously, the need for understanding the productivity of services is essential. The business services sector, which includes branches such as accountancy, computer services, and economic consulting agencies, has emerged as one of the most dynamic industries in the Dutch economy in the recent past. The number of firms that entered or exited the business services market was also remarkable in roughly the last ten years. High entry- and exit rates of firms point to low entry barriers and suggest a high degree of competition. It is generally thought that this combination stimulates efficient management. Yet, labour productivity growth in business services did not improve. Taking into account the government's policy of stimulating entrepreneurship and promoting market forces, this result is puzzling indeed.

Using an internationally unique firm-level data set of the Dutch business services sector for the period 1987 to 1995, this research memorandum documents the link between productivity performance and firm turnover in order to shed some light on the poor productivity performance of the services industries. The available data provide the opportunity to go beyond the industry level – to descend into the heart of the economy: the firm. Special attention is paid to the contributions of incumbents, entering and exiting firms to labour productivity growth.

At this stage of research, this research memorandum aims mainly to be descriptive; no conclusive answers can therefore be given. Nonetheless, I do put forward some conjectures that could explain reasonably well the modest productivity growth. A lack of competition in buoyant markets, accompanied by a shift in demand towards new products, are the most promising. However, additional research along the lines suggested in the final section is clearly needed to better understand the causes of the poor productivity performance.

The remainder of this research memorandum proceeds as follows. Section 2 briefly sketches several reasons why the business services industry is examined in this productivity research. The data and measurement issues of the firm-level data set are also discussed. Section 3 stresses the importance of enterprise demographics for productivity growth and explains the decomposition methodology of productivity growth into the contribution of incumbents, and of entering and exiting firms. This section also discusses the results of the decomposition of labour productivity at two different levels of aggregation of the unit of analysis: business services as a whole, and industries within business services. The next section tries to disentangle the results by looking for similarities among similar groups of firms. It also puts forward some conjectures that could explain the sluggish labour productivity growth in business

services. Finally, section 5 summarises the main findings of this research memorandum and illustrates areas for further research.

## 2 Business services: an overview

Over the last two decades, the growth rate of labour productivity in the Dutch market sector has diminished. Recent CPB researches reveal that this productivity slowdown is due in part to an increase of the employment share of workers with lower levels of productivity and the relatively poor productivity performance of Dutch market services.<sup>2</sup> The first part of this section summarises the main findings of the applied growth accounting technique in van der Wiel (1999). The final part of this section discusses why business services have been selected for further research.

### 2.1 Overall productivity performance

#### *A macro and sectoral perspective*

The trend in labour productivity growth in market services mirrors that of manufacturing over a long period (see figure 1.1 and table 2.1). A general pattern of declining growth rates emerges in both sectors after 1973 through 1990. In the early 1990s, the general pattern breaks down. Labour productivity growth in manufacturing accelerated, whereas it further worsened in market services.

Table 2.1 also decomposes labour productivity growth into the contribution of Total Factor Productivity (TFP) growth and capital deepening for selected periods.<sup>3</sup> TFP growth measures the rate at which output increases if all inputs remain constant. It is a residual that captures unmeasured factors such as disembodied technological progress, economies of scale, economies of scope and organisational improvements.

The strong deterioration in TFP growth has largely been behind the recent decline in productivity growth in Dutch *market services*, which actually vanished entirely in the 1990s. Although the contribution of capital has recently rebounded slightly, capital deepening still adds much less than it did during the first half of the 1980s.

<sup>2</sup> See CPB (1998), *Recent trends in Dutch Labour Productivity: the Role of Changes in the Composition of Employment*, CPB working paper no 98, The Hague, 1998; and Wiel, H.P. van der (1999), *Sectoral labour productivity growth: A growth accounting analysis of Dutch industries, 1973-1995*, CPB research memorandum no 158, The Hague, 1999.

<sup>3</sup> The derived equation for the decomposition of labour productivity growth is:

$\Delta \ln (Y / L) = \text{TFP} + (1 - \alpha) \Delta \ln (K / L)$ , where  $Y/L$  is labour productivity, TFP stands for total factor productivity growth,  $K/L$  represents capital intensity, and  $\alpha$  is the wage share in total factor income.

*Table 2.1 Accounting for the growth of labour productivity, 1974-1995<sup>a</sup>*

	labour productivity	contribution of	
		TFP	capital intensity
	annual percentage changes	percentage points	
<b>Market sector<sup>b</sup></b>			
1974-1979	3.6	2.5	1.1
1980-1985	3.2	2.5	0.8
1986-1990	2.0	1.8	0.3
1991-1995	1.1	0.7	0.4
<b>Manufacturing</b>			
1974-1979	4.9	3.4	1.5
1980-1985	5.0	4.0	1.0
1986-1990	2.1	1.4	0.7
1991-1995	2.9	1.8	1.1
<b>Market services<sup>c</sup></b>			
1974-1979	3.8	2.9	0.9
1980-1985	1.9	1.2	0.7
1986-1990	1.3	1.2	0.1
1991-1995	0.2	- 0.2	0.4

<sup>a</sup> Volume of gross value added per hour.

<sup>b</sup> Enterprises excluding mining and quarrying, operation of real estate, and medical- and other non-market services.

<sup>c</sup> Excluding operation of real estate.

#### *Productivity growth within market services*

The marked fall in labour productivity growth in *market services* took place in almost every services industry except transport (see table 2.2). The latter even slightly improved its relatively huge productivity growth rates after 1990. Although the increase in capital intensity accelerated to some extent in the first half of the 1990s, a strong deceleration in the rise of TFP held back labour productivity growth in the remaining industries within market services. This was particularly relevant for other market services, as well as banking and finance.

Inefficient use of input factors and inadequate organisation of functions and tasks could have hampered productivity growth in these industries. These inefficiencies could be due to a lack of fierce competition, since these services are less exposed to

international competitors than are transport and trade services. On the other hand, measurement problems regarding output and prices could be important, too (see section 4).

*Table 2.2 Accounting for labour productivity growth in market services, 1986-1995*

	labour productivity		contribution of			
			TFP		capital intensity	
	1986-90	1991-95	1986-90	1991-95	1986-90	1991-95
	annual percentage changes					
<b>Market services</b>	1¼	¼	1¼	-¼	0	½
Wholesale and retail trade	1½	¼	1½	0	0	¼
Transport, storage and communication	2½	3	2	2¼	½	½
Banking, finance and insurance	¼	- 1	0	- 2¼	¼	1¼
Other market services <sup>a</sup>	1½	- ½	¾	- 1½	¾	1

<sup>a</sup> Business services (excluding temporary employment agencies), hotels and catering.

## 2.2 Business services: a key industry for the Dutch economy

In order to assess the meagre productivity performance of Dutch services industries, I have – for a number of reasons – selected business services for further research.

*Table 2.3 Growth rates<sup>a</sup> and share of value added, 1980-1995*

	1995	1980-1990	1991-1995
	Share in market sector (%)	annual percentage changes	
Market sector	100	2½	2
Manufacturing	27	2¼	1
Market services	55	3	3
o.w. other market services	22	3½	3½
o.w. business services	9	5½	5¾

<sup>a</sup> Volume gross value added.

First, business services comprise a large fraction of market services and emerge as one of the most dynamic industries in the Dutch economy. Their share in value added makes up approximately 40 percent of other market services in 1995 (see table 2.3). Moreover,

this industry experienced remarkable growth in output during the 1980s and early 1990s. In fact, it reached the highest growth rates of all Dutch industries in this period. However, since employment grew rapidly as well, labour productivity hardly improved.

The second reason why I selected business services for additional research is that the entry and exit numbers in business services are relatively high in the Netherlands (see table 2.4). On balance, more firms entered than exited the industry. In addition, the number of start-ups in the period 1987-1995 was approximately twice as much as the number of existing firms in 1987. Thus, we cannot ignore the role of entry and exit in business services. High entry and exit rates of firms point to low entry barriers and suggest a high degree of competition. It is generally thought that this combination stimulates efficient management. Yet, labour productivity growth in business services did not improve. Considering the government's policy of stimulating entrepreneurship and promoting market forces, this result is indeed puzzling.

*Table 2.4 Development of stock of enterprises in the Netherlands, 1987-1997*

	stock 1987	start-ups	subsidiaries	closures	stock 1997
	x 1000				
Enterprises	424.4	324.6 (76)	91.3	211.2 (50)	629.1
o.w. Business services	49.4	77.9 (157)	20.3	30.3 (61)	117.2

Source: Bais, J.S.et al. (1997). Between brackets start-ups, respectively, closures as percentage of stock of enterprises in 1987.

Finally, outsourcing or contracting out is a growing practice — and is certainly one of the factors behind the strong growth of business services. Moreover, new products of business services have increased the integration of industrial and services activities. Since the 1980s, business have been revising their thinking about organisational performance and the size of the organisation. Ideas such as 'lean and mean' and 'concentrate on your core competence' became very popular in the 1980s. Companies, especially in manufacturing, also turned to downsizing as a solution to the onset of a recession. Therefore, the productivity performance of business services affects the international competitive status of manufacturing and other internationally exposed firms (as these firms buy special services from this service industry).

### **2.3 Firm-level data on business services**

The available firm-level data set of Dutch business services covers the period 1987-1995. The data set is based on a yearly survey undertaken by Statistics Netherlands (CBS) among enterprises with their main activity in business services. This survey

forms the basis of the Census of Production. The available data set contains approximately 48,000 observation units for the whole period investigated.

This research memorandum uses gross real output per person employed (including self-employed) as a measure of labour productivity.<sup>4</sup> On a disaggregated level, the use of gross output is more appropriate for productivity measurement, as gross output allows symmetrical treatment of capital, labour and intermediate inputs. Gross output is measured as net total sales at market prices. Labour input is measured in the number of people employed (excluding temporary employment). As both variables are derived from the same source, internal consistency of output and inputs are probably guaranteed. Finally, the 3-digit CBS National Account deflator for the industry in which the firm is classified deflates gross output.

#### *Main characteristics of business services*

Table 2.5 presents the branches of industries in business services included in this research memorandum. Appendix A contains a full list of all branches engaged in producing business services (including those branches which are not analysed in this research memorandum). The short string will be used in tables with lower levels of aggregation.

*Table 2.5      Branches of industries in business services*

Name	Short string	SBI <sup>a</sup>
Auditors, accountants and tax experts	acc	84.2
Computer services	comp	84.3
Engineers, architects and other technical designers and consultants	eng	84.4
Publicity and advertising agencies	publ	84.5
Economic consulting agencies	econ	84.6
Press and news agencies and other business services	news+obs	84.7 and 84.9

<sup>a</sup> Dutch Standard Industrial Classification 1974 (in Dutch: Standaard BedrijfsIndeling)

Table 2.6 lists some basic characteristics of the industries of business services. With regard to output and employment, the most important branch of industry within business services, is the ‘engineers and architects’. Based on the gross output per

<sup>4</sup> Although one would expect that the greatest part of new jobs consists of part-timers, this has not been confirmed by the sample. The productivity results based on full-time equivalents, therefore, hardly differ and are not reported in this research memorandum.

number of people employed, ‘publicity and advertising agencies’ account for the highest productivity level, whereas ‘press and other business services’ have the lowest level.

*Table 2.6 Some main economic indicators of business services, 1992*

	acc	comp	eng	publ	econ	news+obs	Total <sup>d</sup>
Sales per employee (1000*NLG)	108	184	141	320	125	95	145
Value added per employee (1000*NLG)	105	141	109	107	107	70	105
Output share (%)	16	18	24	19	9	13	100
Employment share (%)	22	14	25	9	11	20	100
Intermediate input intensity <sup>a</sup> (%)	3	23	22	66	15	26	27
Number of firms (x1000)	9.7	5.9	9.8	7.3	11.7	9.5	53.9
Average firm size <sup>b</sup>	6.6	7.1	7.6	3.5	2.7	6.2	5.5
Gross fixed investments rate <sup>c</sup> (%)	5.7	5.4	6.0	9.0	5.1	12.3	6.8

<sup>a</sup> Intermediate input as a percentage of gross value added.

<sup>b</sup> Number of people employed, divided by the number of firms.

<sup>c</sup> As a percentage of gross value added.

<sup>d</sup> Business services excluding legal services and securities, and temporary employment agencies.

Source: CBS (1994): Business services; Summarised Overview 1992 (only in Dutch: Zakelijke dienstverlening; Samenvattend overzicht 1992.)

The intermediate input intensity displays huge diversity, pointing to heterogeneity of input use. ‘Publicity and advertising agencies’ use an enormous amount of intermediate input to produce output. In contrast, ‘accountancy’ uses almost no intermediate input.

All firms in business services are small compared to the average size of manufacturing firms. Firms in business services contain six employees, whereas the average size of manufacturing is approximately 100 employees. The small scale of firms in business services suggests the absence of economies of scale: new firms can remain small without being confronted with a scale disadvantage.

Another inference drawn from table 2.6 is that the gross fixed investment rate, i.e. gross fixed investments as a percentage of gross value added, does not differ much among the branches. Finally, the investment rate is small compared to the 15 percent in manufacturing in recent years. The investment figures suggest that low amounts of capital will suffice to start-up a viable firm in business services.

*Limitations of firm-level data business services*

Although the CBS survey is unique and provides a rich set of variables available, it is certainly not ideal because of issues related to sampling, coverage, status of the firms, and missing variables.

*Table 2.7 Summary statistics census of production versus sample, 1987*

	census of production	survey	coverage (in %)
Firms (x1000)	25.9	2.2	8.4
Output (billions NLG)	23.2	15.0	64.6
Employment (x1000)	149.9	75.2	50.2
Average firm size	5.6	34.7	

Table 2.7 presents aggregate statistics for the survey, compared to the Census of Production. The annual CBS survey accounts for about 50 percent of the employment and almost 65 percent of the output in the Dutch business services sector. However, it is only based on less than 10 percent of all firms in business services. The survey provides complete coverage of firms with at least 20 employees, while firms with fewer than 20 employees are sampled. Since business services consist of many small firms, most of them are not included in the survey. The mean size of firms is almost 35 employees in the survey (compared to fewer than six employees in the Census of Production). Therefore, to estimate the actual contribution of the entire set of small firms to the overall sample of firms, CBS uses sample weights.

In theory it is a straightforward task to decompose labour productivity changes into three components of continuing-, entering- and exiting firms, by weighing each labour productivity level with its respective labour share in the industry (see section 3). However, in practice this decomposition is not straightforward, because not all firms that are actually present are questioned and included in the data set. Therefore, the correct status of the firms is not always known. As table 2.8 illustrates, eight different situations can be distinguished.<sup>5</sup> This research memorandum matches observations of the firms over 1987 and 1995. In that way, three types of firms can be distinguished: *incumbents* (those firms that are sampled in both years); *exits* (those firms that are sampled only in 1987); and *entrants* (those firms that are sampled only in 1995).<sup>6</sup> The fifth column of table 2.8 shows the status of a firm in this research memorandum.

<sup>5</sup> Obviously, the situation not present in both periods is not interesting.

<sup>6</sup> It should be noticed that if a merger or take-over results in a new unique code, mergers are seen as firms that are exiting in period  $t-\tau$ , and the merged firm is seen as an entrant in  $t$ .

Remarkably, additional linked CBS information on birth and death of firms, based on the General Business Register, suggests that this research memorandum probably overestimates the number of entrants.<sup>7</sup> In a booming market, this is an odd result. As shown in table 2.4, alternative EIM information suggests high entry rates in Dutch business services, and therefore does not point to an overestimation of the number of entrants in this research memorandum.

*Table 2.8 Correct classification versus chosen classification of firms*

	year 1	year 0	correct classification	chosen classification
1	present and sampled	present and sampled	incumbents	incumbents
2	present and sampled	present, not sampled	incumbents	entrants
3	present and sampled	not present	entrants	entrants
4	present, not sampled	not present	entrants	not covered
5	present, not sampled	present and sampled	incumbents	exits
6	present, not sampled	present, not sampled	incumbents	not covered
7	not present	present and sampled	exits	exits
8	not present	present, not sampled	exits	not covered

Unfortunately, several interesting variables for productivity research are missing in the micro data set. For instance, data on total labour input are obtainable, but no data are available on differences in labour quality. Firms' prices are also missing. Therefore, if price (or product) differentiation exists, productivity measures for individual firms within the same branch will be biased. Section 4 discusses the price measurement problem in more detail. Capital stocks or capital flows are also not directly collected from firms and must be constructed. However, lacking time series of investments at the firm level complicates this construction. Therefore, only capital stocks for incumbents can be constructed (see also section 4).

Finally, it is not known how much noise there is in the micro data. The differences between the results of the National Account and the Census of Production (PS) suggest weaknesses in official statistics (see appendix B). However, variables in the micro data set correlate with other related variables. For example, as will be seen later, productivity levels of firms do correlate with wages. Moreover, low productivity firms are more likely to exit.

<sup>7</sup> The General Business Register is being maintained by the Dutch Chambers of Commerce and contains information about dates of entry and exit.

### **3 The role of entry and exit in business services**

#### **3.1 Theory of productivity growth; representative firms vs heterogeneity of firms**

The available technology, scale economies, labour skills, capital intensity and the organisation of functions and tasks determine labour productivity. Growth in labour productivity results, in part, from the adoption of technical innovations in process and products, which pushes the production frontier upward. Alternatively, capital deepening and improvements in labour quality can also enhance labour productivity growth.

To analyse sources of productivity growth, most studies apply the growth accounting framework based on Solow (1957). This approach assumes that each plant or firm within the same industry shares a single technology relating output to inputs. More recently, however, the availability of micro data has led to a number of studies that stress the importance of heterogeneity in the performance and behaviour of the firm. This second approach emphasises cross-firm differences in productivity and the importance of resource reallocation between firms. Representative firms do not actually exist. Instead, firms focus on various types of output markets and use different technologies with divergent degrees of success. Furthermore, firms differ in their organisation of functions and tasks. Therefore, at any point in time, intra-industry differences in performance exist.

Theoretical models of industry dynamics (by e.g. Jovanic, 1982, and Hopenhayn, 1992) study an industry's behaviour over time. These models try to explain the divergent paths of the growth and failure of firms. Likewise, all these dynamic models start with the assumption that firms (or producers) within the same industry are heterogeneous: firms differ in their productive efficiency. Idiosyncratic shocks (internal or external) and uncertainty will also affect firms differently. Consequently, firms will make various kinds of decisions regarding entry, growth and exit.

Another characteristic of these dynamic models is that the existence of supra-normal profits and low entry barriers attract new firms to the market and influence productivity performance. High entry rates suggest a competitive and efficient market that exerts pressure on inefficient firms to exit. In theory, entry and exit tend to eliminate excess profits and reduce X-inefficiency, thereby eventually stimulating economic growth. However, in a competitive market with rapidly growing demand, existing firms can earn supra-normal profits, and such profits are likely to persist for as long as it takes for capacity to adjust to demand (see Geroski, 1991). Incumbents will not extend their capacity beyond the efficient scale. Entrants will then fill the gap in unanticipated demand.

### 3.2 Decomposition methods of productivity

To quantify the effect of firm demographics on labour productivity growth, one has to weigh the productivity of individual firms ( $i$ ) by their market share in employment and add them to the average productivity ( $P$ ):

$$(1) \quad P = \frac{Y}{L} = \sum_i \frac{Y_i}{L_i} \frac{L_i}{L} = \sum_i P_i S_i$$

with  $Y$  Gross output  
 $L$  Employment  
 $P$  Labour productivity  
 $S$  Share of firm's employment in total industry

In growth rates, one can rewrite expression (1) as:

$$(2) \quad \frac{\Delta P}{P_0} = \frac{P_1 - P_0}{P_0} = \frac{\sum_i S_{i,1} P_{i,1} - \sum_i S_{i,0} P_{i,0}}{P_0}$$

We can measure the effect of entry and exit on productivity between time periods 1 and 0, by rearranging expression (2) in several arbitrary ways (see e.g. Baldwin, 1995). Only two alternative decomposition methodologies are used here to measure the effect of entry and exit.

#### *Decomposition method 1*

The first decomposition methodology is as follows:

$$(3) \quad \frac{\Delta P}{P_0} = \frac{\sum_{i \in I_{c;0,1}} (S_{i,1} P_{i,1} - S_{i,0} P_{i,0})}{P_0} + \frac{\sum_{i \in I_{e,1}} S_{i,1} P_{i,1} - \sum_{i \in I_{x,0}} S_{i,0} P_{i,0}}{P_0}$$

with  $I_c$  incumbents  
 $I_e$  entrants  
 $I_x$  exits

The overall growth in productivity is determined by two terms. The first term on the right-hand side of (3) features labour productivity growth of incumbents. The second term on the right-hand side represents the net effect of entry and exit on productivity

growth. The contribution of incumbents can be further decomposed into a 'within' firm effect, and two reallocation effects: an employment-share effect, and a cross term:

$$(4) \quad \sum_{i \in I_{c;0,1}} (S_{i,1} P_{i,1} - S_{i,0} P_{i,0}) = \sum_{i \in I_{c;0,1}} \Delta P_i S_{i,0} + \sum_{i \in I_{c;0,1}} P_{i,0} \Delta S_i + \sum_{i \in I_{c;0,1}} \Delta P_i \Delta S_i$$

Since labour productivity may be different across firms, reallocation of employment shares also affects overall productivity growth.

#### *Decomposition method 2*

The results obtained by the first decomposition methodology provide little information on the impact of competition. As the productivity level is an indicator of this efficiency, the impact of competition can be more extensively visualised by considering individual productivity levels in relation to the industry average.

Rearranging equation (3) and adding the following term, which is by definition zero:

$$(5) \quad \left( \left( \sum_{i \in I_{c,1}} S_{i,1} + \sum_{i \in I_{e,1}} S_{i,1} \right) - \left( \sum_{i \in I_{c,0}} S_{i,0} + \sum_{i \in I_{x,0}} S_{i,0} \right) \right) \bar{P}_0$$

We obtain the following decomposition of contributions at our disposal:

$$(6) \quad \begin{aligned} \Delta P = P_1 - P_0 = & \sum_{i \in I_{c;0,1}} S_{i,0} \Delta P_i + \sum_{i \in I_{c;0,1}} \Delta S_i (P_{i,0} - \bar{P}_0) + \sum_{i \in I_{c;0,1}} \Delta S_i \Delta P_i \\ & + \sum_{i \in I_{e,1}} S_{i,1} (P_{i,1} - \bar{P}_0) - \sum_{i \in I_{x,0}} S_{i,0} (P_{i,0} - \bar{P}_0) \end{aligned}$$

The bar above the productivity level indicates an average level of the initial period. Again, productivity growth for incumbents is decomposed into, respectively, a *within* effect (the first term on the right-hand side), a *reallocation effect* and a *covariance* term. The reallocation effect, i.e. the second term, reflects changing market shares, weighted by the deviation of initial firm productivity from the *average productivity level*. Notice, that this reallocation effect differs from the reallocation effect of the first decomposition methodology. If incumbents increase their share, they positively contribute to the overall productivity only if they have higher productivity than the average initial productivity for the industry. The third term on the right-hand side is a cross term that can be either

negative or positive. If an existing firm raises both its market share and productivity level, this effect will be positive.

Additionally, the fourth, and fifth terms tell us more about the probable impact of competition from entry and exit. The fourth term shows that entrants with productivity levels above (below) the industry's average provide a positive (negative) contribution. The fifth term indicates that if exiting firms with productivity levels below (above) the industry's average leave the market, then overall productivity level will increase (decrease). Hence, the effect of entry and exit on productivity is accounted for separately in the second method, whereas in the first method the contribution of turnover is a net effect.

#### *Further decomposition of continuing firms*

Baily, Bartelsman and Haltiwanger (1995) have shown that cross-sectional differences between "upsizing" firms and "downsizing" firms can be important. Following their idea, continuing firms can be decomposed into four types of firms in terms of success and failure in boosting productivity, combined with whether or not employment increased (up-sizer) or decreased (down-sizer):

- Successful up-sizers
- Successful down-sizers
- Unsuccessful down-sizers
- Unsuccessful up-sizers

Firms of the first type I call the *successful up-sizers*. Successful up-sizers improve both employment and labour productivity over time. These firms face increasing demand for their products combined with economies of scale or capital deepening. Alternatively, these firms have realised technological progress that, in turn, makes it possible for them to set prices that are falling, relative to those of their competitors. Successful up-sizers can extend their market shares.

Firms falling under the second type are classified as *successful down-sizers*. Although successful down-sizers improve their labour productivity, their employment shrinks. Downsizing is generally a strategy consciously adopted by firms to improve the efficiency of the organisation and to raise profit margins. This strategy could be a reaction to a decline in demand. Also, it could be a response to fierce competition.

Firms that both decrease their labour productivity level and their employment level are *unsuccessful down-sizers*. These firms may have also (deliberately) chosen for a strategy of downsizing, or are forced to engage in such a strategy — but without success. The number of workers is insufficiently adjusted to decreasing output. This could be due

to labour hoarding or to a productivity penalty induced by changing the scale of operations.

Finally, there are firms whose employment increases while labour productivity decreases: *unsuccessful up-sizers*. Apparently, these firms change their production technology. They experience setup costs or face diminishing returns. A change in production technology could be observed by a relative fall in wages compared to other firms, which hints at a shift to workers with lower levels of productivity. On the other hand, quality improvements could have altered the product variety, while these quality changes are insufficiently reflected in price deflators. This would suggest a downward bias in measured output.

### 3.3 Productivity decomposition results

Table 3.1 shows that a booming demand challenged business services during the period 1987-1995. Gross output expanded by 7% per annum, expressing the growing importance of business services in the economy. This remarkable output growth was mainly due to the entry of new firms. Incumbents expanded their activities at an average rate of only 2½% per year. At first glance, this result suggests that incumbents were not able to extend their activities beyond a certain scale.

The forceful economic growth in business services was accompanied by job creation on a considerable scale, yet without productivity gains. The surge in jobs went hand-in-hand with the growth in output. Hence, the firm-level data confirm the overall picture of sluggish productivity growth in Dutch market services. Growth in employment was primarily due to job creation by new firms. Note, moreover, that incumbents also failed to increase their labour productivity over time.

On top of this, table 3.1 shows that the labour productivity level of firms that disappeared was below the level of incumbents, but virtually equal to that of entrants. Note, however, that a time-span of eight years yawned between entrants and exits. It is to be expected that after eight years the overall productivity level will have increased, including that of entrants.

Measured by the labour costs as a percentage of gross output, entrants and exiting firms had lower labour costs, on average, than incumbents. This is mainly due to the lower wages paid by entering and exiting firms compared to their counterparts.

Finally, firms that exited and entered accounted for a substantial fraction of total output and employment. In 1987, exits accounted for 70 percent of the total output. In 1995, entrants possessed more than 80 percent. The high numbers of entering and exiting firms confirm the importance of entry and exit. There is a lot of turnover in Dutch business services. Average output per firm declined due to the high entry rates in the period 1987-1995.

*Table 3.1 Summary statistics of Dutch business services<sup>a</sup>, 1987-1995*

	1987	1995	1988-1995
	level		annual percentage change
<i>Labour productivity (x1000)<sup>b</sup></i>			
All	135.8	135.2	0
Incumbents	144.7	145.0	0
Entrants		132.9	
Exits	132.4		
<i>Employment (x1000)</i>			
All	137.8	239.3	7
Incumbents	37.5	45.4	2½
Entrants		193.9	
Exits	100.3		
<i>Gross output (billion)<sup>c</sup></i>			
All	18.7	32.3	7
Incumbents	5.4	6.6	2½
Entrants		25.8	
Exits	13.2		
<i>Labour share in firm's income<sup>d</sup></i>			
All	35.8	33.9	- ¾
Incumbents	40.7	44.1	1
Entrants		33.1	
Exits	34.0		
<i>Number of firms<sup>e</sup></i>			
All	1857	5640	
Incumbents	337	337	
Entrants		4111	
Exits	1520		

<sup>a</sup> Including acc, comp, publ, econ, and news+obs.

<sup>b</sup> Gross output per employee in terms of 1987 guilders.

<sup>c</sup> Gross output in terms of 1987 guilders.

<sup>d</sup> Labour costs as a percentage of gross output.

<sup>e</sup> Actual (unweighted) number of firms in sample.

Table 3.2 contains the contribution of the fourfold classification types of incumbents and the net effect of entry and exit to aggregate labour productivity growth.

Neither successful up-sizers (increasing employment and labour productivity) nor successful down-sizers (improving productivity/shrinking employment) contributed to labour productivity growth in business services between 1987 and 1995. Despite their productivity improvements, both types of firms lost market shares because of the enormous number of new competitors that were attracted to the market. This reallocation effect is huge, and completely explains the negative contribution of continuing firms to overall performance.

*Table 3.2 Contribution of incumbents, entrants and exits to overall labour productivity growth, 1988-1995 (decomposition methodology 1)<sup>a</sup>*

	total	contribution of incumbents		
		within-effect	reallocation effect	cross term
	annual percentage changes			
All firms	0			
Incumbents	- 1¼	¼	- 1½	0
o.w. successful up-sizers	0			
successful down-sizers	- ½			
unsuccessful down-sizers	- ½			
unsuccessful up-sizers	- ¼			
Entry and exit	1¼			

<sup>a</sup> Including acc, comp, publ, econ, and news+obs.

Results of the second decomposition methodology of productivity are summarised in table 3.3. Compared to the results in table 3.2, the negative reallocation effect in the second decomposition method is almost absent, and the net contribution to productivity growth of entry and exit shrank to zero. The difference in results between both methodologies is due to the fact that the second method compares productivity levels of firms with the average initial productivity. As table 3.1 illustrates, differences in productivity between entering and exiting firms are negligible. The second decomposition method ensures that net entry does not raise aggregate productivity solely because the share of entrants is greater than the share of exiting firms. Henceforth, I will apply only the second decomposition method.

*Table 3.3 Contribution of incumbents, entrants and exits to overall labour productivity growth, 1988-1995 (decomposition methodology 2)<sup>a</sup>*

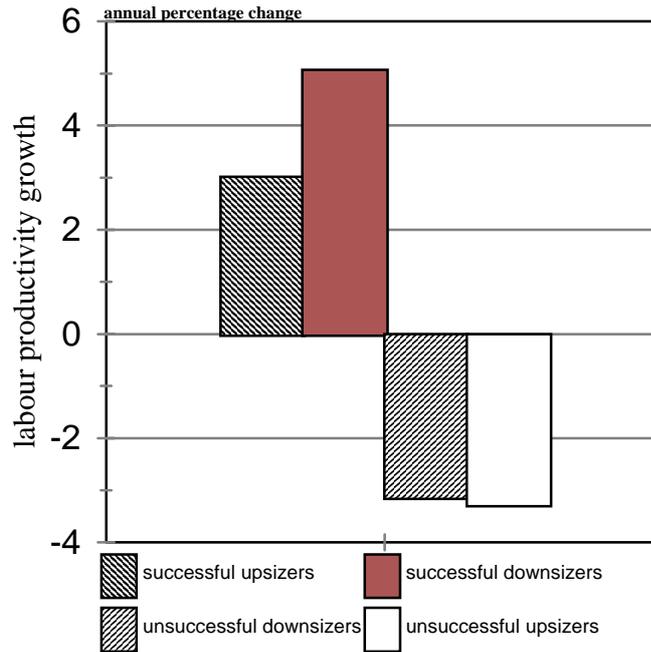
	total	contribution of incumbents		
		within-effect	reallocation effect	cross term
	annual percentage changes			
All firms	0			
Incumbents	0	1/4	- 1/4	0
o.w. successful up-sizers	1/4			
successful down-sizers	1/4			
unsuccessful down-sizers	- 1/4			
unsuccessful up-sizers	- 1/4			
Entry	- 1/4			
Exit	1/4			

<sup>a</sup> Including acc, comp, publ, econ, and news+obs.

Incumbents in business services, on average, did not succeed in improving their productivity between 1987 and 1995. However, productivity growth amongst survivors differs considerably. Successful up-sizers and successful down-sizers in business services expanded their labour productivity by 3-5% annually, which proves that not all firms in market services face a productivity problem (see figure 3.1). By contrast, labour productivity of unsuccessful firms diminished by 3-4% per year. Hence, the allocation of the four types determined the labour productivity performance of continuing firms as a whole.

On average, only 25 percent of all incumbents engaged in producing business services realised both an increase in labour productivity and in employment over time. Again, another 25 percent of the incumbents improved their productivity level, but at the cost of lower levels of employment. The remaining 50 percent of survivors were unsuccessful firms. These types of firms counterbalanced the excellent performance of the successful incumbents. The following section pays special attention to this diversity among groups of incumbents.

Figure 3.1 *Labour productivity growth of incumbents in the Netherlands, 1988-1995*



#### *Benchmarking Dutch business services*

Assessing the labour productivity performance of Dutch business services by comparing the performance with that of other countries could indicate as to where the weakness lies. Unfortunately, because of data problems and a lack of comparable micro-level data for the services sector, international comparison is tricky. Results of sector studies suggest, however, that the rate of labour productivity growth in Dutch market services lags behind that of the US, the UK and Germany (see O'Mahony, 1999, and van der Wiel, 1999).

Using longitudinal firm-level data, Foster, Haltiwanger and Krizan (1998) recently stated that there is also tremendous reallocation of activity across service-sector firms in the US. Much of this reallocation in the selected services industries has been generated by entry and exit, which dominate productivity growth. For example, the exit of very low productivity plants was the primary contributor to the productivity growth of the automobile repair shop industry between 1987 and 1992. This finding does not correspond with that of the Dutch business services.

Benchmarking the demographic performance of Dutch business services is also feasible with Dutch manufacturing. Bartelsman *et al.* (1995) analysed the effect of firm turnover on the productivity performance of Dutch manufacturing. At least two results of his analysis substantially differ with the results in this research memorandum. First, the productivity level of entrants in manufacturing was considerably higher than that of exiting firms. Due to this factor, the effect of firm turnover is positive, and appeared to account for one-third of the productivity growth in Dutch manufacturing between 1980 and 1991. Second, more incumbents in manufacturing succeeded in raising their productivity level than did their counterparts in the services sector. In fact, more than 60 percent of all Dutch continuing firms in manufacturing realised an increase in productivity, whereas only one out of two incumbents in business services accomplished a rise in productivity. These results suggest that the intensity of competition in business services is less fierce than it is in manufacturing. Section 4 will discuss further the role of competition.

### **3.4 Disaggregating productivity**

It could be quite misleading to draw inferences from aggregate data to characterise what has been happening within business services. Aggregate numbers can conceal broad disparities in output and labour productivity performance among various branches of business services. In this regard, table 3.4 presents some disaggregated summary statistics on output, employment and labour productivity growth, including those of incumbents. Some of the results are striking.

First, at a lower level of aggregation, the results are diverse. Huge variations in output and employment growth exist among the industries between 1987 and 1995. Production in 'accountancy' grew by approximately 5% yearly. However, growth in 'economic agencies' was twice as much as was realised in 'accountancy'. Even so, all industries within business services performed, on average, better than the whole economy (see table 2.3).

Second, overall growth rates of labour productivity also differ widely. Labour productivity in 'computer services' and 'economic consulting agencies' diminished, whereas it improved in most other branches. Additionally, slow labour productivity growth is not typically of all firms or industries within business services. Two branches, news agencies and accountancy, attained productivity growth rates that come close to the growth rates of most manufacturing industries in the same period.

Third, at a disaggregated level, labour productivity growth is generally slightly higher for incumbents than for all firms in the period 1987-1995. So, if churning was completely absent, productivity growth would have been somewhat better in most branches.

Finally, the numbers of ‘publicity’ and ‘economic consulting agencies’ are also striking. The growth rates of aggregate output, and those of the continuing firms differ enormously. Total output in both industries grew substantially, whereas incumbents’ output contracted noticeably.

*Table 3.4 Output, employment and labour productivity growth in the Netherlands, 1988-1995*

	Total			Incumbents		
	output	employment	labour productivity	output	employment	labour productivity
	annual percentage changes					
acc	4½	3½	1	4¾	3½	1¼
comp	8¾	10½	- 1½	4¼	5¼	- 1
eng <sup>a</sup>	5	5	0	½	- 1¼	1¾
publ	6¼	6	½	- 5¾	- 7½	1¾
econ	9¼	14½	- 4½	- 1¾	0	- 1¾
news + obs	7¾	6	1¾	4¾	3	1¾
Business services <sup>b</sup>	7	7	0	2½	2½	0

<sup>a</sup> Period 1989-1995.

<sup>b</sup> Including acc, comp, publ, econ, and news+obs.

Is the modest productivity performance in business services due to a long tail of poorly performing firms that drags down the average of the industry, or is it the case that the average productivity levels are dragged down by the performance of all firms? Long tails of underperforming firms hint at potential output gains in the future if these firms could catch up by adopting industry’s best practice. This notion is partially confirmed by the evidence of table 3.5 and figures 3.2-3.3.<sup>8</sup> A long tail of low productivity firms definitely exists in each industry over time, and the dispersion of productivity across firms is very wide at any one time. The distribution is skewed to the left: more low productivity firms occur than is predicted by the bell-shaped curve. However, if we look at changes over time, the results suggest that the poor productivity performance in business services is endemic to all firms: the curves hardly changed in position or in shape.<sup>9</sup>

<sup>8</sup> The figures of the other branches are presented in appendix C.

<sup>9</sup> This result does not change significantly if the distribution is by scale, or if only incumbents are scrutinized.

Figure 3.2 *Distribution of log productivity of accountancy, 1987-1995*

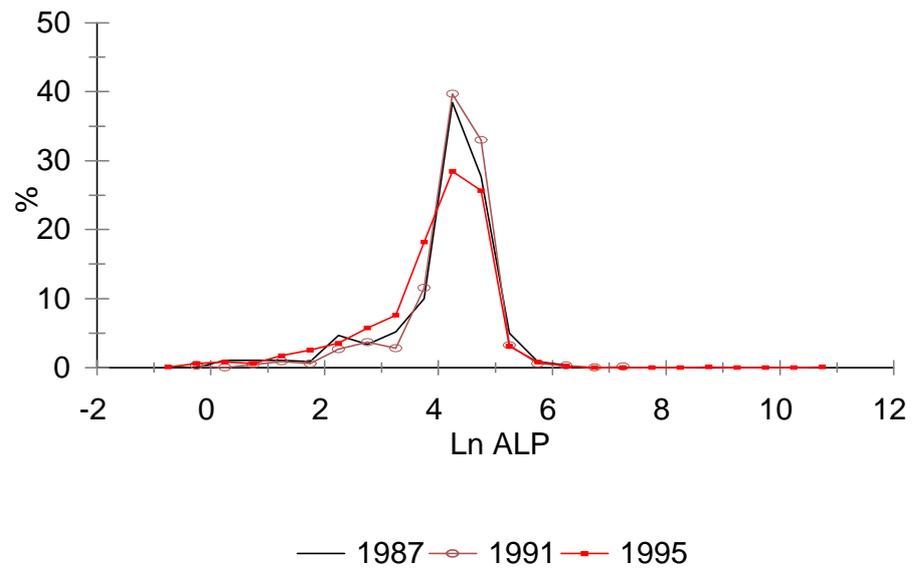
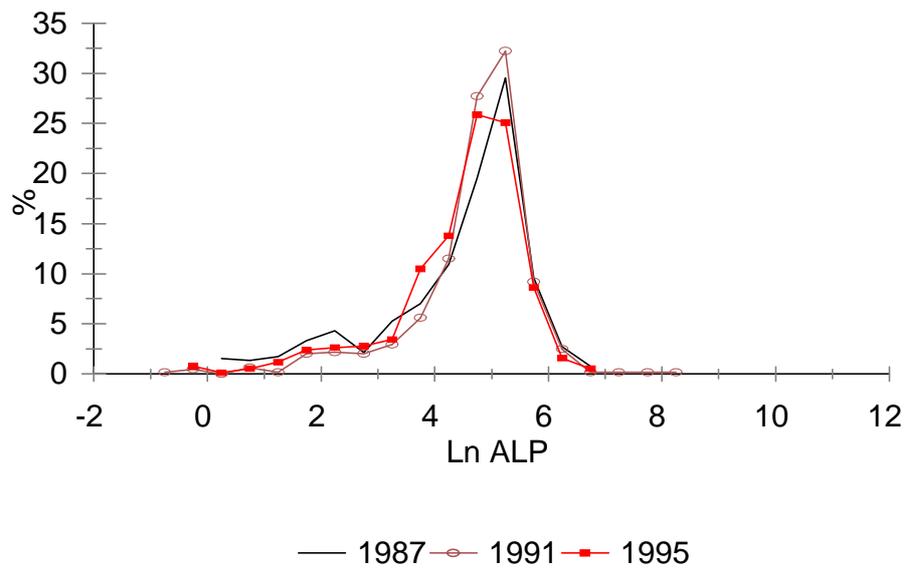


Figure 3.3 *Distribution of log productivity computer services, 1987-1995*



*Table 3.5 Dispersion of productivity, 1987-1995<sup>a</sup>*

	1987	1991	1995
<b>acc</b>			
mean	4.05	4.22	3.92
standard deviation	1.00	0.78	1.05
skewness	- 1.86	- 1.92	- 0.90
<b>comp</b>			
mean	4.41	4.68	4.46
standard deviation	1.34	1.06	1.13
skewness	- 1.33	- 1.71	- 1.50
<b>eng<sup>b</sup></b>			
mean	4.53	4.59	4.51
standard deviation	0.86	0.77	0.88
skewness	- 1.70	- 1.92	- 1.91
<b>publ</b>			
mean	4.82	5.16	4.71
standard deviation	1.54	1.27	1.29
skewness	- 0.78	- 0.86	- 0.78
<b>econ</b>			
mean	4.36	4.43	4.57
standard deviation	1.16	1.06	1.09
skewness	- 0.32	- 1.73	- 1.26
<b>news+obs</b>			
mean	4.15	4.04	4.26
standard deviation	1.14	1.16	1.14
skewness	- 0.55	- 0.61	- 0.56

<sup>a</sup> Productivity is in logs, assuming that the distribution of this variable is approximately lognormal. The skewness measures the shape of the distribution. It can be interpreted as a tendency for one tail of the distribution to be heavier than the other. For instance, if this indicator is positive then the tail is toward larger values.

<sup>b</sup> First year is 1989.

*Decomposition results within business services*

Table 3.6 presents the contribution of firm turnover to productivity growth according to the second decomposition methodology. Three remarks can be made.

First, in spite of the fact that continuing firms mostly improved their productivity and that their initial productivity level was above the industries' aggregate, their declining market shares counterbalanced this effect. The latter result is a pattern common to most branches within business services. New entrants gained market shares at the expense of the more productive incumbents. As a result, the contribution of incumbents to productivity growth is generally modest on a disaggregated level, and absent at an aggregated level. It suggests that the strong shift of resources between firms has all but enhanced aggregate productivity growth at the industry level, except for 'publicity and advertising'. In this context, the term "reallocation" is confusing. In fact, what really happened was that growth of total market demand in business services outstripped the considerable output growth of incumbents. In other words, it was not a reallocation of market shares, but rather the fact that entrants picked up the gap in demand.

*Table 3.6 Contribution to overall labour productivity growth of incumbents, entering and exiting firms in business services, 1988-1995*

	incumbents		reallocation effect	cross-effect	entry	exit	Total
	total	within effect					
	annual percentage change						
acc	½	½	0	0	¼	½	1
comp	- ¼	- ¼	0	0	- 1½	¼	- 1½
eng <sup>a</sup>	½	1	- ¼	- ¼	- 1¼	¾	0
publ	½	½	¼	- ¼	½	- ½	½
econ	- ½	- ½	- ¼	¼	- 4½	¼	- 4½
news + obs	¼	¾	- ¼	- ¼	0	1½	1¾
Business services <sup>b</sup>	0	¼	- ¼	0	- ¼	¼	0

<sup>a</sup> Period 1989-1995.

<sup>b</sup> Including acc, comp, publ, econ, and news+obs.

Second, the contribution of entry to industries' aggregate productivity growth differs in signs according to industry. Firms that entered the market of economic consulting agencies substantially depressed the overall productivity growth. Although many new firms penetrated this branch, their productivity levels were significantly below the average level of the industry. The same applies to the productivity level of entrants in

computer services and engineering. On the other hand, new firms in accountancy and publicity had productivity levels above the industry average.

Finally, the contribution of exiting firms to productivity growth is only negative in publicity and advertising. Exiting firms in this branch originally had a higher than average productivity level. Mergers and takeovers could cause this peculiar result. However, this could have led to market power by some firms, reflected in a rise of the concentration rate. Nevertheless, the concentration rate in this branch did not increase (see figure 3.2), and the modest contribution of entrants to productivity growth does not confirm this hypothesis.

In summary, firm-level data suggest that the absence of labour productivity growth in business services is due to both the performance of incumbents and the net effect of turnover. Changes in market shares, relatively low productivity levels of entrants and a lack of productivity improvements by too many incumbents are important factors that held back labour productivity growth in business services. At a disaggregated level, the story is more discriminating. Apparently, the overall sluggish labour productivity growth in business services is especially due to two industries: computer services and economic consulting agencies. Nevertheless, although some remarkable differences appear among industries, some common facts seem to hinder labour productivity growth within business services to boost.

## **4 Sluggish productivity growth: some conjectures**

### **4.1 Explanations of productivity slowdown: notions vs. facts**

This section analyses the results of the previous section in more detail by looking separately at the performance of incumbents, entrants and exiting firms. At this stage of research, the main aim is to exploit the firm-level data. The research memorandum, therefore, is primarily descriptive, and its findings should be viewed as exploratory. Some conjectures and interesting facts pop up that could contribute to an explanation of the poor productivity performance in Dutch business services. Before exploring these facts, though, I will examine how various notions of the productivity slowdown from literature relate with the available facts in business services in the Netherlands.

Both this study and the recent growth accounting analysis by van der Wiel (1999) have shown that if a labour productivity problem exists, it is not endemic to the whole market services sector or to every firm in business services. But is there really a problem? Roughly speaking, the literature has put forward four notions to explain the lower productivity growth rates in market services compared to that in the manufacturing industry:<sup>10</sup>

- I Measurement problems
- II Lack of economies of scale and capital deepening
- III Insufficient management and lack of labour skills
- IV Lack of competition

#### *Measurement problems*

Measurement problems with regard to output and quality changes probably result in an underestimation of the volume of service sector output, since traditional price measurements partly fail to capture improvements in the quality of services and the effect of new services. As a result, labour productivity growth in services could be underestimated. However, some facts and trends in the Netherlands indicate that measurement problems in business services could be less severe than in other service industries.

First, the value of output in business services is apparently less understated than the value of output in many other services for which surveys are lacking (e.g., non market

<sup>10</sup> See e.g. Maclean, D. (1997), *Lagging productivity growth in the service sector: Mismeasurement, Mismanagement or misinformation*, Bank of Canada, working paper 97-6.

services). Statistics Netherlands measures the value of output in business services on a firm-level. Second, it is hard to believe that the tremendous productivity growth differential between successful and unsuccessful firms (see figure 3.1) is caused, in particular, by measurement errors. Still, another indication of a lack of severe price measurement errors is the absence of complete divergence between productivity growth and profitability trends. The profitability of firms with worsening productivity declined considerably in the period 1987-1995, whereas the wage rate slightly improved.

Another reason exists why it is hard to believe that, nowadays, measurement errors more severely affect productivity growth in Dutch business services than they did previously. A measurement explanation of the productivity slowdown in services requires mismeasurement to get worse over time, which has not yet been proven. In addition, how can these errors explain the lagging productivity growth in business services compared to that of the United Kingdom or Germany? Are measurement errors in the Netherlands worse than those in other developed countries?

An issue neglected here for lack of information is the role of within-industry price dispersion and product differentiation. In this research memorandum, 3-digit CBS gross output deflators deflate current output values into real values of output. Micro-level prices or (quality adjusted) quantities are lacking in the available data set. Under perfect competition, it is legitimate to deflate each firm's output with one price because the price per output should be the same across firms. However, if product differentiation exists or if competition is non-perfect, prices may differ between firms. In that case productivity measures are negatively biased, and, therefore, the contribution of incumbents, entering and exiting firms to productivity could be mismeasured. However, the adjusted price-cost margin does not considerably differ between the three types of firms.<sup>11</sup> This lack of difference could point to the absence of strong within-industry price dispersion.

#### *Lack of economies of scale and capital deepening*

The potential for productivity improvements in services by economies of scale and capital deepening is limited. Services generally have less scope for reaping economies of scale than the manufacturing industry has, since services generally cannot be stored and, therefore, require a more direct relationship between the producer and consumer. However, perhaps, economies of scope offer services more potential for productivity improvements.

Small firms dominate business services. This suggests that no increasing returns to scale are at stake. Apparently, new firms in business services can remain small without

<sup>11</sup> The adjusted price-cost margin is defined as the value of gross output minus input divided by the value of gross output.

being confronted with substantial cost disadvantages. On the other hand, recent developments of (new) information technology have eased standardisation of procedures in those branches that extensively use computers. A tendency to scale up exists, in particular, in accountancy. Regarding the global players in this branch, competition forces them to increase in scale by mergers or takeovers.

In this regard, table 4.1 shows the breakdown of some branches by firm size. In 1995, the labour productivity level of large firms was much higher than that of small firms in most branches (except in 'economic consulting agencies').<sup>12</sup> On the other hand, the differentials in productivity level between medium and large firms are mostly modest and in favour of medium firms. These observations suggest that economies of scale are not very important beyond some certain scale. Simple regression analysis does not reject this hypothesis. The elasticity between labour productivity and firm size is very small – but positive and significant.

*Table 4.1 Labour productivity by firm size in Dutch business services<sup>a</sup>, 1995*

	small	medium
	productivity large firms = 100	
acc	54	94
comp	52	100
publ	42	106
econ	118	133
news + obs	53	59

<sup>a</sup> Large firms employ more than 100 employees, small firms employ fewer than 20 employees, and medium firms employ 20 to 100 employees. Labour productivity is measured as output per full-time equivalent.

Capital deepening is another way to increase productivity. New machines such as computers provide the opportunity to raise output per employee. Unfortunately, capital stocks are difficult to construct with the available data set, given the absence of direct measures and the time series of investments required. At this stage of research, I use two crude measures to construct capital stocks for survivors on an aggregated level. First, the capital stock of an industry is based on the total value of depreciation. Assuming a mean life of capital of twenty years, the capital stock of incumbents is simply the value of depreciation times twenty. Additionally, the second estimate for the capital stock is derived by applying the perpetual inventory method by using investment series and an initial capital stock based on the value of depreciation in a base year.

<sup>12</sup> Note that small firms also tend to be young firms. However, the growth rate of those young small firms that do survive, tends to be greater than that of the other firms.

Both crude measures of capital stocks suggest that productivity improvement by capital deepening in business services is missing. The capital stock hardly increased over time. Remarkably, incumbents' nominal investments as a percentage of total nominal output declined over time. Even if, computers are properly deflated (since computer prices have dropped dramatically in the last few decades), the share of total investments in real terms has worsened. As will be shown later on, entrants show the same investment tendency. Both results are remarkable, since output of business services is booming.

#### *Insufficient management and lack of labour skills*

A radically different view tries to explain sluggish productivity growth in services by examining management skills and the organisation of functions and tasks. Several studies stressed have suggested that inadequate management and deficient organisation of tasks on productivity may have contributed to the problem. Recently, Biema and Greenwald (1997) pointed to the amazing results attainable if senior executives would pay more attention to how work is actually done.<sup>13</sup> Leading-edge service companies in reorganising work in the United States attained performance levels that outstripped those of their competitors and, moreover, they realised magnificent progress. Additionally, McKinsey studies have revealed that the major share of productivity differentials between identical firms can be attributed to the way functions and tasks are organised.<sup>14</sup> Indeed, rough indicators, such as the (material) input as a percentage of the output, suggest that some survivors in Dutch business services, do not succeed in improving their productivity level, because they use relatively more inputs to produce an amount of output.

Scrutinising the role of labour quality, such as the effect of managerial ability, is problematic: data on labour quality are not directly available in the micro data set. However, there seems to be a link between wages and productivity in business services: a firm that pays higher wages than average is also more productive than average. The relationship between wages and productivity will be discussed further below.

#### *Lack of competition*

To what extent are the lower productivity growth rates in business services due to a lack of competition? Competition reallocates production and profits from inefficient to efficient firms. Lower rates of productivity growth in services might therefore reflect

<sup>13</sup> Biema, M. van, and B. Greenwald (1997), 'Managing our way to higher services sector productivity', *Harvard Business Review*, July-August.

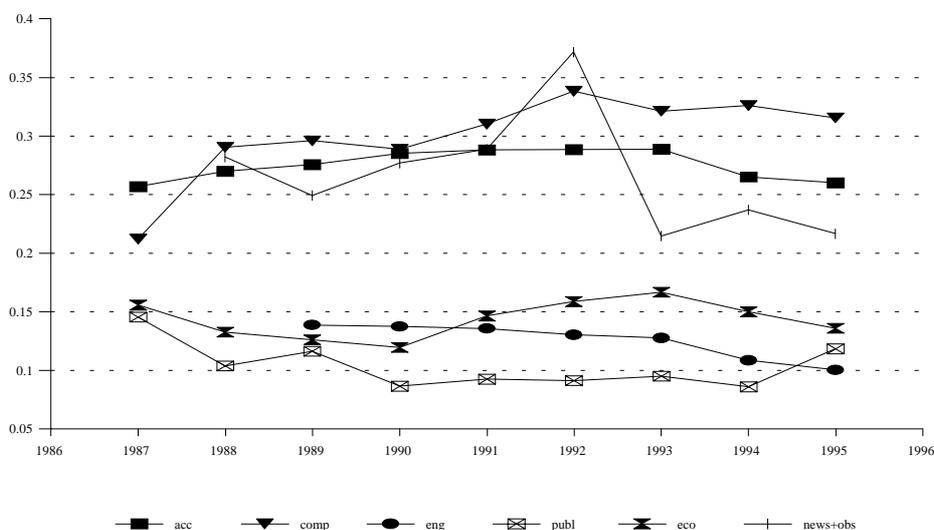
<sup>14</sup> See, e.g., McKinsey Global Institute (1992), *Service Sector Productivity*, Washington, D.C., and McKinsey Global Institute (1993), *Manufacturing Productivity*, Washington, D.C.

a lack of competitive pressure due to a higher level of regulation and/or to less exposure to (international) competitors.

This section analyses several indicators, including market concentration rates, standard deviation of productivity levels, entry and exit rates, entry barriers, and price-cost margins, that could have an impact on productivity or could give an impression of the degree of competitive pressure in business services.

The *market concentration rate*, defined as the gross output of the ten largest firms related to the overall output, is an indicator for measuring the intensity of the competitive process. A rise in market concentration rates could point to less competition. A higher concentration rate can be supposed to result in more monopoly power and higher price-cost margins, because dominant positions of firms on a market yield higher markups.

Figure 4.1 Concentration rates in Dutch business services<sup>a</sup>, 1987-1995



<sup>a</sup> The concentration rate is defined as the gross output of the ten largest firms related to the overall output.

According to figure 4.1, the concentration rate is relatively stable among branches over time. It increased only in computer services. The stable pattern suggests that the effect of mergers and takeovers on the productivity level is negligible, or that the effect on the concentration rates was counterbalanced by high entry rates. The degree of

concentration is below 30 percent in most parts of the business services sector. Broadly speaking, a dichotomy in concentration rates occurs: on the one hand, concentration rates are high in accountancy, computer services and news agencies. On the other hand, concentration rates are low in the remaining branches. Concentration is remarkably lower than what is found in most industries within Dutch manufacturing.

There are problems, however, with using concentration rates as a measure of competition. First, if entrants in business services operate in a niche, they do not compete directly against incumbents. In that case, the market concentration rate based on a rather broadly defined industry classification is not a suitable indicator of the pressure that new firms can generate on incumbents. Over the years, the business services market may have become more segmented. Entrants probably pursue a strategy of seeking new segments and products, whereas incumbents stick to their regular customers. Second, the business services market may not yet be in equilibrium. New firms, either viable or incompetent, are attracted to the market. Then, a relation between a price-cost margin and concentration rate will only be apparent in the long-run. In fact, a rise in competition may well increase the market share and profits of the most efficient firms in the market.<sup>15</sup> In other words, a rise in concentration rates may incur a reduction in competition (an increase in barriers to entry) or an increase in competition.

*Table 4.2 Standard deviation, productivity, and entry/exit rates*

	acc	comp	eng	publ	econ	news+obs
<i>1995</i>						
Standard deviation productivity level <sup>a</sup>	1.05	1.13	0.88	1.29	1.09	1.14
<i>1988-1995</i>						
	total percentage change					
Productivity growth	8	- 11	0	4	- 30	15
Standard deviation productivity level	7	- 16	2	- 16	- 6	0
<i>Net entry/exit rates <sup>b</sup></i>						
	%					
unweighted	44	39	47	112	253	77
weighted	38	133	59	75	155	100

<sup>a</sup> Productivity is in logs, assuming that the distribution of this variable is approximately lognormal.

<sup>b</sup> Net entry /exit rates are defined as (sample weighted) entry minus (sample weighted) exit divided by the (sample weighted) geometric mean of total firms in 1987 and 1995.

<sup>15</sup> Boone, J. (1999), 'Measuring product market competition', internal CPB mimeo, 1999.

Another rough competition indicator is the *standard deviation of the log of productivity* (see table 4.2). In general, productivity differences between firms will be smaller in markets with stronger competition due to learning effects and market selection over time. The indicator lies between 0.88 and 1.29. The dispersion in productivity is relatively high in ‘publicity’, and relatively low in ‘engineering’. Hence, we ask, is competition in the latter tougher than in the former? To give a straightforward answer is not easy. A comparison between industries is limited because industries differ in other ways (e.g. firm size and capital intensity), which could account for differences in productivity. Based on both measures, i.e. the market concentration rate and standard deviation, competition in engineering seems to be tougher than in other business services industries. However, the sign of the changes in the distribution is equal to the sign of the productivity changes in almost every case. This does not point to market selection. Unfortunately, these results cannot be compared with other Dutch industries, due to a lack of data availability.

With regard to the *net entry rates*, wide variation can be seen by industries. Net entry rates in ‘economic consultancy’ are much higher than in other services industries. Nevertheless, net entry rates in Dutch business services are relatively high compared to those in other sectors of the Dutch economy. The high entry and exit rates in business services, therefore, point to low entry barriers and suggest a high degree of competition. Yet, these high turnover rates have not raised labour productivity growth rates. Relatively high net entry rates by industry generally coincide with reductions in the productivity distribution over time. Differences in productivity have probably declined over time due to the entry and exit of firms. However, a clearly positive relation between entry rates and productivity growth seems to be lacking.

Theoretical models of industry dynamics emphasise the importance of sunk costs as *entry/exit barriers* (see section 3). Moreover, low entry costs, such as investments and advertising, may promote entry and exert pressure on inefficient firms to exit, thus speeding up the reallocation of resources from inefficient to more efficient firms.

The extent of the investment levels and sales costs does not point to entry barriers in business services. To start up a firm in business services does not initially require much capital: a personal computer, a telephone and a room or small office might suffice. Table 4.3 shows that, in most branches, entrants invest relatively more when they start their operations than do incumbents. In the course of time, entrants’ investments activities fall back to normal levels in succeeding years.

New firms incur additional costs in the form of advertising campaigns to make their product known, and price cuts, in order to achieve sufficient market shares. However, with the exception of ‘economic consulting agencies’, the industry which has the highest entry/exit rates, the differences in sales costs between continuing, exiting and entering

firms are remarkably small (see table 4.3). Therefore, sales costs are probably not a severe barrier to entering firms.

The final competition indicator considered here is the *price-cost margin*. Monopoly power is reflected in higher price-cost margins, because dominant positions of firms on a market yield higher markups. A more transparent market, however, offers clients the opportunity to buy products at a low price. Price-cost margins tend to rise in most industries over time – in spite of increasing number of firms. Based on this indicator, competitive pressure in business services seems to be mild.

In a nutshell, the extent of market competition in business services seems to still be insufficient to boost productivity in business services. Although high entry rates and low entry barriers suggest tough competition, other indicators suggest the opposite.

**Table 4.3** *Investments, price-cost margin and sales costs of incumbents, entrants and exits*<sup>a</sup>

	Investments rate		Sales costs <sup>b</sup>		Price-cost margin <sup>c</sup>	
	1987	1995	1987	1994	1987	1995
	% of gross output					
<i>acc</i>						
incumbents	3½	2¼	10	9	31	35
entrants	3¾	2	13	10	21	29
exits	3¾	4¼	10	10	37	42
<i>comp</i>						
incumbent	4½	3½	11	10	34	35
entrants	12¾	4¾	14	13	30	35
exits	1½	2	12	10	25	30
<i>publ</i>						
incumbent	1¼	2	6	6	12	27
entrants	36¼	2¾	10	7	.	26
exits	1¼	1	6	6	13	18
<i>eco</i>						
incumbent	2¾	2¾	16	17	27	35
entrants	4¾	2¼	22	19	36	27
exits	6¼	6¾	12	15	15	24

<sup>a</sup> Data based on cohort 1987; for exits the last year is 1994.

<sup>b</sup> Sales costs include e.g. advertising and expenses of office. No figures available for 1995.

<sup>c</sup> Price-cost margins are defined as the value of gross output minus input, and labour costs divided by the value of gross output.

## 4.2 Productivity performance of continuing firms

Section 3 concluded that incumbents' productivity hardly increased, on average, between 1987 and 1995 – mainly due to a decline in two industries: 'computer services' and 'economic consulting agencies'. Compared to the Dutch manufacturing industry, fewer continuing firms could enhance their productivity levels in business services.

The focus now turns to a more detailed examination of the performance of the four types of continuing firms. Several questions will be addressed. Why is there such a huge variety in growth rates between the four types of survivors? Did productive firms tend to move ahead, or did weak firms catch up? What drives some survivors to be more productive than other survivors? Although it is difficult to draw conclusions, due to the wide variety in productivity and heterogeneity within and between those four groups of incumbents, some similarities can be observed across industries.

Successful incumbents showed yearly productivity growth rates of 3-5 percent, while the productivity of unsuccessful incumbents fell by 3-5 percent per year in the period 1987 -1995. Regression analysis suggests that productivity growth is fastest in initially low productive firms. This 'regression to the mean' is significant in all industries within business services. Therefore, differences in productivity between firms at any moment in time seem to be due to transitory factors. In 16 out of 24 cases (i.e. six industries and four different types of firms), the dispersion of log productivity slightly decreased over time.

Other indicators hint at a finely tuned story. Productivity differences might be more permanent than originally thought. According to the ranking of most productive firms per industry, today's champions are in many cases the same as yesterday's. Many survivors, who were at the top twenty ranking of best practices in 1987, were still well-ranked almost ten years later. Moreover, the correlation coefficients between firms' productivity in the last year and first year of the sample are less than 1 in most industries – but they are still considerable.

Table 4.4 presents several variables that could help us find causes for productivity performance differences among the four groups of incumbents. It illustrates that some similarities in ranking and general trends can be observed among the four groups.

Similarities in ranking emerge for labour productivity, in the extent of capital intensity, and, as a consequence, in the extent of TFP. The TFP-level reflects, for instance, the effective use of inputs. Firms classified as successful down-sizers or unsuccessful down-sizers are relatively more capital intensive than the other two groups.

The differences in capital intensity among the four groups of survivors are great– even wider than the variety in labour productivity.<sup>16</sup> Another similarity across all industries is that the TFP-levels are the highest for successful up-sizers, and the lowest for unsuccessful down-sizers. The TFP-levels suggest that the latter are inefficient firms:

<sup>16</sup> Differences in capital intensity between the four groups are presumably not due to variations in firms size, because the difference in allocation of firms size is negligible.

they persistently use more inputs per unit of output. Finally, unsuccessful firms have initially higher productivity levels than successful down-sizers. These findings correspond to those of Bartelsman *et al.* (1995). There appear to be opportunities for successful down-sizers to catch up. However, this offers no explanation for the decline in productivity by unsuccessful down-sizers.

*Table 4.3 Some main indicators for incumbents<sup>a</sup>*

	acc	comp	publ	eco
<i>Number of firms (in %)</i>				
Successful up-sizers	39	23	31	9
Successful down-sizers	21	19	17	28
Unsuccessful down-sizers	6	23	44	25
Unsuccessful up-sizers	34	36	8	38
<i>Capital intensity: level/growth</i>				
Successful up-sizers	4/neg	3/neg	3/neg	3/neg
Successful down-sizers	1/pos	2/pos	2/pos	2/pos
Unsuccessful down-sizers	2/pos	1/pos	1/pos	1/pos
Unsuccessful up-sizers	3/neg	4/neg	4/neg	4/neg
<i>TFP: level/growth</i>				
Successful up-sizers	1/pos	1/pos	1/pos	1/pos
Successful down-sizers	2/pos	2/neg	3/neg	2/pos
Unsuccessful down-sizers	4/neg	4/neg	4/neg	4/neg
Unsuccessful up-sizers	2/pos	3/neg	2/neg	2/pos
<i>Productivity growth/wage growth</i>				
Successful up-sizers	+ / ++	+ / ++	++ / +	++ / +++
Successful down-sizers	++ / +	++ / ++	++ + / +++	++ + / +++
Unsuccessful down-sizers	- / +	-- / +	-- / ++	-- / =
Unsuccessful up-sizers	- / +	--- / -	-- / +	- / ++
<i>Ranking productivity level/ wage level</i>				
Successful up-sizers	2 / 2	2 / 1	1 / 2	2 / 3
Successful down-sizers	2 / 4	4 / 2	4 / 4	4 / 2
Unsuccessful down-sizers	2 / 2	2 / 4	2 / 1	1 / 1
Unsuccessful up-sizers	1 / 1	1 / 2	3 / 3	3 / 2

<sup>a</sup> Growth rates: = 0% ; + < 2½%; 2½% < ++ < 5%; 5% < +++ < 10% , ++++ > 10% (vice versa negative growth rates/negative signs)

<sup>b</sup> Ranking according to 1987; 1= highest level, 4= lowest level.

Besides similarities in absolute levels, there are also common trends among the four groups of incumbents. First, the labour productivity growth rates of each group are of

comparable magnitude within the selected industries. Second, a positive relation between labour productivity and wages can be distinguished. Firms with high (low) productivity levels also had, on average, high (low) wage levels. Moreover, firms that significantly increased labour productivity also had high wage growth rates. For example, successful down-sizers in publicity had the lowest productivity ranking as well as the lowest wage-level ranking. But this type of firm attained the strongest growth rates in labour productivity and in wages. Regression analysis does not reject these findings.

Baily *et al.* (1996) also found this relationship between productivity and wages. A first interpretation of this relationship is that some of the wage changes observed are determined by changes in labour quality, where wage differentials are assumed to reflect productivity differentials. However, many factors other than labour productivity affect wages. Another interpretation of this relationship refers to rent sharing. Workers might benefit from increases in productivity if part of that increase benefits them. The third and final interpretation refers to capital/labour substitution. High wage pressure could fortify the incentives of firms to invest in new, relatively cheaper, capital. Thus, wage pressure can intensify capital deepening and, therefore, productivity growth. It is, therefore, striking that developments in capital intensity in business services suggest an opposite trend. All successful up-sizers became less capital-intensive over time, while wages grew relatively rapidly among this group. Conversely, unsuccessful down-sizers became more capital-intensive despite their lower wage increases.<sup>17</sup> Strikingly, successful down-sizers adopted a different strategy: they intensified their capital-labour ratio.

Further common trends found in table 4.4 include the developments of TFP by successful up-sizers and unsuccessful down-sizers. The first group increased its leading position, whereas the latter lost ground.

Finally, the developments in profits are the same for each group across the selected industries. Profits of successful up-sizers increased in the period 1987-1995, whereas profits of unsuccessful firms declined. Although developments in output and employment were the same for successful up-sizers and unsuccessful up-sizers, i.e. both output and employment increased, developments in profits were the opposite. The discrepancy could be explained by assuming that unsuccessful up-sizers are becoming inflexible firms in utilising their fixed inputs. These firms are reluctant to change their organisation and management, while their environment is rapidly changing. As the firms were successful in the past, i.e. had relatively high labour productivity levels, they have

<sup>17</sup> However, in contrast, CPB research in the manufacturing industry suggests that wage moderation can have a significant role in boosting employment as well as productivity (see e.g. Bartelsman, 1997).

a tendency to become rigid, leading to a decline in profitability.<sup>18</sup> On the other hand, these firms could have changed their production technology, as a consequence, they experience setup costs, or face diminishing returns.

Despite the similarities between groups of firms, no clear-cut explanations for the relatively high percentage of unsuccessful continuing firms in Dutch business services are available at the moment. What (other) factors could determine the relatively skewed distribution of firms in business services? In this regard, as already noted at the top of this section, a plausible explanation seems to be that firms in business services are subject to less competitive pressure than are firms in manufacturing. Hitherto, unsuccessful firms in business services could easily maintain their positions in a booming market by making supernormal profits because unimpeded competition in services is probably lacking or has become eminent only in recent years. In this context, it must be noted that the profitability of unsuccessful firms has deteriorated through the years (see table 4.4). In the long run, prospects for these firms are therefore insecure if competition becomes more fierce.

Labour productivity growth in Dutch business services could also be hampered due to a taut labour market. In business services labour demand exceeds labour supply, whereas in most manufacturing industries it is the other way around. Based on the developments of the average wage level, in some indistinct way, some firms are more hampered than others. *Unsuccessful up-sizers* hardly increased their wages, compared with their successful counterparts. Unsuccessful up-sizers probably attracted more inexperienced or lower qualified workers for their new jobs than did successful up-sizers, leading to negative productivity growth between 1987 and 1995. However, these former firms could also have been aiming at a long-term strategy in which new workers receive their training on-the-job. The fruits of this strategy have, of course, not yet been fully reaped.

While productivity growth of incumbents was modest in most industries within business services, it was actually negative for *economic consultancy agencies* and for *computer services*. The productivity decline in both industries is especially due to the high share of unsuccessful firms, in particular up-sizers, and their relative productivity level. Almost 65 percent of the continuing firms within economic consultancy agencies failed to increase their productivity level.

Both unsuccessful industries have, at least, one thing in common: the growth rates in aggregate output were the highest among business services' industries (see table 3.4).

<sup>18</sup> See, e.g., Baaij, M. (1996), *Evolutionary strategic management: Firms and environment, performance over time*. Dissertation, Eburon-Nijenrode University Press.

The output growth of the continuing firms, however, was considerably lower than that of the overall output growth, and was actually negative in economic consulting agencies. One possible explanation of these remarkable differences is that the products supplied by the continuing firms are in their mature phase of the product life cycle. Demand substitutes towards new products (e.g. the one-stop-shopping service concept). Moreover, customers have become more discerning in selecting their suppliers and do not automatically return to the firm from which they previously bought their services.

#### **4.4 Productivity performance of entering and exiting firms**

Obviously, one of the most salient features of business services is the high rate of entry and exit. However, entry and exit have not, hitherto, raised productivity growth in the short-term, because the average productivity level of entrants was lower than that of exiting firms in most of the branches. This contrasts with the findings of Bartelsman *et al.* (1995) for the Dutch manufacturing industry. Using Israeli (manufacturing) data, Griliches and Regev (1992) also found that entering firms typically have higher productivity levels than exiting firms.

Apparently, this observation for Dutch business services suggests that productivity in business services is a rather minor factor affecting the likelihood of survival. Success and failure seem to depend on factors other than labour productivity. In the period considered, booming demand attracted many new firms. It is likely that these new firms filled the gap in demand because incumbents did not extend their activities beyond some scale. The poor overall performance of entrants, then, could be due to a lack of experience, or to the fact that new, less efficient, firms (which will fail in the future) are still active. It is also possible that these new entrants do not compete directly with incumbents because they operate in a niche.

This section looks in more detail at the productivity performance of entrants vis-à-vis that of exiting firms and incumbents. How many entrants have survived and why? Do they catch-up? Conversely, why do firms have to exit, and after how many years?

##### *Low survival of entrants in business services*

The lifetime of new firms in business services as a whole is shown in table 4.4. In general, some 15 to 25 percent of these entrants had already disappeared by the end of their first year, post-entry. After five years, no more than 25 to 40 percent were still in operation. Table 4.5 also provides information about the average length of life of exiting firms. The mean lifespan is rather low, especially in economic consulting agencies. According to EIM (1997), the mean lifespan of exiting firms in other Dutch services industries, which are relatively young industries as well, are significantly higher.

These cohort data suggest that entry in business services is easy, but that survival is not. According to Geroski (1991), there are at least two characterisations of this entry process. First, entrants are essentially 'hit-and-run starters'. High profitability, growing demand, low entry barriers and new niches in the market, attract new firms. However, the opportunities represented by these factors can change or cease to exist very easily in the short run.

Second, this entry process is primarily a selection process not unlike the evolution of animals: survival of the fittest. Entry is a type of passive learning. Jovanic (1982) constructed a dynamic model in which heterogeneous producers continually learn about their relative costs through market participation. New firms are relatively small, heterogeneous, and less cost-efficient on average than incumbents. As these new firms acquire experience, they eventually choose to expand and to improve productivity, or they are forced to exit.

*Table 4.5 Lifetime of entering firms and average mean life of exiting firms<sup>a</sup>*

	year 1	year 2	year 3	year 4	year 5	year 6
	%					
<i>Cohort</i>						
1987	84	67	60	52	42	36
1988	74	65	56	42	34	20
1989	84	70	52	41	25	22
1990	82	60	46	28	24	
	acc	comp	eng	publ	econ	news+obs
Average mean life of exiting firms	8	5	8	6	4	5

<sup>a</sup> Average mean life of exiting firms is based on cohort data for 1993-1995.

*Productivity levels of entrants: a rapid yet temporary catch up*<sup>19</sup>

The labour productivity level of new firms at their ‘time of birth’ is noticeably lower than that of incumbents (see figure 4.2). However, the differentials in productivity level between the branches are large. For example, the productivity gap between incumbents and entrants in economic consulting agencies runs up to more than 50 percent. The gap in accountancy, however, was approximately no more than 25 percent.

The low labour productivity level of entrants may be owing to their inexperience. Small firms have a lower productivity level than medium and large firms have (see table 3.4). As new firms mature, their productivity level rises rapidly. In some branches, the productivity level of new firms became comparable to that of incumbents within approximately five years.<sup>20</sup> This pattern suggests that learning-by-doing effects are present and are probably essential in order for a firm to survive the selection process. In this regard, the catch-up process in business services appears to be remarkably quick, compared to findings in manufacturing. New firms in the Canadian manufacturing industry, for instance, attained a comparable level after roughly ten years, post-entry (see Baldwin, 1995).

After 1992, the productivity gap in some of the branches widened between entering and continuing firms. Why? One tentative hypothesis is that, relative to incumbents, entering firms are more cyclical in output and labour productivity, because entering firms cannot easily adjust the number of employees. The labour productivity growth of entering firms, therefore, will lag behind that of incumbents during an economic downswing. Entrants are smaller, on average, and probably face less overhead (low-skilled) personnel, which renders them less flexible in adjusting the number of employees. When output levels fall, incumbents find it easier to lay off relatively low-skilled workers that are not needed for current production, while entrants cannot fire themselves or their single employee. An indication of this difference in employment structure is the persistent lower average wage level of incumbents.<sup>21</sup> In addition, incumbents probably notice a more sustained demand, because they have more regular customers and produce more (noncyclical) product varieties.

<sup>19</sup>These results are based on the cohort 1987. Entering firms are those firms that started in 1987, exiting firms are those firms that actually vanished in 1995. Finally, incumbents are those firms that already existed in 1987 and are still active after 1995.

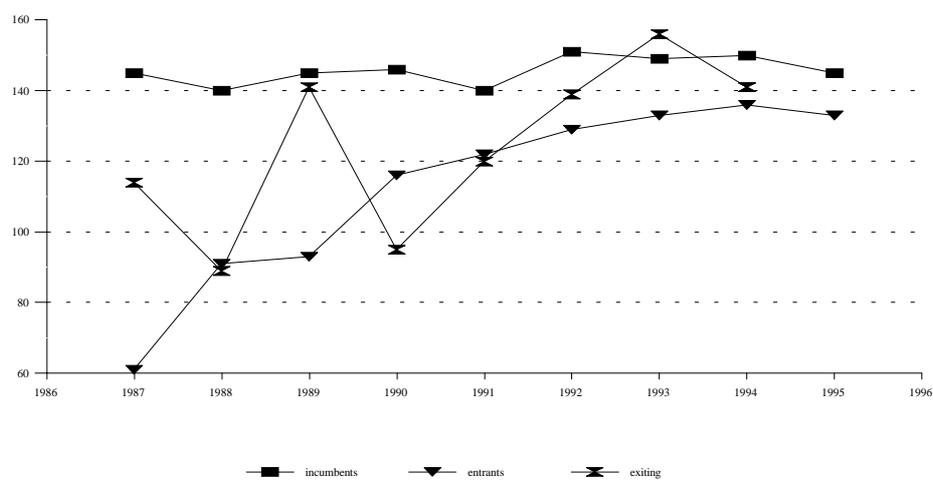
<sup>20</sup> However, the profitability of new firms does not catch up that quickly.

<sup>21</sup> Alternatively, the higher wage level of entering firms could point to fierce labour market competition. Entering firms may have to pay a mark-up to attract employees.

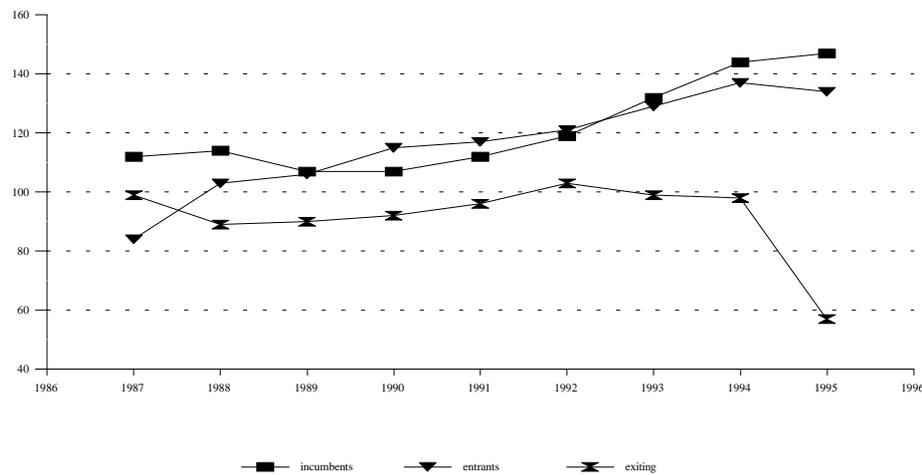
According to figure 4.1, the concentration rate is relatively stable among branches over time. It increased only in computer services. The stable pattern suggests that the effect of mergers and takeovers on the productivity level is negligible, or that the effect on the concentration rates was counterbalanced by high entry rates. The degree of concentration is below 30 percent in most parts of the business services sector. Broadly speaking, a dichotomy in concentration rates occurs: on the one hand, concentration rates are high in accountancy, computer services and news agencies. On the other hand, concentration rates are low in the remaining branches. Concentration is remarkably lower than what is found in most industries within Dutch manufacturing.

*Figure 4.2 Labour productivity levels of incumbents, entering and exiting firms, 1987-1995*

#### Economic consultancy agencies



## Accountancy

*Why do firms exit?*

The general notion is that poorly performing firms are the ones who fail and exit. If productivity level is the benchmark, the overall result confirms this notion. In all branches, except in publicity, the productivity of exiting firms lagged behind that of continuing firms.

Figure 4.2 also supports this view. The cohort 1987 is followed over time. The productivity level of exiting firms is generally below that of incumbents. Note that around 1992, the productivity level of the exiting firms (in accountancy) deteriorated and the 'shadow-of-death' effect emerges (see Griliches and Regev, 1992). The shadow-of-death effect implies that these firms are in a downward spiral, and they might well get worse if they hang around any longer. What is the driving force behind this breakdown, ending in a (compulsory?) exit? Is it a lack of profits or expectations, or does it come down to wrong expectations about future market conditions, or is it something else entirely? At this stage of research, I can only point towards some trends and put forward some conjectures.

First, and foremost, neither the profitability level nor the price-cost margins of the exiting firms appear to explain the decision to exit.<sup>22</sup> Both financial indicators were not noticeably lagging behind those of incumbents or did not deteriorate dramatically. These

<sup>22</sup> The profitability level is based on the profits before tax as a percentage of total sales. There are no considerable differences in profits among continuing, entering and exiting firms of the cohort 1987 over time.

findings coincide with Geroski (1998), who states that profitability is not a very useful summary measure of corporate performance.<sup>23</sup>

Second, the phase of the market probably contributed to the breakdown and, ultimately the exodus of these firms. Most exiting firms were hit by contracting demand around 1992. This decline coincided with a cyclical downturn in the economy. The breakdown probably occurred because recessions can have highly selective effects on a firm's performance. Yet, it is amazing that the average wage level of exiting firms hardly increased between 1987 and 1995. What does this mean? Did high-skilled employees leave these firms?

Finally, the quality of services (e.g. advice) may be insufficient to survive in a changing environment. Because preferences of customers change rapidly, i.e. requiring more specific and differentiated services, firms have to decide which customers they want to serve. Perhaps, after all, exiting firms realised that they could not provide these new products. By way of illustration: sales of accountancy, traditionally, came from auditing. Meanwhile, growth in auditing has been slipping, whereas growth in management advice (e.g. IT advice, change management and re-engineering) has been soaring. Consequently, firms in accountancy should in some way transform their organisation, tasks and product variety to be confident of maintaining their activities.

I wind up this section by summarising the main findings of possible causes for the sluggish productivity growth. Entry in business services looks easy. More than 75 percent of all firms active in 1995 did not exist in 1987. However, less than 30 percent of all entrants in 1987 kept their businesses going after more than eight years. Some of them noticeably raised labour productivity within a short period. Exiting firms, on the other hand, with initially medium productivity levels, were confronted within a short period with a remarkable decline in output and in productivity. These patterns suggest that demand opportunities are changing rapidly. In addition, the findings on incumbents suggest that a lack of or insufficient competitive pressure, including insufficient managerial effort, and a shift in demand towards new products are possible causes for the poor productivity performance of incumbents in business services. Again, these hypotheses need further research before conclusions can be drawn.

<sup>23</sup> According to Geroski, profitability is statistically incongruent with many other performance measures.

## 5 Conclusions and plans for additional research

Using internationally unique firm-level data of the Dutch business services for the period 1987 to 1995, this research memorandum documents the link between productivity performance and firm turnover in order to shed some light on the poor productivity performance of the services industries. These micro-level data are primarily exploited to examine the relationship between microeconomic productivity dynamics and aggregate productivity growth in business services, which has grown into one of the most important industries of the Dutch economy. Special attention is given to the contribution of entrants and exits to productivity growth. This research memorandum also contains a first attempt to determine the factors underlying the sluggish productivity growth.

The main findings of this research memorandum can be summarised as follows:

First, productivity growth rates of business services were apparently sluggish in the period 1987-1995. Thus, firm-level data of business services confirm the overall picture of poor productivity performance of Dutch market services. Moreover, incumbents' average productivity hardly changed over time. Nonetheless, some incumbents considerably enhanced their productivity in the period investigated. It proves that not all firms in business services face a productivity problem.

Second, tremendous within-industry heterogeneity exists in business services. The extent of productivity dispersion across firms within business services is very wide in any year. Some firms are substantially more productive than others. In addition, large differentials occur in the rates of productivity growth among firms within the same industry. Successful up-sizers and successful down-sizers in business services expanded their labour productivity by 3-5% annually. By contrast, labour productivity of unsuccessful firms diminished by 3-4% per year. This wide diversity among firms is also noticeable in variables like profits, costs and capital-labour intensities. The sources of this heterogeneity and diversity, however, are less evident.

Third, entering firms are less productive than incumbents. In the period 1987-1995, many entrants penetrated the market, while their productivity levels were initially low. Consequently, the high entry rates have hampered productivity growth so far. The weak performance of entrants is probably due to inexperience or to the fact that inefficient firms that will fail in the future are still active. When entrants do survive, their productivity level is raised within approximately five years to a level comparable to that of incumbents.

Next, exiting firms are on average equally as productive as entrants, and therefore less productive than incumbents. However, exiting firms are initially quite productive compared to entrants in some industries. A factor that could partly explain the exit of

these firms is probably a lack of sufficient demand, combined with the quality of services (e.g. advice). As the preferences of customers were changing rapidly, some firms were not able to provide the expanded range of expertise required.

Entry in business services looks easy. More than 75 percent of all firms active in 1995 did not exist in 1987. However, only a fraction of all entrants in 1987 kept their businesses going after more than eight years. The high entry and exit rates in business services suggest that the role of firm turnover is very important in this industry. Booming demand and relatively low entry barriers have persuaded many new entrepreneurs to start up a firm of their own. It could be that these entrepreneurs filled the gap in demand because incumbents did not extend their firms beyond some scale. On the other hand, it is also possible that new entrants do not compete directly with incumbents because they operate in a niche. If profits are abundant in both situations, then productivity improvements are not necessary in the short-term — especially if competition is not fierce. However, it can be expected that in the longer run, if competition becomes more fierce and demand grows at a moderate pace, more firms will be forced to enhance efficiency or will be forced to exit.

Finally, this study confirms findings of other recent micro-level studies that tremendous reallocation activities are taking place across firms, especially in services. However, the huge reallocation in Dutch business services has hampered aggregate productivity growth so far. The latter result contrasts with the findings for Dutch manufacturing, in which firm turnover appeared to account for one-third of the productivity growth.

This research memorandum has aimed, mainly, to shed light. In some ways, it is still in preliminary form. Much work remains to be done on evaluating the results. Further research is clearly needed to examine the determinants of dynamics and the causes of the poor productivity growth. There are many open issues that deserve further attention. The open issues to be addressed include the following: what is the impact of competition and entry rates on the growth rate of labour productivity in business services? Why do firms leave the market? What exact role did the business cycle play? Why do firms try to penetrate the market of business services, as the chances of survival are so meagre — not to mention the chances of success?

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**Appendix A List of branches of industry in business services**

This research memorandum uses firm-level data of Dutch business services for the period 1987-1995. This sample is based on a yearly survey collected by Statistics Netherlands (CBS) that is held among enterprises with their main activity in business services (SBI 84). At the outset, neither legal services (84.1) nor securities (SBI 84.96) were included in this survey. A full list of the branches included in business services compared to our sample is presented in table A.1. Although temporary employment agencies are present in the survey, this branch has been left aside.

Recently, a new and quite different Standard Industrial Classification (SIC) called SBI 1993 (in Dutch: Standaard BedrijfsIndeling) was introduced, and this one replaced the SBI 1974. Starting at the statistical year 1993, all industrial statistics, including the Census of Production, have been produced on the new basis. As a result, some branches, e.g. press and news agencies, are no longer classified in the SBI 1993 as a branch of industry within the business services. On the other hand, some branches were added as new types of business services.

In this research memorandum, I still employ the SBI 1974 classification. Although the consequences of the new SIC for the business services sector are limited, in order to create a consistent sample of firms, I had to reclassify some firms. However, this could easily be done, due to the fact that each firm has a unique firm classification code.

*Table A.1 Branches of industry in business services according to SBI 1974*

Branch	Sub-branch	SBI 93	Sample
84.1	Legal services	7411	No
84.11	Lawyers' offices		
84.12	Legal advice agencies		
84.13	Notary offices		
84.14	Sheriffs' offices		
84.15	Patent offices		
84.2	Auditors, accountancy, and tax-experts.	7412	Yes
84.21	Auditor offices		
84.22	Accountancy		
84.23	Tax-consultancy		
84.3	Computer services	72	Yes
84.4	Engineers, architects and other technical designing and consulting agencies	742	after 1988
84.41	Engineering services		
84.42	Architects		
84.43	Designing and consulting agencies.		
84.44	Expertise- and appraisal offices	672/703	
84.49	other technical designing n.e.c.		
84.5	Publicity and Advertising	744	yes
84.6	Economic consulting agencies	7413	yes
84.7	Press- and news agencies	924	yes
84.71	Press- and news agencies		
84.72	Self-employed journalists		
84.8	Temporary employment agencies	745	yes
84.9	Other business services	747	
84.91	Collection agencies		yes
84.92	Translation offices		yes
84.93	Copy agencies	222	no
84.94	Phototype	222	no
84.95	Exhibition/congress facilities		yes
84.96	Security services		no
84.97	Auction		yes
84.99	Other business services n.e.c.	140/911/913	no

## Appendix B Measurement issues

The productivity growth rates of the sample aggregated by branch do not necessarily have to correspond fully with the growth rates of the National Accounts. In fact, the National Accounts use different sources of data on income and expenditure and try to present a consistent overall result for the whole economy.

According to the National Accounts, the scanty labour productivity performance of the business services sector does not relate to the entire business services. The only branch of business services in which productivity growth was negative was the news agencies and other business services. In three branches productivity grew by 1% or more. In particular, economic consulting agencies and computer services considerably improved their productivity level. Surprisingly, this contrasts completely with the findings in this research memorandum. However, it is hard to imagine that the growth of employment in news agencies was the highest among business services.

The differences between the results of the National Account and the Census of Production (PS) suggest some weaknesses in official statistics. The differences in employment growth are especially remarkable at a lower level of aggregation. Although the National Account and PS apply different employment concepts, i.e. full-time equivalents (National Accounts) versus number of people employed (PS), this does not distort the comparison between the two sources on an aggregated level.

*Table B.1 Output, employment and labour productivity growth of business services<sup>a</sup>, 1988-1995*

	Volume gross output		Employment		Labour productivity	
	NA	PS	NA	PS	NA	PS
	annual percentage changes					
acc	5	4½	2¾	3½	2¼	1
comp	8¼	8¾	3¾	10½	4½	- 1½
publ	4½	6¼	4½	5	0	0
econ	10¼	9¼	4½	14½	5½	- 4½
news+obs	10	7¾	12	6	-2	1¾
Business services <sup>b</sup>	6¼	7	6	7	¼	0

<sup>a</sup>Employment in full time equivalents for National Accounts (NA).

<sup>b</sup>Including acc, comp, publ, econ, and news+obs.

Source: National Accounts: Additional information CBS National Accounts.

## Appendix C Detailed statistics

*Table C.1 Summary statistics of accountancy, 1987-1995*

	1987	1995	1988-1995
	level		annual percentage change
<i>Labour productivity (x1000)<sup>a</sup></i>			
All	92.0	99.4	1
Incumbents	104.7	115.0	1¼
Entrants		93.6	
Exits	87.3		
<i>Employment (x1000)</i>			
All	50.7	66.4	3½
Incumbents	13.8	18.1	3½
Entrants		48.3	
Exits	36.9		
<i>Gross output (billion)<sup>c</sup></i>			
All	4.7	6.6	4½
Incumbents	1.4	2.1	4¾
Entrants		4.5	
Exits	3.2		

<sup>a</sup> Gross output per employee in terms of 1987 guilders.

<sup>b</sup> Gross output in terms of 1987 guilders

*Table C.2 Summary statistics of computer services, 1987-1995*

	1987	1995	1988-1995
	level		annual percentage change
<i>Labour productivity (x1000)<sup>a</sup></i>			
All	168.4	150.3	- 1½
Incumbents	185.8	170.1	- 1
Entrants		146.7	
Exits	163.4		
<i>Employment (x1000)</i>			
All	27.2	60.0	10½
Incumbents	6.1	9.3	5¼
Entrants		50.7	
Exits	21.0		
<i>Gross output (billion)<sup>c</sup></i>			
All	4.6	9.0	8¾
Incumbents	1.1	1.6	4¼
Entrants		7.4	
Exits	3.4		

<sup>a</sup> Gross output per employee in terms of 1987 guilders.

<sup>b</sup> Gross output in terms of 1987 guilders

Table C.3 Summary statistics of publicity, 1987-1995

	1987	1995	1988-1995
	level		annual percentage change
<i>Labour productivity (x1000)<sup>a</sup></i>			
All	261.0	269.1	½
Incumbents	230.2	265.4	1¾
Entrants		269.5	
Exits	271.1		
<i>Employment (x1000)</i>			
All	19.1	30.3	6
Incumbents	4.7	2.6	- 7½
Entrants		27.7	
Exits	14.4		
<i>Gross output (billion)<sup>c</sup></i>			
All	5.0	8.2	6¼
Incumbents	1.1	0.6	- 5¾
Entrants		7.5	
Exits	3.9		

<sup>a</sup> Gross output per employee in terms of 1987 guilders.

<sup>b</sup> Gross output in terms of 1987 guilders

Table C.4 Summary statistics of economic consultancy, 1987-1995

	1987	1995	1988-1995
	level		annual percentage change
<i>Labour productivity (x1000)<sup>a</sup></i>			
All	104.8	97.9	- 4½
Incumbents	154.3	133.7	- 1¾
Entrants		94.4	
Exits	136.0		
<i>Employment (x1000)</i>			
All	13.2	38.6	14
Incumbents	3.5	3.5	0
Entrants		35.1	
Exits	9.7		
<i>Gross output (billion)<sup>c</sup></i>			
All	1.9	3.8	9¼
Incumbents	0.5	0.4	- 1¾
Entrants		3.3	
Exits	1.3		

<sup>a</sup> Gross output per employee in terms of 1987 guilders.

<sup>b</sup> Gross output in terms of 1987 guilders

*Table C.5 Summary statistics of news and other business services, 1987-1995*

	1987	1995	1988-1995
	level		annual percentage change
<i>Labour productivity (x1000)<sup>a</sup></i>			
All	94.8	108.9	1¼
Incumbents	129.9	148.3	1¼
Entrants		94.2	
Exits	76.6		
<i>Employment (x1000)</i>			
All	27.7	44.1	6
Incumbents	9.4	12.0	3
Entrants		32.1	
Exits	18.2		
<i>Gross output (billion)<sup>c</sup></i>			
All	2.6	4.8	7¾
Incumbents	1.2	1.8	4¾
Entrants		3.0	
Exits	1.4		

<sup>a</sup> Gross output per employee in terms of 1987 guilders.

<sup>b</sup> Gross output in terms of 1987 guilders

*Figure C.1 Distribution of log productivity of engineering, 1989-1995*

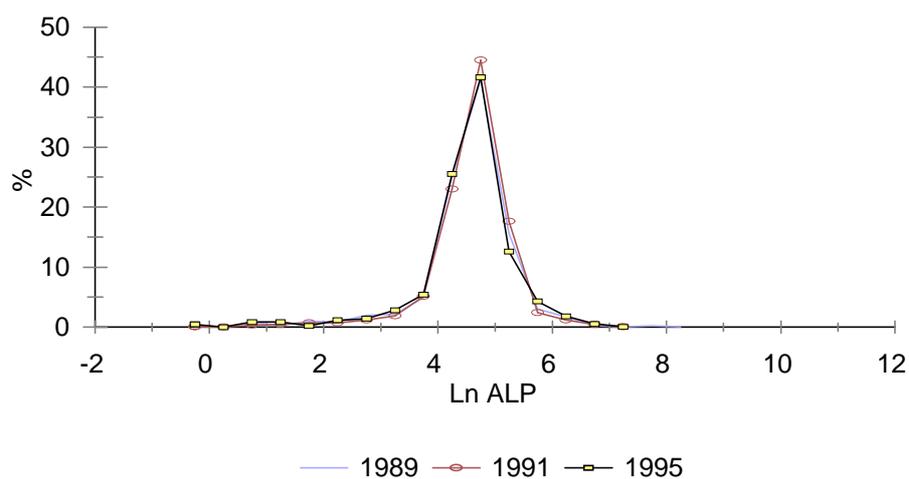


Figure C.2 *Distribution of log productivity of publicity and advertising, 1987-1995*

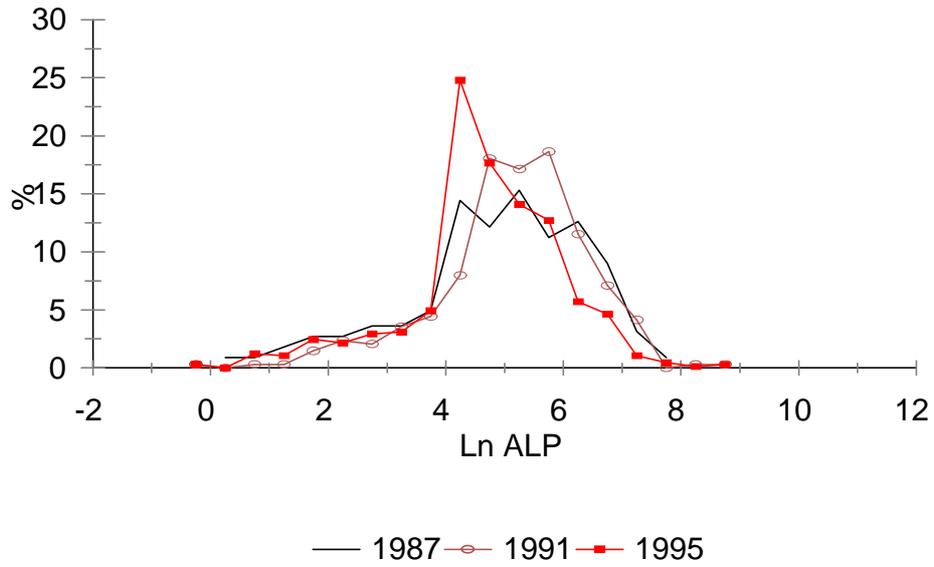


Figure C.3 *Distribution of log productivity of economic consultancy, 1987-1995*

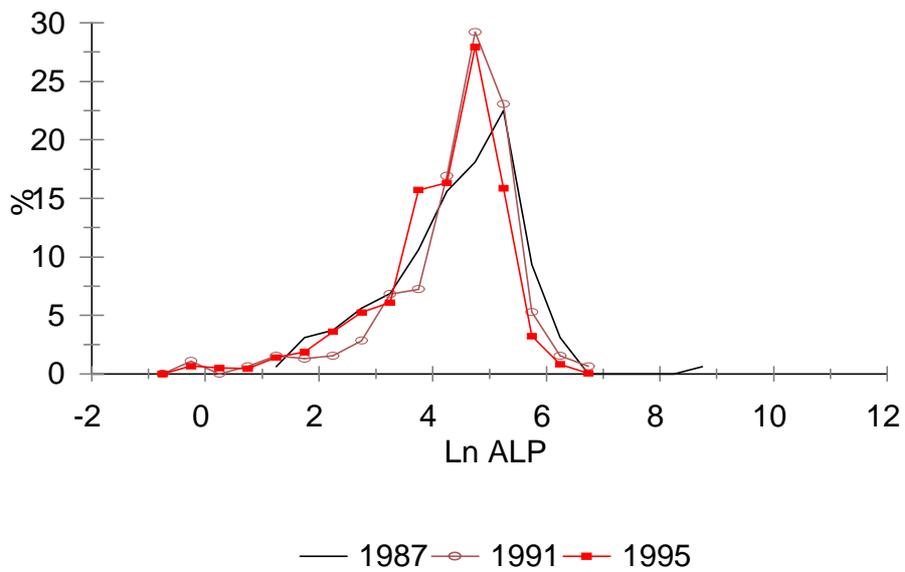
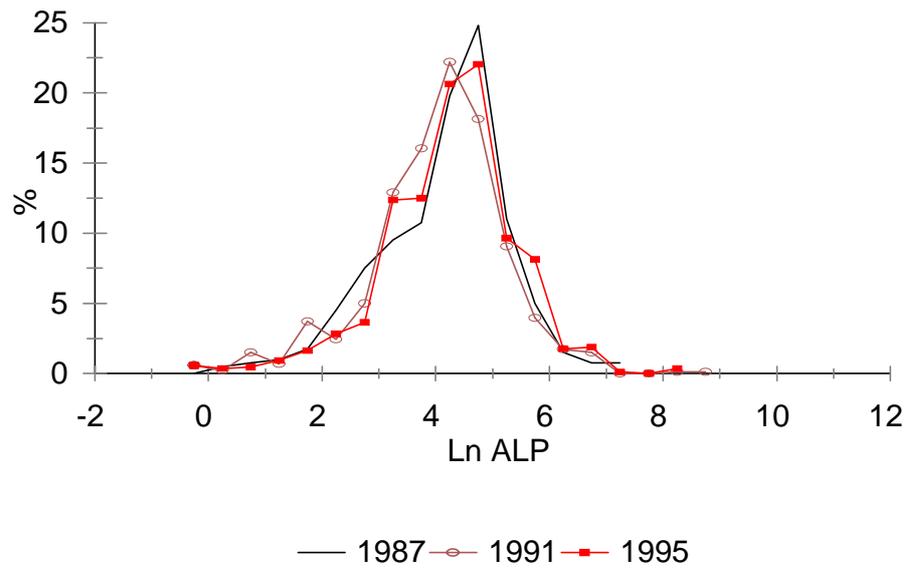


Figure C.4 *Distribution of log productivity of press, news and other business services, 1987-1995*



**Abstract**

Labour productivity growth in Dutch business services has been lagging in recent years. Using a unique firm-level data set of Dutch business services, this research memorandum analyses the effect of firm turnover for labour productivity growth. Special attention is given to the contribution of entering and exiting firms to productivity growth. The study shows that entering firms are less productive than incumbents. Remarkably, entering firms are equally as productive as exiting firms. Since many new firms entered the market of business services in the period investigated, aggregate productivity growth did not improve. Moreover, incumbents' productivity on average hardly changed over time, though a wide dispersion in firm productivity growth rates exists.