CPB MEMORANDUM
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SOURCES OF STRUCTURAL GROWTH IN BUSINESS SERVICES

Summary:
Over the last two decades, business services industry went through a period of strong structural growth in most OECD countries, including The Netherlands. Its growth was higher than the market sector average and also higher than the average for market services. This report identifies the factors behind structural growth of the business services industry. This memorandum is a background study in a wider CPB research project, an internationally comparative study on the business services industry.

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1 INTRODUCTION

Business services industry[2] has been among the industries with the highest growth rates, in terms of employment and in terms of value added. This holds for the Netherlands as well as for most OECD countries. This memorandum tries to explain the strong growth performance of business services industry.

1.1 Demarcation of the research subject

In many countries, the growth rates of BS industry for a decade or more has been higher than the average for the market sector, giving sufficient reason to speak of a positive structural growth gap. The paper has the following aims:

1. assess the evidence on a structural growth gap between BS industry and the rest of the market sector;
2. explain the structural growth performance of BS industry.

This memorandum is a background study in a wider CPB research project, an internationally comparative study on the business services industry, to be finalised in 2001. The aims of the full project are to: (a) assess which factors determine the growth of business services industry, (b) assess growth perspectives of Dutch BS industry in view of apparent strengths and weaknesses; and (c) identify policy areas that can be crucial in furthering growth of this industry. The performance of Dutch BS industry is compared with that in a number of OECD benchmark countries. The comparison allows the identification of commonalities, national particularities, strengths and weaknesses. Benchmarking is expected to generate a better understanding of growth-enhancing and growth-retarding policies. Finally, the project analyses how internationalisation of company activities, through trade and direct investment, affects growth performance of the BS industry. Future project publications will concentrate on more forward-looking factors, dealing in particular with the question whether structural growth BS industry was a temporary phenomenon of the 1990s, or a phenomenon that can be expected to continue during the next 5 to 10 years.[3]

[2] Throughout this report, business services will be abbreviated as BS.

[3] Earlier research papers appeared on competition structure and labour productivity development in BS industry (Kox 2000) and on internationalisation trends in this industry (Kox 2001). A report, due in Summer 2001, will present a assessment of strengths and weaknesses of the Dutch BS industry, its future growth perspectives, and the policy perspective that can be derived from the international comparison.

1.2 Structure of this report

The plan of this paper is as follows. Chapter 2 first presents an international comparison of structural growth data for BS industry. Chapter 3 deals with explanatory factors for the structural growth of BS industry. Chapter 4 summarises the conclusions.

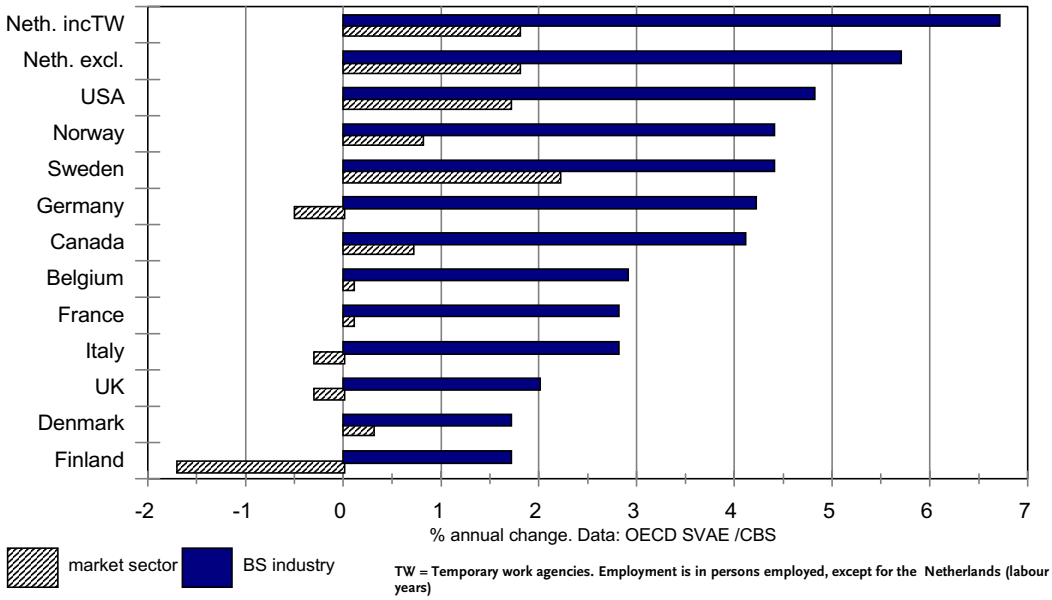
2 RECENT GROWTH PERFORMANCE OF BS INDUSTRY

This chapter surveys empirical evidence on the extent of the structural growth in BS industry. Structural growth of an industry is defined as a persistent positive growth rate difference between that industry and the rest of the market sector in a national economy. Subsequently, two dimensions of structural growth are reviewed, employment and value added.

2.1 Employment growth

During last decade, employment in BS industry of most OECD countries has been growing at a remarkably fast pace. Figure 1 compares employment growth of BS industry and the total market sector. A wide definition of 'market sector' is used, because of substantial inter-country differences in the commercialisation of education, social security and health. The market sector is defined as the total of all industries less public administration and defence.

Figure 1 Employment growth in BS industry and total market sector, selected countries, 1991-98



TW = Temporary work agencies. Employment is in persons employed, except for the Netherlands (labour years)

Employment growth in Dutch BS industry was stronger than in the 11 other OECD countries. The BS industries of the USA, Norway, Sweden, Germany and Canada also recorded growth

rates above 4 per cent.[4] The actual employment growth gap between the Netherlands and the other countries is even larger than Figure 1 shows, due to a measurement difference. Dutch employment data are expressed in full-time labour years, whereas the data for other countries are expressed in persons employed (no correction for part-time jobs).

BS industry includes temporary work agencies, and this holds for all benchmark countries. The temporary work branch developed exceptionally fast in the Netherlands (Dunnewijk 2001). We checked whether the growth difference between the Netherlands and the other countries was caused by the exceptional growth of BS industry. Leaving temporary work agencies out of Dutch BS employment data (cf. *Neth. excl.* in Figure 1), however, did not remove the growth difference. Figure 1 allows a direct comparison between employment growth in BS industry and the total market sector. A brief look is sufficient to tell that employment growth in BS industry must have a structural character.

Table 2.1 Growth difference between employment [a] in the BS industry and in the total market sector [e]

	1971-80	1981-85	1986-90	1991-95	1996-98
	%-point, average annual growth				
Belgium[b) c) g)]	4.5	1.6	2.9	2.3	3.6
Canada	5.4	3.1	3.8	3.0	5.2[q)]
Denmark	..	..	1.4[o)]	1.3	1.6
Finland	3.8[m)]	5.8	7.2	2.0	5.8
France[j)]	4.0[k)]	3.2	6.5	2.1	3.7
Germany	..	..	..	4.9[p)]	4.5
Italy[b)]	..	..	3.2[o)]	2.1	4.9
Neth. incl. TW[h) g)]	3.3	4.5	4.1	4.2	5.5
Neth. excl. TW[h) g)]	3.2	4.2	2.9	3.8	3.7
Sweden[j)]	..	3.6	6.4	2.0	4.1
UK[d)]	2.8[n)]	4.0	3.3	2.4	2.3
USA	4.0	5.5	3.9	2.6	4.1[q)]

Notes: a) in persons employed. b) BS plus real estate. c) For the years before 1995 estimated as 50% of total employment in community, social and personal services (benchmark year 1995). d) BS plus real estate plus finance and insurance. e) Because of inter-country differences in the degree of commercialisation of social services, health and education, a wide definition of market sector has been used. Market sector employment is calculated as total employment in all industries less employment in '*Producers of Government Services* (ISIC2)' or *'Public Administration and Defense*' (ISIC3, group 3.1). g) Data up to 1995 based on ISIC 2; after 1995 on ISIC 3. h) TW stands for 'temporary work agencies'. i) 1987-1990. j) Data up to 1990 based on ISIC 2; after 1990 on ISIC 3. k) 1973-80. m) 1975-80. n) 1978-80. o) 1988-90. p) 1992-95. q) 1996-97. Source: OECD, Services: Statistics on Value Added and Employment (SVAE), May 2000. Dutch BS data from CBS.

[4] UK employment data include banking, finance, insurance and real estate, so that the depicted UK growth rates can only in a very rough sense be regarded as indication for BS employment growth. Belgian and Italian data include the real estate sector. US data cover the period 1991-97, while Canadian data refer to the period 1991-96.

Table 2.1 presents more detailed data on the development of the structural employment growth gap over time. BS employment - in all benchmark countries and in all sub-periods for which data were available - grew faster than employment in the total market sector. In the last part of the 1990s, the employment growth gap between BS and the market sector increased compared to the earlier part of the 1990s. The business cycle upswing did not change this pattern. Table 2.1 deepens the picture of a long-term structural growth of BS industry. Does perhaps structural BS employment growth simply form part of a general tertiarisation process? This is not the case. BS employment in all benchmark countries also grew faster than employment in the total commercial services sector. A detailed country-by-country comparison on this issue is given in Annex I, Table A1.

High growth rates for a relatively new industry do not say anything about the weight of this development for the entire economy. It is absolute numbers of jobs that count. Table 2.2 compares the BS employment increment with that of the rest of a country's market sector. Relative to the BS share in total market sector employment - in 1990 between 6 and 11 per cent in most countries - the industry's contribution to total employment shifts was disproportionately large. These data again show that the growth of BS employment represents a major shift in industry structure.[5]

Table 2.2: Business services as job creator: absolute annual employment changes, 1991-98, selected countries

	1990 share of BS in total market sector employment	period 1991-95		period 1996-98	
		Business services	all market industries	Business services	all market industries
	%	*in thousands of employed persons*			
Denmark	6.8	5	-83	12	136
France	9.7	185	-309	297	405
Germany [d]	6.2	487	-1147	350	-279
Italy [a]	7.6	110	-843	299	239
Neth. incl. TW [c]	11.3	145	213	201	497
Neth. excl. TW [c]	7.7	98	213	103	497
Sweden [b]	8.3	-1	312	41	45
USA	9.8	2124	7510	1570	5030

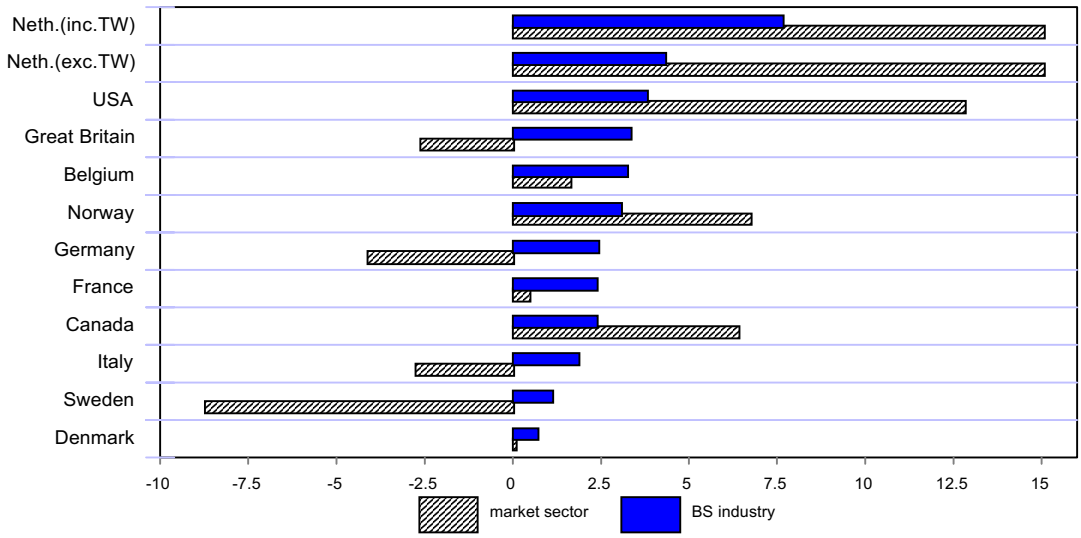
Notes: a) BS plus real estate. b) Data for 1991-95 based on ISIC 2; for 1996-98 on ISIC 3. c) In labour years. Data for 1991-95 based on NA revision 1993. d) 1992-95. Sources: OECD, Services: Statistics on Value Added and Employment (SVAE), May 2000. Dutch BS data from CBS.

In Figure 2 the absolute employment shifts are expressed as a percentage of 1990 employment in the total market sector. The parallel between employment growth in the Netherlands and the

[5] Annex 3 gives 1999-2002 projections for the contribution of Dutch BS industry to the creation of new jobs in the market sector.

USA is striking. Both countries witnessed high growth rates, both for total market sector employment and for the BS industry. To a lesser extent this can also be seen in Canada and Norway. In all other countries, the rest of the market sector performed weakly in terms of employment growth.

Figure 2 Change in the number of jobs 1991-98 by industry (expressed as % of total jobs in the market sector in 1990)



2.2 Growth of real value added

A second way to portray structural growth performance of BS industry is by comparing its value-added growth with that of the total market sector.

Figure 3 gives country data on average annual growth of real value added in the period 1991-98. By far the highest value-added growth rates for BS industry are found in the Netherlands and Norway, followed at a distance by Canada, Germany and the UK. The US growth rate is only about one-third of the Dutch one. Belgium, France and Italy are found at the bottom of the growth list.

In all benchmark countries (except Italy), BS industry also grows faster than the total market sector, as Table 2.3 displays. The structural growth gap is largest again in the Netherlands (no matter whether temporary work agencies are included or excluded), Sweden and Norway, followed by Germany and Canada.

Figure 3 Average annual growth of real value added by sector, 1991-98, selected countries

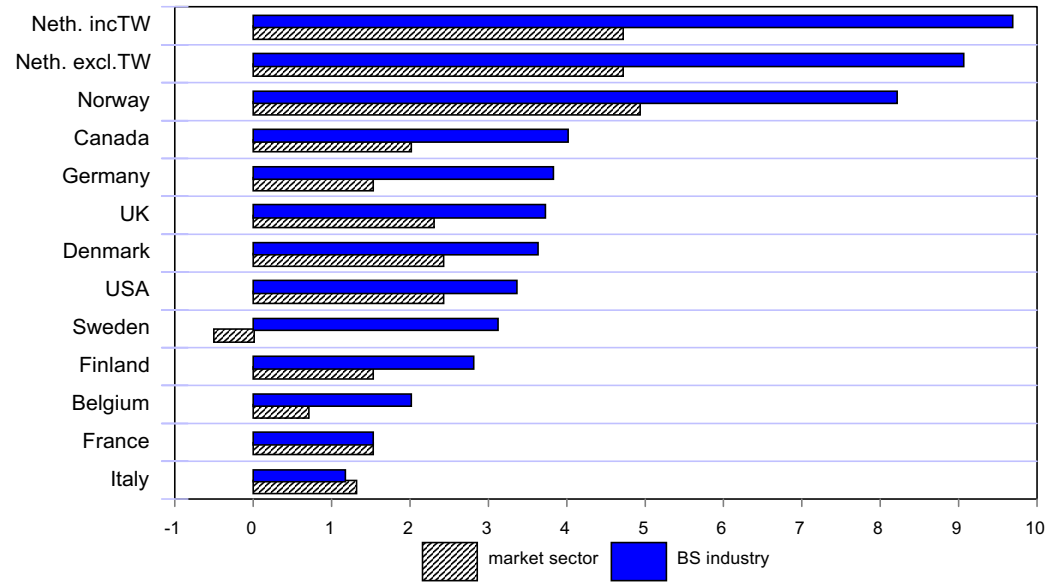


Table 2.3 Differences between BS and total market sector[b] in average annual growth of real value added

Country	1971-80	1981-85	1986-90	1991-95	1996-98
	%-point, average annual growth				
Belgium[b]	..	..	-0.4	1.2	1.2
Denmark	..	..	1.3	1.2	0.4
Finland	..	2.8	1.9	0.1	3.0
France[c]	..	-0.1	4.9	-0.5	2.5
Germany	..	..	..	1.9	2.2
Italy[b]	..	..	0.7	-0.4	0.0
Neth. incl. TW [d] [f]	..	1.0	4.0	4.1	5.5
Neth. excl. TW[d] [f]	..	..	..	3.8	4.5
Norway	..	4.9	0.4	3.4	3.5
Sweden[c]	..	5.1	5.5	4.0	0.9
UK	..	0.8 [g]	0.7[g]	0.5 [b]	3.0 [b]
USA[h]	3.6	5.5	3.7	0.7	2.1

Notes: a) Because of inter-country differences in commercialisation of social services, health and education, a wide definition of market sector is used. Market sector value added is calculated as gross domestic product in all industries less value added in '*Producers of Government Services* (ISIC2)' or *'Public Administration and Defence*' (ISIC3). b) BS plus real estate. c) Data up to 1995 based on ISIC 2; after 1995 on ISIC 3. d) TW stands for 'temporary work agencies'. e) 1987-1990. f) Data up to 1995 based ISIC 3 (NA rev. 1993); after 1995 based on ISIC 3 (NA rev. 1995). g) Data for Finance, Insurance, Business Services and Real Estate. h) Data after 1987 based on chain volume measures with 1992 as base year. Sources: OECD, Services: Statistics on Value Added and Employment (SVAE), May 2000. Dutch data from CBS and CPB long-range time series database.

Finally, Figures 1 and 3 together allow a first impression of a sloppy labour productivity development in BS industry. Value added in the total market sector almost everywhere[6] grew faster than employment. In all but two countries, gross labour productivity growth in the total market sector was higher than in the BS industry.[7] The labour productivity issue will be further explored in the next chapter.

2.3 Conclusions

The empirical evidence reviewed in this chapter can be summarised in the following points:

- BS employment grew faster than overall employment in the market sector, both in the first and second half of the 1990s.
- BS employment also developed faster than the rest of market services.
- In absolute terms, job creation in BS industry in all countries represented a major shift in market sector employment.
- The growth difference between BS industry and the market sector was smaller for value added than for employment.
- Structural growth of BS employment and BS value added was stronger in the Netherlands than in most benchmark countries.
- The growth performance of Dutch BS industry can only to a small extent be explained from the strong growth in temporary work agencies.

[6] Not in Sweden.

[7] The expression *gross* labour productivity growth is used, because the data have not been corrected for a differential development of contractual annual labour hours and for inter-country differences in part-time working.

3 Explanations for the growth of BS industry

This chapter surveys the literature on the factors behind structural growth of the BS industry. Structural growth of BS industry is defined as a positive growth difference between BS industry and the total market sector in an economy. Sometimes, general theoretical insights were applied to the BS industry. The present paper neither envisages conclusive empirical testing of possible explanations of structural BS growth, nor can it quantify the relative weights of specific explanatory factors. Where possible, however, quantitative evidence is added to illustrate the points made in the literature.

3.1 Growth of the BS industry in a historical context

Interest for BS industry in economic theory is quite new. The surge in attention is to a large extent a side-product of structural change in the economy. Nineteenth century classical economists like Smith and Ricardo used to regard services as an unproductive activity having more to do with distribution and consumption of wealth than with production of wealth. An exception was sometimes made for transport. The implicit association of production with *material* goods production disappeared with the ascent of neoclassical economic theory since the early 1870s. But in the century to follow, theoretical interest for growth contributions of the services sector was only allotted in a step-motherly way. A gap remained between theoretical acknowledgement that value could be created through material and non-material production, and empirical treatments in which the emphasis completely remained on material production. This dichotomy was seriously challenged when Colin Clark in 1938 pointed out that no less than 50 per cent of the British and US labour populations worked in professions other than mining, agriculture, manufacturing and crafts.[8] He framed the catchword "tertiary production" for this no longer negligible category, but still it was treated as a heterogeneous residual of goods production. Thirty years later, Baumol pointed out that growth of the services sector could be a drag on macroeconomic growth, because it has a limited potential for productivity increase.[9] Ensuing discussion soon led to the conclusion that at least an analytical distinction had to be made between government services, consumer-oriented market services and producer-oriented market services. Theoretical interest for producer services as a specific economic sector thus dates back from the 1970s.[10] It was not before another decade had passed that *business services* -

[8] Clark (1938). Cf. Fisher (1939) on the then contemporary debate on the growth of services.

[9] Baumol (1967).

[10] Browning and Singelmann (1978) came up with a useful disaggregation of tertiary services, distinguishing four categories: distributive services (trade, transport and communication), producer services (banking, insurance, business services), social services (government, health, education, non-profit organisations) and personal services.

a sub-set of producer services - got any real theoretical and empirical appreciation. The interest was triggered by the industry's high growth rates and the complexity of its relationship with outsourcing, innovation and productivity tendencies elsewhere in the economy. Moreover, the high rate of human capital input in business services made the industry an interesting case from the perspective of modern growth theory and the economics of technical change.

3.2 Analytical framework for an assessment of structural BS growth

A literature survey may yield a panoply of explanatory factors, related to different aspects (technology, institutions, preferences, organisation) and operating at different levels of analysis (micro, meso, macro). Several factors can operate at the same time, though at different levels of analysis. Other factors may hold for particular periods, for particular branches, or for countries in a particular stage of development.
Some 'system in the madness' can be brought by starting from the viewpoint that business services are intermediary products. Structural growth of BS industry cannot meaningfully be analysed without paying full attention to inter-industry relations. Making a virtue of necessity, structural growth of BS industry can be analysed through an input-output (i/o) accounting framework. Box 1 formalises the analytical framework.

Three groups of growth factors can be distinguished, viz. changes in final demand, changes in the system of intermediate deliveries within the market sector, and privatisation by the government sector:

- *Final demand* for the BS industry may have grown stronger than for the rest of the market sector. This can be can be caused by two effects. The first is that direct final demand for the BS industry grows stronger than direct final demand for the rest of the market sector. The second, more indirect effect is caused by shift of total final demand towards those industries that use more BS inputs than inputs from the rest of the market sector. Section 3.3 deals in more depth with both types of final-demand related factor.
- *Privatisation* trends in the government (non-market) sector may have generated more growth in the BS industry than in the rest of the market sector. This factor is discussed in section 3.4.
- BS industry may have got a larger weight in the *system of intermediary deliveries* between market industries, resulting in a changing set of input-output coefficients. For an intermediary industry like the BS industry such a shift is likely to be important. An analytical complication is that changes in input-output coefficients can be the result of a whole array of technologic, organisational and institutional changes. Section 3.5 and its sub-sections distinguish several of these factors: outsourcing, product innovation, and deregulation.

Box 1 Decomposition of structural growth rate difference

For the analysis at hand, a simple input-output system may do. Three economic sectors are distinguished: BS industry, other market industries and non-market sectors, represented by the suffices B, M and Q, respectively. The i/o system is:

$$\mathbf{x} = \mathbf{R}\ \mathbf{y} \qquad (1)$$

in which:

$\mathbf{x}$: vector of gross production

$\mathbf{R}$: Leontief inverse matrix (3 x 3 dimension)

$\mathbf{y}$: vector of final demand

The growth of gross production between period 1 and period 0 is given by:

$$\Delta\mathbf{x} = \mathbf{x}_1 - \mathbf{x}_0 = \mathbf{R}_1\,\mathbf{y}_1 - \mathbf{R}_0\,\mathbf{y}_0 = \Delta\mathbf{R}\,\mathbf{y}_0 + \mathbf{R}_0\,\Delta\mathbf{y} + \Delta\mathbf{R}\,\Delta\mathbf{y} \qquad (2)$$

The change in final demand can be expressed in terms of the initial final demand and a row vector ($\mathbf{f}$) that gives growth perunages of total final demand per sector, so that:

$$\Delta\mathbf{x} = \Delta\mathbf{R}\,\mathbf{y}_0 + \mathbf{R}_0\,\mathbf{f}\,\mathbf{y}_0 + \Delta\mathbf{R}\,\mathbf{f}\,\mathbf{y}_0 \qquad (3)$$

Note that the base year shares of final demand are used as weights for the growth rates. Oosterhaven and Hoen (1998) propose a weighting method in which the final year shares and the base year shares each are taken for half of total weights. Although this method reduces the base year bias, it will be omitted for expository reasons.

The framework so far can be applied straightforwardly for tracing the causes of the structural growth rate difference between the BS sector and the other market sector:

$$\dot{x}_B - \dot{x}_M = \frac{\Delta x_B}{x_{Bo}} - \frac{\Delta x_M}{x_{Mo}} \qquad (4)$$

After filling in all elements from the full i/o system, the structural growth rate difference can be expressed like in equation (3):

$$\begin{aligned}\dot{x}_B - \dot{x}_M = {} & \dot{y}_B\, y_{Bo}\left[\frac{r_{BBo}+\Delta r_{BB}}{x_{Bo}} - \frac{r_{MBo}+\Delta r_{MB}}{x_{Mo}}\right] + y_{Bo}\left[\frac{\Delta r_{BB}}{x_{Bo}} - \frac{\Delta r_{MB}}{x_{Mo}}\right] \\ & + \dot{y}_M\, y_{Mo}\left[\frac{r_{BMo}+\Delta r_{BM}}{x_{Bo}} - \frac{r_{MMo}+\Delta r_{MM}}{x_{Mo}}\right] + y_{Mo}\left[\frac{\Delta r_{BM}}{x_{Bo}} - \frac{\Delta r_{MM}}{x_{Mo}}\right] \\ & + \dot{y}_Q\, y_{Qo}\left[\frac{r_{BQo}+\Delta r_{BQ}}{x_{Bo}} - \frac{r_{MQo}+\Delta r_{MQ}}{x_{Mo}}\right] + y_{Qo}\left[\frac{\Delta r_{BQo}}{x_{Bo}} - \frac{\Delta r_{MQo}}{x_{Mo}}\right]\end{aligned} \qquad (5)$$

Equation (5) contains contributions of three main factors behind structural growth of the BS industry:

* differential growth of final demand;
* changes in the system of intermediary deliveries between BS industry and the other market sector;
* differential effects of privatisation by the non-market sector.

he aforementioned factors all may contribute to the explanation of structural growth of production and employment in the BS industry. With regard to structural employment growth, an additional factor must be taken into account, namely the lagging productivity performance of BS industry. It can explain part of structural employment growth difference between BS industry and the rest of the market sector.[11] This subject is treated in section 3.6. Finally, section 3.7 summarises the conclusions.

3.3 The impact of final demand and final preferences

According to Pasinetti (1981), the main forces driving structural change within an economy are (a) technological change, and (b) shifts in final demand of the type described by Engel's law. The latter refers to growing demand for luxury goods, i.e those goods (and services) characterised by an above-unity income elasticity.[12] Engel's law mainly operates through consumer and export demand. Final demand changes induced by technological change may manifest themselves through all final demand categories.

If a faster-than-average growth of total final demand explains structural growth of the BS industry, then the following condition –based on the analytical framework of Box I (equation 5) – must apply:

$$\dot{y}_B\, y_{Bo}\left[\frac{r_{BBo}+\Delta r_{BB}}{x_{Bo}} - \frac{r_{MBo}+\Delta r_{MB}}{x_{Mo}}\right] + \dot{y}_M\, y_{Mo}\left[\frac{r_{BMo}+\Delta r_{BM}}{x_{Bo}} - \frac{r_{MMo}+\Delta r_{MM}}{x_{Mo}}\right] + \\ + \dot{y}_Q\, y_{Qo}\left[\frac{r_{BQo}+\Delta r_{BQ}}{x_{Bo}} - \frac{r_{MQo}+\Delta r_{MQ}}{x_{Mo}}\right] > O \qquad (6)$$

Condition (6) shows that a positive final demand shift may emanate from BS industry itself, the other market sector, or the non-market sector. The contribution of final demand factors to structural growth depends on four elements: initial final demand levels by sector (y_{jo}), initial intermediate input intensities by sector (r_{ijo}), final demand growth rates by economic sector ($\dot{y}_j$), and the change in intermediate input intensities by sector (Δr_{ij}). The relevance of intermediate input intensities can be illustrated easily. Suppose that $\dot{y}_B = \dot{y}_M = \dot{y}_Q$ holds in condition (6), then still a positive contribution of final demand to structural growth of the BS industry can result, depending on the terms between brackets. Hence, structural growth of BS

[11] This analysis can be coupled with the framework of Box 1. Let $\boldsymbol{a}$ be a vector of direct employment by economic sector (B,M,Q) and $\boldsymbol{H}$ a diagonal matrix with labour intensities $\boldsymbol{h_i}$ (labour quantity per unit of value added, i.e. the inverse of labour productivity). Then it holds that: $\boldsymbol{a = H\,y}$. By analogy with equation (3) of Box I, we derive: $\boldsymbol{\Delta a = \Delta H\, y_o + H_o f y_o + \Delta H\, f y_o}$. And this result can be used for finding $\dot{a}_B - \dot{a}_M$.

[12] For Germany, the Deutsche Bank (1996) found income elasticities for services demand in the range of 1.5 and higher (quoted in Klodt *et al.* 1997).

industry can result if final preferences shift towards sectors that have higher-than-average intermediate BS input-intensities, either initially or after the change in intermediate input intensities.

The final demand growth rates by economic sector ($\dot{y}_j$) can be decomposed further by specifying the growth rates of individual final demand components, i.e. private consumption (C), government consumption (G), investments (I), and exports (E). Hence, using the base-year final-demand shares as weights, final demand growth rates can be decomposed into:

$$\dot{y}_j = \dot{C}_j \frac{C_{jo}}{y_{jo}} + \dot{G}_j \frac{G_{jo}}{y_{jo}} + \dot{I}_j \frac{I_{jo}}{y_{jo}} + \dot{E}_j \frac{E_{jo}}{y_{jo}} \qquad \text{with } j = B, M, Q \tag{7}$$

The rest of this section first reviews empirical evidence on the question whether or not condition (6) *as a whole* applies. It is investigated subsequently what a shift in final preferences contributed to the overall results.[13]

Effect of the change in direct final demand

Very few growth decomposition studies for the BS are available in the literature. Oosterhaven and Hoen (1998) provide a sectoral decomposition of real value-added growth (1975-85) on the basis of consolidated European i-o tables. They distinguish the sector 'other market services' which comes close to BS industry.[14] Their results, presented in Table 3.1, indicate that a higher final demand growth cannot explain the structural growth difference between European 'other market services' and overall growth in the European economy. Though private consumption contributed positively to the structural growth difference, this positive effect was more than outdone by other final demand categories. Hence, total final demand for BS services has grown slower than final demand for the rest of the market sector.

[13] Since BS industry is an intermediary industry, few BS products directly enter final consumption. The main exceptions are: consumer-oriented software products, software products that enter final demand as immaterial investment goods, notarial services and services by architects. Cf. Alladin, Suijker en Kuypers (1999) for data on final demand structure for Dutch BS branches.

[14] Other than trade, repair, transport, lodging, communication and financial services.

Table 3.1 Decomposition of real value-added growth by final demand category, selected industries, Europe-6 [a] and Netherlands, 1975-85

	Total growth real value added	Growth total final demand by category [d]					Other growth sources
		Private consumption	Government consumption	Investment	Exports	Subtotal [c]	
	in per cents of annualised change						
'Other market services' EU-6 [b]	4.3	1.3	0.2	0.2	0.6	2.2	2.1
Total economy EU-6	2.6	1.0	0.6	0.3	0.8	2.7	-0.1
Difference: structural growth	1.7	0.3	-0.4	-0.1	-0.2	-0.5	2.2
Market services Netherlands	4.4	1.5	0.1	0.2	0.9	2.6	1.8
Total economy Netherlands	2.2	1.0	0.3	0.3	1.1	2.5	-0.3
Difference: structural growth	2.2	0.5	-0.2	-0.1	-0.2	0.1	2.1

Notes: (a) Intercountry i-o table includes Germany, France, Italy, the Netherlands, Belgium and Denmark. (b) Other than repair, trade, lodging, transport, communication and financial services. c) Differences in the addition are due to rounding. d) Level weights in growth decomposition are initial year (50%) and final year (50%).Data source: Oosterhaven and Hoen (1998, p. 513-8).

Table 3.2 Sources of employment growth in the Netherlands, 1975-93

	Employment growth	Sources of employment growth				
		Gross labour productivity change	Change domestic final demand	Change foreign final demand (exports)	Import substitution	Change in system of intermediate deliveries (i/o coefficients)
	average annual change percentage					
BS industry	3.9	1.0	1.5	1.7	-0.4	2.1
Total Dutch economy	0.6	1.8	1.4	1.2	-0.4	0.1
Difference: structural growth	3.3	-0.8	0.1	0.5	0.0	2.0

Data source: Brus (1998, p. 37)

Table 3.3 Estimated national income share of software inputs, USA 1974-99

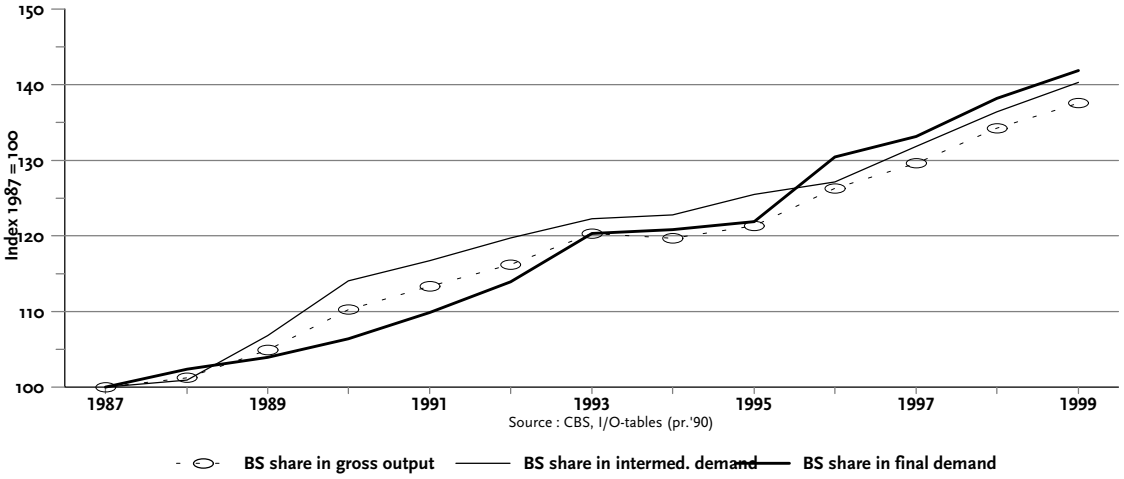
	1974–90	1991-95	1996-99
	% share		
Income share software inputs	0.8	2.0	2.5

Note: The income share data for software include pre-packaged software (partly consumer-oriented), custom-produced software (investment goods, produced by BS industry) and in-house produced software (investment goods, produced by own employees). Source: Oliner and Sichel (2000).

The consolidated 'European' result is replicated for the Dutch market services sector, and comparable results emerge. Hence, this study for the 1975-85 period shows that structural value-added growth in 'other market services' was not caused by final demand growth. Their conclusion is more or less in line with a CPB-study by Brus (1998) and Alladin et al. (1998). These authors did a employment growth decomposition study for the Netherlands on the basis of employment data over the period 1973-93. The Brus findings are presented in Table 3.2. Domestic final demand can only explain a tiny part of structural employment growth in the BS industry, but export growth contributes one-sixth of the structural growth difference.[15]

The aforementioned growth decomposition studies are useful for historical reasons, but more interesting are the actual trends. Recent indications suggest that, in particular since the early 1990s, final demand growth could have become more important in explaining structural BS growth. In the recent decade, final demand for computer-related services (software, hardware services) expanded faster than for the market sector as a whole. For the USA, Oliner and Sichel (2000) found an increased national income share of software inputs (Table 3.3). Another indication for a more important role of final demand in the structural BS growth performance comes from a recent study on international transactions in the BS industry. In the 1990s, BS exports in many countries have grown faster than average exports from the market sector.[16]

Figure 4 BS share in total market sector, by demand category, Netherlands, 1987-99



[15] Note, however, the critical comments on this study by Eering and Van der Wiel (1999).

[16] Kox (2001) found that during a large part of the period since the mid-1980s,international trade in services grew faster than trade in goods. In most benchmark countries, the BS share in total exports has grown in the 1990s, even after correction for the increased share of BS industry in the national economies.

In the Netherlands, BS industry accounts for a growing share of total final demand of the market sector. Figure 4 shows a clear jump in the final-demand share taking place after 1995. From then onwards, the contribution to the market sector's final demand grows faster than the contribution of BS industry to intermediary demand and gross output of the market sector.[17]

Some intermediary conclusions can be drawn as to the question whether condition (6) *as a whole* applies. Growth of final demand probably could not explain structural growth of the BS industry's until the mid-1980s. The situation has changed since then. Particularly since the early 1990s, consumer demand for software products and export demand for BS products increased faster than for the market sector as a whole. Both factors can explain part of recent structural BS growth.

Effect of shift in final preferences

We now turn to the question whether structural growth of BS industry can perhaps be explained by an indirect final demand effect. This happens if more final demand growth occurs in industries that have high BS input intensities than in industries that make intensive use of products from the remaining market sector (cf. Barker and Forsell 1992).[18]

Table 3.4 shows 1990 BS-input intensities for selected industries in four European countries and the USA.[19] BS input intensities are measured as the share of BS inputs per unit of gross output.[20] Inter-industry differences in BS-input intensities appear to be quite strong. Manufacturing industry and producer services have the highest BS-input intensities. The most important manufacturing client industries are: machinery, office equipment, food, chemicals, paper and printing, and transport equipment. Services industries with the highest BS-input intensities are: finance, insurance, and the BS industry itself.[21] The question now is whether a shift in final preferences took place such that industries with above-average BS input intensities grew faster than the average growth rate of the market sector. As Table 3.5 shows, this was not the case. The

[17] All elements are taken from CBS input-output tables and have been expressed in constant prices of 1990.

[18] Cf. thought experiment formulated with regard to condition (6).

[19] No complete OECD-homogenised set of i/o tables was available for a later year than 1990.

[20] One could object that BS products are more akin to factor inputs than to material intermediate deliveries, so that one should focus on the potential for substituting in-house labour services by intermediary deliveries of BS products. We investigated this possibility with an alternative definition of BS input intensities, i.e. the value of BS inputs over value added of the client industry. This alternative measure yieldedeven wider inter-industry disparities in BS-input intensities (due, inter alia, to differences in labour intensities by industry). The result is shown in Annex 4.

[21] Table 3.4 shows that the communication sector was characterised by low BS input intensities. In 1990, communication firms were run by state enterprises, apparently producing most services in-house.

Table 3.4 International comparison of BS-input intensities in gross output, selected industries, 1990

	Rank Netherlands	Netherlands	France	Germany	UK	USA
	ranking [g]	*value of BS inputs as percentage of gross output* [b]				
Agriculture, forest, fishery	2	2.3	0.9	1.8	1.7	3.9
Food, beverages, tobacco	5	3.7	6.1	6.8	3.8	4.0
Textiles, clothing, leather prod.	3	5.0	7.0	7.9	3.6	2.6
Paper and printing products	3	6.2	6.1	7.2	9.5	5.8
Industrial chemicals	4	4.0 [d]	6.1	6.6	4.0	5.3
Drugs and medecines	4	2.7 [e]	5.5	..	5.3	16.3
Iron and steel	1	3.8 [f]	1.4	3.5	3.1	1.7
Non-ferrous metals	2	3.8 [f]	0.9	4.4	2.7	2.4
Metal products	3	3.7	3.7	6.9	5.0	3.5
Non-electric machinery	3	5.8	15.4	9.0	4.6	4.1
Office, computing machinery	3	5.4 [a]	14.0	12.3	3.3	1.2
Automobile industry	4	3.7	7.7	7.6	4.7	1.9
Construction	5	3.7	14.7	8.7	5.9	6.7
Repair, wholesale & retail trade	4	8.1	6.1	15.4	9.0	10.1
Transport and storage	4	4.6	5.9	7.2	7.8	4.3
Communication	3	2.9	1.9	1.6	5.4	4.6
Credit and insurance	5	5.2	11.6	16.5	19.9	11.9
Business services	5	6.8	12.1	12.4	20.8	11.5
All market industries	5	4.8	7.1	8.5	7.1	6.8

Notes: a) Electrotechnical industry. b) All in current prices. c) Base metals. d)Rubber and plastics industry. e) Chemical indusry. f) Base metals. g) Gives the rank in BS input intensities for this group of five countries (5 = lowest BS input intensity). Sources: input intensities for France, Germany , UK and USA calculated from i/o tables in OECD database; Dutch input intensities calculated from CBS i/o table (using industry aggregates of OECD).

grey-shaded industries in the second column are those with above-average BS-input intensities in 1990. Typically, as the last column shows, these *not* the industries with the above-average value-added growth during the 1990s. The only exception is trade. Hence, Table 3.5 conveys the message that it is very unlikely that a final demand shift towards industries with above-average BS input coefficients recently has been a major factor behind structural BS growth in the Netherlands.

This finding is in line with an OSA growth decomposition study for the Netherlands over a 15-year period ending in 1993 (Van der Hoeven *et al.* 1997). Value-added growth of the 'other market services' industry, an aggregate that comes close to BS industry, is compared with other economic sectors. The results are reported in Table 3.6. Shifts in final preferences contributed

much more to value-added growth in the rest of the economy than in 'other services'. Therefore, shifts in final preferences could not explain the structural growth difference.

Table 3.5 BS input intensities for selected industries in1990 and value-added growth1990-99, Netherlands

	value of BS inputs as percentage of value added in 1990 [b]	*% average growth rate value-added in period 1990-99* [b]
Agriculture, forest, fishery	5.0	3.5
Food, beverages, tobacco	18.2	2.5
Textiles, clothing, leather products	15.2	-1.7
Metal products	10.0	2.5
Machinery [a]	13.5	2.5
Chemicals and pharmaceuticals	14.5	2.6
Paper and printing products	16.0	2.0
Construction	10.8	0.4
Repair, wholesale & retail trade	14.2	3.4
Transport	9.0	3.6
Communication	3.8	7.7
Credit and insurance	8.3	1.7
Business services	8.8	6.6
All market industries	9.2	3.3

Notes: a) Non-electric machinery, and office & computing machinery. b) The grey-shaded areas refer to industries with above-average BS input intensities (second column) or above average value-added growth rates (third column). Sources: input intensities calculated from CBS i/o table; Dutch growth data from CPB long-range database.

The same result was found in a growth decomposition study for the USA over a period covering 1972-85. While shifts in the composition of final demand contributed 3.5 per cent to annual output growth of all US market services, it only contributed 2 per cent in US producer services industry (Tschetter 1987).

In all, the data in this section allow the following conclusions:

- Growth of direct final demand probably could not explain structural growth of the BS industry's until the mid-1980s.
- The situation has changed since then. Particularly since the early 1990s, consumer demand for software products and export demand for BS products increased faster than for the market sector as a whole. Both factors related to direct final demand can explain part of recent structural BS growth.
- Shifts in final demand preferences towards industries with above-average BS input intensities cannot explain recent structural growth of the BS industry.

Table 3.6 Decomposition of differences in value-added growth between 'other market services' and selected economic sectors, Netherlands 1978-93

	Total value-added growth	Of which:			
		Growth domestic final demand	Growth net foreign demand	Shift in final preferences	Change in system of intermediate deliveries
	average annual growth in per cents				
Growth of 'other market services' (a)	1.8	1.0	0.8	-0.9	0.9
Growth difference with:					
Exposed sector with import competition	0.4	0.5	-0.7	-0.5	1.2
Exposed sector without import competition	-1.3	0.3	-1.7	-2.1	2.3
Consumer-oriented sector	-0.7	-0.4	0.6	-1.7	0.8

Note: (a) Services other than trade, lodging, transport, storage, communication, finance, insurance and real estate. Source: Van der Hoeven, Kwaak and Lever (1997).

3.4 BS industry benefits strongly from privatisation by the non-market sector

This section discusses the possibility that structural growth performance of the BS industry was due to the fact that BS industry benefited most from privatisation by the non-market sector. If this is true, then the following condition should hold:[22]

$$(1+\dot{y}_Q)\, y_{Qo} \left[\frac{\Delta r_{BQo}}{x_{Bo}} - \frac{\Delta r_{MQo}}{x_{Mo}} \right] > 0 \qquad (8)$$

Privatisation is a special case of outsourcing, with government as the outsourcing agent. In the early 1990s, government activities in many OECD countries still included activities like infrastructure maintenance, energy supply, postal services, telecommunication, water supply, transport and construction. The 1990s have been characterised by privatisation of such government activities. Typically, other market industries than the BS industry benefited most from this first part of the privatisation wave.

However, many of the remaining government activities are in fact services activities: intermediary in-house services, services to other government departments, services to consumers, and services to companies. With exception of the services to consumers, most other types of government services could potentially be transferred to the BS industry or to other

[22] Derived from the analytical framework of Box 1, especially equation 5.

commercial producer services industries (banking, insurance, real estate). This process would entail a second privatisation wave. It already took off in most OECD countries, and contributed in two ways to the growth of the BS industry:

- Tasks that so far were done by government services were outsourced to private companies. Firms in accountancy, technical consultancy, juridical services, building security services, industrial cleaning, salary administration, software development, ICT hardware maintenance, public relations, text writing, economic consultancy, and several other business services branches have benefited from this privatisation process.[23]
- A simultaneous process was that specialised government services, which in the past worked for other government departments and local government authorities, were split off as independent companies. They became new entrants in the commercial BS market. The off-spinning process happened, *inter alia,* with government services in software development, engineering consultancy, salary administration, accountancy, and temporary work agencies.

No quantitative tests of condition (8) are known from the literature. On the basis of qualitative observations we expect to find that the second wave of privatisations partly explains of structural growth of BS industry in the second half of the 1990s.

3.5 BS industry gets a larger weight in the system of intermediary deliveries among market industries

A major explanatory factor for structural growth of the BS industry is that the BS industry tends to increase its weight in the system of intermediate deliveries within the market sector. Framed in the concepts of Box 1, this occurs if:[24]

$$\left(1+\dot{y}_B\right) y_{Bo}\left[\frac{\Delta r_{BB}}{x_{Bo}}-\frac{\Delta r_{MB}}{x_{Mo}}\right]+\left(1+\dot{y}_M\right) y_{Mo}\left[\frac{\Delta r_{BM}}{x_{Bo}}-\frac{\Delta r_{MM}}{x_{Mo}}\right] > 0 \qquad (9)$$

A second look at Figure 4 shows that, between 1989 and 1995, the growing BS share in total intermediary demand of the market sector appears to have been a major driving force of structural BS growth in the Netherlands. Changes in the system of intermediate deliveries can be the result of organisational, technological and institutional causes. Limits of the input-output analysis technique and the quality of available data makes it difficult to discriminate sharply

[23] Cf. Kavanagh and Parker (2000).

[24] Note that condition (9) for completeness also contains the second-order effects $\Delta y_j \, \Delta r_{ji} (x_{jo})^{-1}$ that already featured as part of the final demand condition (6). In an empirical decomposition study, one has to choose, more or less arbittrarily, whether these effects will be accounted for in condition (6) or in condition (9).

between these causes. Three factors behind the change in i/o coefficients are treated in specific sub-sections. Sub-section 3.5.1 deals with the possibility that the intermediary demand shift results from product innovation in the BS industry (new products, new product varieties). Increased outsourcing by other market industries generates new demand layers for the BS industry, an issue that will be discussed in section 3.5.2. Deregulation forms an institutional factor that contributed to more intermediary demand for BS products. It will be dealt with in section 3.5.3.

3.5.1 Intermediate demand for new, specialised BS products

The freedom to choose is itself an attribute of welfare (e.g. Sen 1973). Dixit and Stiglitz (1977) integrated a desire for product variety in utility functions, so that it could be integrated in welfare analysis. They showed, *inter alia*, that welfare increases if government intervention preserves a certain degree of product variety.[25] The Dixit-Stiglitz analysis strictly applies to consumer behaviour and differentiated consumer goods. Because consumers prefer greater variety of goods, larger markets sustain larger number of businesses with an own product line. Competition is no longer restricted to cost competition (often production scale-related), but also encompasses market entry by firms with a new product variety. Preference for variety has also been applied to producer behaviour in the market for intermediates. Producers may prefer choice variety in intermediates because the variety can support the distinctive character of their final products, or because it features productivity increases and scale economies in their own production process.[26] Client industries often have a demand for tailor-made intermediary products that take their specific circumstances into account, and that provide optimal local solutions. The direction of causality between a larger variety of intermediates and national output growth thus is a two-way process. Increased output growth creates a place under the sun for a larger variety of intermediates, giving rise to more labour specialisation and innovation. Ethier (1982) showed that national output can increase by having a larger variety of intermediate inputs. A more differentiated supply of intermediate goods reflects an increased level of labour specialisation, but - given the presence of fixed set-up costs - this is only possible at higher levels

[25] So that products are produced which would not have been produced otherwise, but which represent large potential consumer surpluses.

[26] E.g. Markusen (1989); Feenstra, Markusen and Zeile (1992). Barro and Sala-i-Martin (1995, Ch.6) show that the welfare implications of endogenous growth models where product variety adds directly to utility, and those models where more product variety of producer goods increases productivity (and thus indirectly to utility) are grossly the same.

of total output.[27] Adam Smith in his famous pin-factory model already observed that 'the division of labour is limited by the extent of the market'. This theme has been explored many times later

Box 2 Increasing roundaboutedness and demand for more diversified BS products

The following two-factor, two–sector model is adapted from Kögel (1999). It is a closed economy producing final goods and a composite business services product. A household works one unit of labour in each period. Households do not save and consume only one final good. The price of the final good is normalised to one. Hence, final goods output ***Y*** is:

(a) $Y = w\,L$

in which ***w*** denotes the wage rate and ***L*** represents the number of households. The market for the economy's final good is perfectly competitive. The number of final goods firms is normalised to one (representative firm). The production of the final good requires a differentiated BS product and manufacturing labour. The production function of the representative final goods firm is:

(b) $Y = f(D, A_L, L_Y)$

in which ***D*** denotes a composite of business services, A_L represents a given index for the level of technology, and L_Y denotes labour used in final goods production. The composite BS product is defined as:

(c) $$D = \left(\int_0^N S_z^{\frac{\varepsilon-1}{\varepsilon}}\, dz \right)^{\frac{\varepsilon}{\varepsilon-1}} \qquad with\ \varepsilon > 1\ \ and\ \ z \in [0,\ldots,N]$$

where S_z denotes the quantity of each BS variety ***z*** and ***N*** represents the number of BS varieties. Some S_j ($j \in [0,..,N]$) can be zero. Each unique variety is produced by a single producer. ϵ is the elasticity of substitution between BS varieties.[a] ***Y*** increases in ***z***. The price of the composite BS product (p_D) is derived as:

(d) $$p_D = \left(\int_0^N p_z^{1-\varepsilon}\, dz \right)^{\frac{1}{1-\varepsilon}}$$

in which p_z denotes the price of BS variety ***z***. The demand for each BS variety follows from a two-stage optimisation procedure by the final goods firms. In the first stage, they choose the values of D and L_Y that maximise their profits by setting the marginal product of each input factor equal to its factor price. In the second stage, the demand for the composite BS product is optimally allocated among the BS varieties. The quantities are chosen such that the composite BS product is maximised subject to the stage-two constraint:

(e) $$\int_0^N p_j\, S_j\, dj = p_D\, D \qquad j \in [0,..,N]$$

The optimisation process results in the following optimal demand condition for each BS variety:

(f) $$S_z = \left(\frac{p_D}{p_z} \right)^{\varepsilon} D$$

The model can be completed with labour demand for BS production (L_S). In equilibrium, total labour demand is equal to L_S+L_Y. When the economy grows due to population growth and/or technological progress, the model endogenously generates an increasing demand for BS varieties (higher ***z***).

[a] For a very large number of BS firms, ϵ approaches the price elasticity of demand for each service variety (Helpman and Krugman 1985, Ch.6). Hence $\epsilon > 1$ implies positieve marginal revenues for monopoly BS providers.

[27] The same result is derived in De Groot (2001), although via a different way. Consumer preference for more varied final products (rather than demand for varied intermediary products) is the driving force in his model.

on (cf. Stigler 1951; Edwards and Starr 1987; Francois 1990). It also applies to the production and use of BS products.
Specialisation and innovation may generate new intermediate BS products that make production of final goods more productive, and/or contribute to new categories of final products (e.g. Hulshoff 1998). On the other hand, once available, the demand for new intermediates BS products can generate new intermediary phases in the production of final goods. On the demand side, scale barriers in the use of BS products by client industries may play a role. Once more specialised taylor-made BS products are available, new layers of clients - that so far were inhibited by scale barriers - enter the market. Process innovation may allow more labour division in the BS industry. Often this occurs in the form of vertical disintegration, i.e. intermediate production stages get decentralised over more decision centres.

In input-output analysis, the vertical fragmentation process translates itself into a higher transaction density in the trajectory between primary inputs and the final good. In an Austrian tradition, the process is labelled 'growing roundaboutedness' of production (cf. Grubel and Walker 1991; Grubel 1995; Burda and Dluhosch 2000). As described, the process of growing roundaboutedness and increased BS product diversity results from a combination of supply-driven and demand-driven influences. Demand for increasingly diversified business services is formalised in Box 2. The box summarises a model by Kögel (1999), in which increased demand for specialised and diversified BS products endogenously creates the basis for further labour specialisation and product differentiation in the BS industry. The increased number of BS varieties makes it possible for the final goods sector to attain a higher productivity and to develop new final goods and services. In particular, the broad availability of new knowledge-intensive BS products since the end of the 1980s may have created new layers of clients, in particular small- and medium-sized firms that so far were unfamiliar with this type of services, or that were not in the position to hire specialised consultancy firms. Such additional final demand can in turn generate a new demand cycle. The process continues until the specialisation advantages in the intermediate stage die away, or until the 'love of variety' in final demand temporarily fades out as driving force.

Summarising, product innovation and product differentiation generate demand for specialised and diversified BS products. This in turn can lead to a new system of intermediary deliveries between market industries, with a larger weight for the BS industry.

3.5.2 Increased intermediate demand due to outsourcing

Outsourcing means that firms change the production mode of in-house service activities: provision by outside firms substitutes service provision by own employees of the outsourcing firm. The service activity itself is not necessarily changed. Two types of BS growth due to outsourcing can be distinguished:

- *displacement outsourcing*: the service activity itself remains unchanged. The only difference is that the service is now provided by personnel of an outside BS supplier instead of by own personnel of the outsourcing firm. Jobs from the outsourcing firm are 'displaced' to another firm, and often another industry (BS industry). The service-providing personnel can even remain the same when they continue their jobs under an employment contract of the outside BS firm. Technically, 'displacement growth' only means that labour inputs in the outsourcing industries are replaced by increased intermediate BS supplies.[28]
- *service-upgrading outsourcing*: the services rendered by the BS supplier are qualitatively different from prior in-house service activities of the outsourcing firm.[29] Quality change more often refers to upgrading rather than downgrading.[30] The service-upgrading growth partly overlaps with the product innovation factor that was described in the preceding sub-section.

The outsourcing decision is governed by a number of considerations, not only related to costs but also to product quality and to a redefinition of the firm's core activities. Outsourcing motives may have differed by period and by branch. The outsourcing decision often forms part of a periodic audit for in-house company service activities in which outsourcing is one of the alternatives. Other alternatives are simple continuation of the service activity, spinning it off as a separate company, or continuing it as a separate business unit (profit centre).[31] A plausible micro-economic decision framework for outsourcing audits is provided in Annex 2.[32] The most important outsourcing motives can be summed up in the following points:

- freeing resources for investments that have higher priority;
- freeing management capacity for core businesses;

[28] If costs savings were the reason for 'displacement' outsourcing, one would expect the increase in intermediate supplies to be smaller than wage savings or incremental profits in the outsourcing industry.

[29] Cf. Klodt (1996); Klodt *et al.* (1997).

[30] Exceptions are conceivable in which a high-quality, high-cost services department is replaced by a standard-quality, low-cost outside supplier.

[31] Cf. T. Lester, Making your knowledge go further: companies are trying to maximise returns on their intellectual assets by setting up consultancies, Financial Times, March 26, 2001.

[32] Derived from Hagedoorn et al. (1986).

- 'variabilising' fixed costs like overhead costs;[33]
- 'super-variabilising' variable costs (wage costs may not be really variable due to collective labour contracts by industry or by firm);
- remedying deficient in-house expertise or lacking quality of the in-house service activity;
- lowering costs: specialised BS firms may be able to perform certain activities at lower costs for the outsourcing company. The specialist firm may have lower unit costs because of scale economies, access to specialised inputs, or by tapping from cheaper labour forces (Abraham and Taylor 1993).

Some 'core' activities are not up for outsourcing. The decision *not* to outsource a particular service or activity generally is often based on the wish to preserve key company assets (like specific product, process or market expertise), confidentiality, or on social aspects (avoiding negative social consequences for redundant workers, preserving company cohesion).[34]

The outsourcing process was greatly stimulated by technological developments and by deregulation with regard to labour contracts, temporary work, job qualification and requirements for new firms (cf. section 3.5.2). ICT progress sharply lowered communication and monitoring costs, thus decreasing transaction cost barriers for farming out parts of company activities.

The internationally comparative data on BS input intensities (Table 3.4) showed that, by 1990, industries in the Netherlands generally used less BS inputs per unit of gross output than in four benchmark countries. This particularly held for Dutch services industries: trade, transport, financial services and business services. Strong intermediary demand for BS products may well have come from a backlog or catching-up demand of the services industries for intermediary BS inputs. Table 3.5 showed that trade, transport, and business services were among the Dutch industries with the highest growth rates. A lack of recent and comparable i/o-tables for all benchmark countries makes it impossible, at present, to explore this catching-up hypothesis empirically.

Different BS branches benefited from the outsourcing tendencies in different periods. Looking to the type of BS activities that are outsourced, three outsourcing waves can be distinguished in

[33] Intra-company 'fixed cost' departments (e.g. computer and planning departments, transport, storage, logistics, administration, sales, engineering) could shrink to the benefit of specialist outside firms, many of them in the BS industry.

[34] A recent survey by EIM showed that smalll- and medium-sized had concerns that outsourcing their administration to BS firms would endanger the secrecy of their company data (Boog and Van Lin 2001). Similar confidentiality concerns were expressed by Danish firms (Ministry of Trade and Industry 2000b, pp. 15-17, 80-81).

most benchmark countries (Table 3.6). The periodisation is only indicative and may differ somewhat by country.

Table 3.6 Three 'waves' of outsourcing

	Approximate period	Emphasis	Service activities involved
1	1983-1988	low-skilled, or very specialised service` activities	Internal and external transport, cleaning, catering, maintenance of buildings and equipment, specialist legal and tax advise, insurances.
2	1985-1993	standardised in-house service activities	Security services, personnel education, R&D, storage, banking activities, standard administration work, financial controlling, bookkeeping, customs facilities, recruitment for temporary standard jobs, technical testing, specialist computer consulting
3	1993-now	specialised in-house service activities	Market research, advertising, legal advise, quality control, engineering and technical consulting, economic consulting, client invoicing, salary administration, recruitment for management jobs, logistics management, public relations management, software design, software and hardware maintenance, development e-commerce tools, provision of office supplies, internal post and document services, archive services, interim management, management of communication network services, specialist R&D, text writing, environmental management services

In the first wave, only simple standard services, or the opposite, very specialised services[35] were outsourced. Direct savings in salary costs and flexibilisation of overhead costs were among the main motives behind this first outsourcing cycle.[36]

In the second outsourcing wave, many other in-house service activities came under scrutiny for being outsourced, including several well-defined routine service tasks. Not only direct cost savings, but also motives related to the quality of specialist service providers became important (Beyers and Lindahl, 1996; De Bandt, 1995). In the first two outsourcing waves, BS branches with more or less standardised products benefited most.[37]

In the last outsourcing wave, specialist and close-to-management service activities that were thus far considered to be core company domains became eligible for outsourcing.[38] BS branches

[35] Those services where maintenance of a consistent high quality is associated with high scale barriers (fixed costs, erratic use, high knowledge volatility).

[36] Coffey and Bailly (1991); Goe (1991); Perry (1992).

[37] Analysis of the sources of occupational change in US manufacturing over the period 1983-86 only found evidence for outsourcing of simple service jobs (janitors, security guards) and for 'clerical and administrative support workers', but not for any other occupational groups (Tschetter 1987).

[38] E.g. Financial Times, Special on R&D outsourcing by life sciences businesses, 15 July 1999.

producing client-specific business services (tailor-made for client firms) gained most in the third outsourcing wave.[39]

Table 3.7 Growth of real value added for selected BS branches, Netherlands, 1993-99

	Skill-intensive BS branches, of which:					Non-skill intensive BS branches[a]	Total BS industry [b]	Total market sector
	Computer-related services	R&D	Legal services, accountancy and economic consultancy	Engineering, architects, technical testing	Advertising			
1993-99	17.5	6	4.9	5.6	5.6	2.4	6.7	3.6
1993-96	13.3	5.9	4	4.8	6.2	3.2	5.3	3.1
1997-99	21.8	6	5.9	6.4	4.9	1.6	8	4.1

Notes: (a) This includes cleaning and security services. Not included are : equipment rental services and temporary work agencies. (b) Including equipment rental services. Data source: Statistics Netherlands and CPB.

Table 3.8 Skill composition of employment, selected industries, 1998

	A. Ratio of low-skill to medium-/high skill [a]			
	Producer services	All services	Personal services	Manufacturing
Belgium	0.19	0.36	0.61	0.63
Denmark	0.14	0.25	0.55	0.44
France	0.31	0.42	0.77	0.54
Netherlands[b]	0.24[c]	0.34	0.63[d]	0.66
USA	0.06	0.13	0.35	0.18
OECD average	0.24	0.45	1	1.03
	B. Ratio of university to non-university workers[a]			
	Producer services	All services	Personal services	Manufacturing
Belgium	0.45	0.22	0.09	0.12
Denmark	0.14	0.07	0.03	0.03
France	0.63	0.4	0.13	0.19
Netherlands[b]	0.84[c]	0.45	0.14[d]	0.19
USA	0.7	0.43	0.14	0.26
OECD average	0.45	0.24	0.08	0.09

Note: (a) 'Low skill' corresponds to ISCED 0-2, 'medium/high skill' to ISCED 3-7, 'university' to ISCED 6-7 and 'non-university' to ISCED 0-5. (b) 1999 data, for working people in age category 15-64 years. (c) Business services only, not including temporary work agencies. (d) Average of trade, hotel and catering industry. Data sources: Netherlands: CBS, Enquete Beroepsbevolking 1999. Other countries: OECD (2000b, p. 96)

The data presented in Table 3.7 show that skill-intensive BS branches in the Netherlands have recently expanded much faster than non-skill intensive BS branches, and also faster than the

[39] Cf. Kox (2000).

average for the total market sector.[40] A general trend in the three outsourcing waves is that the human capital content of the outsourced activities increased. Physical intermediate goods or standard intermediate services are substituted by new or improved intermediate services that include more knowledge inputs and are more fitted to the demands of the outsourcing firm (cf. OECD 1999).

Figure 5 Change in education levels of the BS workforce, Netherlands, 1983-98

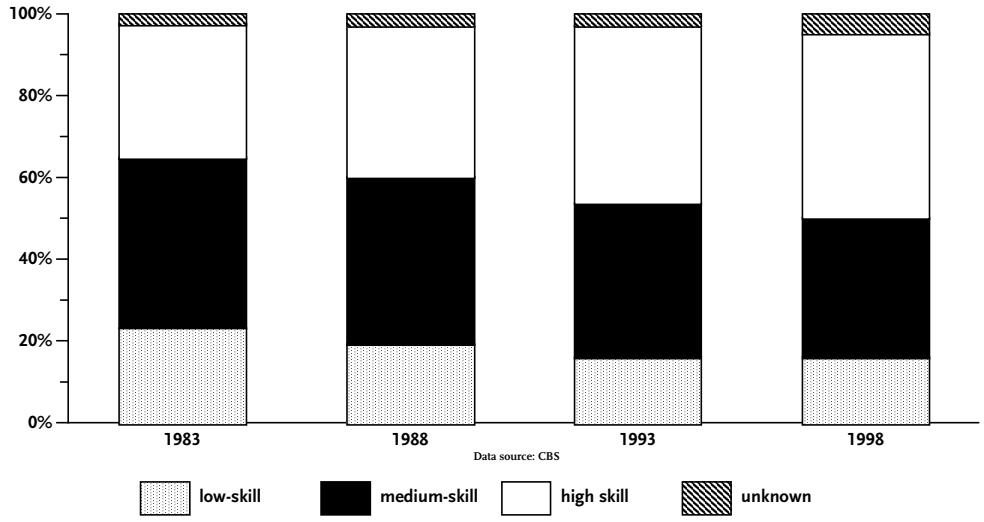


Figure 5 shows a marked increase of the human capital content in Dutch BS workforce.[41] The comparatively high skill component in producer services and business services also shows up in international data (cf. Table 3.8). The Dutch BS workforce appears to have a more hybrid structure than elsewhere in the OECD, characterised by a relatively high[42] share of low-skilled workers, but at the same time by the highest share of university-educated workers. The hybridisation stems from the decreasing share of middle-skilled workers, a process that is also visible in Figure 5.

An empirical assessment of the importance of outsourcing as an explanatory factor for structural growth of the BS industry is difficult due to inherent limitations of growth decomposition techniques based on input-output analysis. Typically, outsourcing will end up in changing i/o-coefficients. Under strict conditions, articulated in Box 3, such changes can be interpreted as the

[40] Detailed branch-level data are available only for the period since 1993 onwards.

[41] Except for 1983, the workforce data exclude temporary work agencies. The underlying CBS data sources are, respectively, Arbeidskrachtentelling 1993, Arbeidsrekeningen 1988 and 1993, and Enquete Beroepsbevolking 1998.

[42] Compared to the USA, Belgium and Denmark.

Box 3 Limitations of input-out decomposition methodology for analysis of outsourcing processes

Input-output coefficients, derived from the i/o table of a particular year, can be interpreted as coefficients of an economy-wide production function. The latter can be used for forecasting and back casting (what if…/what if not…). It requires some strong assumptions to interpret i/o data as a production function that can be used for projections over time:

(i) constant returns to scale;

(ii) a fixed technical relation between primary inputs, intermediate inputs and final output of each industry;

(iii) even if several different production methods were available for each industry, only one of them is preferred and observed (homogeneity);

(iv) with a Leontief-type technology, relative prices of industry outputs can change only if the level or composition of final demand change.

Using these assumptions, static i/o analysis can calculate how a change in level and/or composition of final output would have affected intermediate deliveries. However, working the other way around, i.e. the interpretation of changes in intermediate deliveries over time, is much more problematic. Even after correction for changes in the level and composition of final output, a change of inter-industry deliveries may be due to host of factors: more efficient use of primary and other inputs, different technology, change in vertical integration, quality differences, product innovation, occurrence of externalities, deregulation, altered industrial relations practices or changing (dis)economies of scale. Here lies the explanatory limit of i/o decomposition methods with regard to changes over time. The validity of assumptions i)-iv) becomes problematic when a set of i/o coefficients is used for long-term projections. Particular problems arise with regard to the homogeneity and technological constancy requirements. Coefficients derived from the i/o table of a particular year are no longer valid as technical coefficients of an economy-wide production function after some years. For each new technology, product innovation, or system of vertical integration one would need a new set of coefficients. Interpreting changing i/o coefficients over a period longer than a few years, certainly for a highly dynamic intermediary industry like BS industry, is therefore tricky business. The change in coefficients cannot be taken as evidence for increased importance of outsourcing.

combined result of outsourcing and technological progress (cf. Momigliano and Siniscalco 1982). The data so far warrant the expectation that displacement outsourcing and service-upgrading outsourcing contributed positively to structural growth of BS industry. This expectation is confirmed by the results of some growth decomposition studies to be presented in sub-section 3.5.4.

3.5.3 Deregulation increases intermediate deliveries of BS products

Deregulation refers to a relaxation of government-imposed rules on market transactions, aiming at improvement of competition and market processes. Major forms of deregulation apply to labour contracts, firm startup regulations, quality requirements for products and services, professional qualifications, and requirements for existing firms. To the extent that more liberalised market transactions improve allocation and economic efficiency, this factor works

throughout the economy. Nonetheless, some industries may be affected by deregulation more than others are. BS industry may have profited more than other industries:

- deregulation of labour laws and employment protection rules has facilitated outsourcing of services jobs;
- deregulation of labour laws with respect to temporary jobs created giant opportunities for temporary work agencies (Dunnewijk 2001);
- deregulation of professional qualifications has particularly affected highly-skilled professional BS branches like legal advise, engineering and accountancy;
- deregulation of law-based professional monopolies like notary services created opportunities for new entrants and more competition in these branches;
- deregulation of firm startup requirements is particularly beneficial for starting new firms in industries with a small minimum efficient scale of operation as prevails in most BS branches.

The potential effect of deregulation is intertwined with several of the aforementioned explanations for structural growth of BS industry. It particularly affected intermediate demand for BS products through more outsourcing and privatisation, but also demand for new BS products (e.g. several types of temporary labour services, new products by innovating new startups). In a panel data set for OECD countries over the period 1984-1998, the share of producer services in total employment appeared to be significantly and negatively correlated with the strictness of employment protection regulation (OECD 2000b, p.103). These qualitative and empirical indications suggest that deregulation contributed positively to the growth difference between BS industry and the rest of the market sector.

3.5.4 Changes in the system of intermediary deliveries as structural growth factor: conclusions

All available growth decomposition studies in which growth of the BS industry is analysed, invariably find that changes in the system of intermediate deliveries account for the largest chunk of the structural growth difference between the BS industry and the rest of the market sector. Brus (1998) found for the Netherlands that the change in i/o-coefficients explained 60 per cent of structural employment growth of the BS industry during the period 1975-93 (cf. Table 3.2). Also Van der Hoeven *et al.* (1997) calculated that the change in i/o-coefficients was responsible for a very large part of structural value-added growth over the period 1978-93, as was reported in Table 3.6.[43] Figure 4 of this memorandum showed that between 1989 and 1995, intermediary demand from the market sector formed the strongest growing demand component for the Dutch BS industry.

[43] Note, however, the methodological comments by Eering and Van der Wiel (1999) on the latter two studies.

For the USA, Tschetter (1987) found that the chance in i/o-coefficients explained the complete difference in output growth between producer services industry and the total services industry over the period 1972-85. Oosterhaven and Hoen (1998) compared consolidated EU input-output tables, measured in constant prices, for 1975 and 1985. They found that 48 per cent of real value-added growth of 'other market services' could be reduced to changes in i/o-coefficients. Much of it could be traced back to an input shift towards industries with a higher value-added coefficient. All four studies thus find that changes in the system of intermediate deliveries explain 48 to 100 per cent of the structural growth difference between BS (producer services) and other sections of the economy. An unknown part of the shifts stems from technical change, product innovation and institutional changes.
Although the empirical data do not allow a strict proof, it can safely be assumed that the changes in the system of intermediate deliveries, have been the major factor contributing to structural growth of the BS industry.

3.6 Lagging labour productivity growth as explanation for structural BS employment growth

A differential development of labour productivity cannot explain the difference in value-added or production growth between the BS industry and the rest of the market sector. But the factor does become important when we try to explain the sectorial differences in employment growth. The structural growth of BS employment can partly be explained from the sloppy labour productivity performance of BS industry relative to the total market sector.[44]

This effect has occurred in the Netherlands and in the benchmark countries as was already noted in section 2.2. Firm level research on the Dutch BS industry showed that gross production per

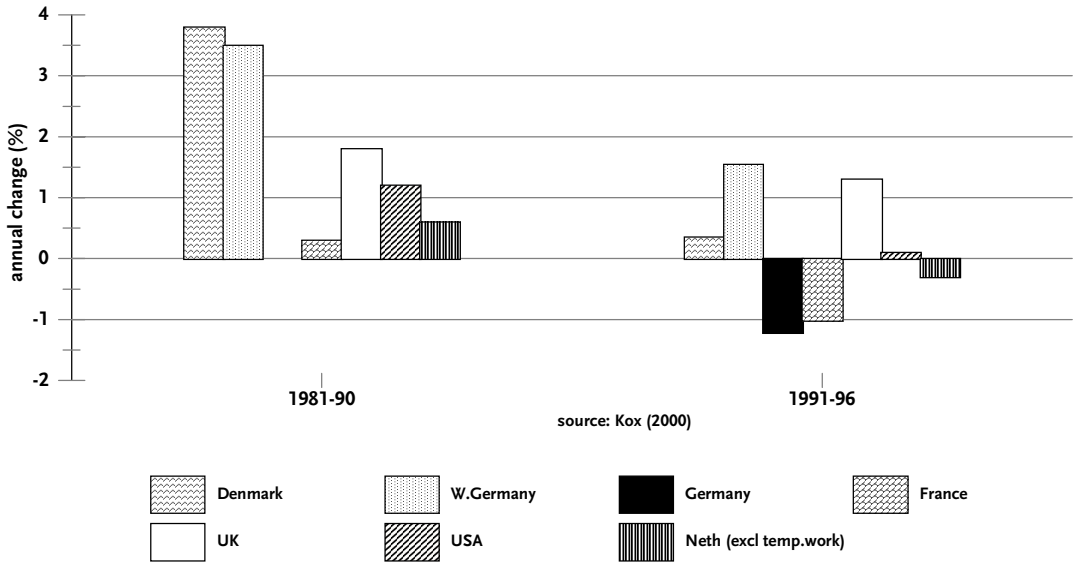
Table 3.10 Labour productivity [a] development Dutch BS industry, based on micro data 1987-1995

	1987	1995	1988-95
	level in 1000 Dutch guilders		change per year in %
Total BS industry	135.8	135.2	0

Note: a) Gross production (constant prices) per person employed. Source: Van der Wiel (1999b)

[44] Building on the framework sketched in footnote 13, stagnating labour productivity growth only contributes positively to the explanation of structural BS employment growth if the following condition is met: $\left(\dot{y}_B - \dot{y}_M\right) + \left(\dot{h}_B - \dot{h}_M\right) + \left(\dot{h}_B \dot{y}_B - \dot{h}_M \dot{y}_M\right) > O$.

Figure 6 Change in labour productivity per hour worked in BS industry, selected countries, 1981-90 and 1991-96



person employed (constant prices) remained practically unchanged between 1987 and 1995 (cf. Table 3.10). If labour productivity is expressed as real value added per hour, the stagnation was less dramatic, but also in these terms we see a productivity development that tends towards stagnation. Figure 6 shows that the BS industry in all main benchmark countries was confronted with a flawing growth or even a fall in labour productivity (cf. Box 4). In this respect, the development in the Netherlands was by no means unique.

Box 4 A brief look at the causes of stagnating labour productivity development in the 1990s

Two main factors are regarded responsible for the flawed labour productivity development in BS industry. One is that recent growth in the BS industry took place especially in branches that predominantly produce client-specific BS products (cf. Table 3.8). Production in these BS branches allows less product standardisation, less efficiency gains through internal division of labour. Non-perfect competition with segmented markets (some oligopolist, some monopolistic) typifies many of the BS branches with client-specific products, which makes it easier for low-productive firms to survive. Firms in these branches often are confronted with a strong, rent-sharing position of key employees, which exerts a downward influence on optimal firm size, thus suppressing potential economies of scale (cf. Kox 2000, 2001). A second major factor is the strong demand growth for knowledge-intensive services in the 1990s, which created a place under the sun even for the many small, but low-productive entrants (cf. Van der Wiel 1999b). In the Netherlands, BS industry in the second part of the 1990s was characterised by a considerably higher firm startup rate than other Dutch industries.

BS labour productivity growth in all benchmark countries appears to have been lower than in the total market sector. This factor by itself is sufficient to explain a large part of the structural employment growth for BS industry. If we correct for upgrading of labour quality (cf. Figure 5) then this the relative labour productivity stagnation in the BS industry becomes more marked. Accardo et al. (1999) showed that this was a strong effect in France.

Table 3.11 Decomposition of differences in employment growth between 'other market services' and selected economic sectors, Netherlands 1978-93

	Total employment growth	Of which:				
		Growth domestic final demand	Growth net foreign demand	Shift in final preferences	Labour productivity change	Change in system of intermediate deliveries
	average annual growth in per cents					
Growth of 'other market services' (a)	3.9	1	-0.8	-0.9	2.1	0.9
Growth difference with:						
Exposed sector with import competition	4.7	0.5	-1.7	-1.1	4.9	0.4
Exposed sector without import competition	2.8	0.5	-2.8	-0.5	5.6	-1.6
Consumer-oriented sector	2.2	-0.4	-0.9	-1.6	2.8	0.7

Note: (a) Services other than trade, lodging, transport, storage, communication, finance, insurance and real estate. Source: Van der Hoeven, Kwaak and Lever (1997).

A study by Brus (1998) found that labour productivity stagnation contributed 0.8 per cent annually to a annual employment growth rate difference of 3.3 per cent between BS industry and the total economy in the Netherlands during the period 1975-93.[45] An even stronger result was found in an OSA study by Van der Hoeven *et al.* (1998), as reported in Table 3.11.

It can be concluded that a relatively weak labour productivity development has contributed strongly to the employment growth difference between BS industry and the rest of the market sector.

[45] Note that the negative sign for the difference in gross labour productivity change between BS industry and the average for the total Dutch economy should be read as a positive contribution to the employment growth difference.

3.7 Conclusions

This chapter used an explanatory framework for structural growth of BS industry that was derived from input-output analysis. Three groups of explanatory factors were explored for the structural value-added and output growth of BS industry compared to the rest of the market sector: (i) different growth rates of final demand, (ii) different impacts of privatisation by the government sector, and (iii) changes in the system of intermediate deliveries between market industries. The latter factor reflects technological change, outsourcing tendencies and institutional changes like deregulation. For structural employment growth in the BS industry, an additional explanatory factor, namely the difference in labour productivity change between BS industry and the rest of the market sector, was explored. No integrated empirical testing of all relevant explanatory factors could be undertaken. Data had to be drawn from different studies, with different methods, different period coverage and different countries. This empirical limitation makes a ranking of explanatory factors a bit tricky. With these caveats in mind, still some conclusions can be drawn on the factors that contributed to structural growth of BS industry.

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1. Outsourcing of in-house service activities by private firms was a major source of structural growth. The nature of outsourcing changed over time, from pure replacement outsourcing to service-upgrading outsourcing with increased high-skill inputs from the BS industry. Especially BS branches that produce client-specific products have benefited from this outsourcing wave since the mid-1990s.
2. The increased weight of BS industry in the system of intermediate deliveries is partly caused by technological change that has the form of product innovation and product specialisation. Playing a role in the background is the preference of client industries for a diversified supply of BS products, thus generating strong demand for new and specialised BS products.
3. Final demand for some BS industries - software and ICT-related services - has grown more than final demand for the rest of the market sector. This factor especially pertains to the 1990s. No growth contribution was found from final demand shifts towards industries that make more-than-average use of business services as intermediary inputs.
4. Deregulation contributed positively to the growth difference between BS industry and the rest of the market sector.

5. Privatisation of in-house service activities by governments probably also contributed to structural growth of BS industry. In particular the second wave of privatisations (mainly service activities) contributed to structural growth of BS industry in the second half of the 1990s.
6. Stagnating labour productivity development relative to the rest of the market sector. This explanation only pertains to the structural employment growth: it does not explain structural value-added growth.

4 General conclusions

This study had the following aims: (A) assess the evidence on a structural growth gap between BS industry and the rest of the market sector; (B) explain the structural growth performance of BS industry;

Re: A Evidence on a structural growth gap

The following empirical evidence was found on the extent of the structural growth gap:

- BS employment grows stronger than overall employment in the market sector, both in the first and second half of the 1990s.
- BS employment also grows stronger than the rest of market services.
- In absolute terms, job creation in BS industry in all countries represents a major shift in market sector employment.
- The growth difference between BS industry and the market sector is smaller for value added than for employment.
- Over the 1990s, gross labour productivity in the BS industry grew less than in the total market sector.
- Structural growth of BS employment and BS value added was stronger in the Netherlands than in most benchmark countries.
- The growth performance of Dutch BS industry can only to a small extent be explained from the strong growth in temporary work agencies.

Re: B Explanations for structural growth performance of BS industry

Structural growth of BS services industry can be attributed to several causes. Three groups of explanatory factors have been explored for the structural value-added and output growth of BS industry compared to the rest of the market sector: different growth rates of final demand, different impacts of privatisation by the government sector, and changes in the system of intermediate deliveries between market industries. The latter factor reflects technological change, outsourcing tendencies and institutional changes like deregulation. With regard to structural employment growth an additional explanatory factor, namely the difference in labour productivity change, was explored.

All available empirical studies invariably find that changes in the system of intermediate deliveries, have been the major factor contributing to structural growth of the BS industry.
It can therefore safely be concluded that this factor is more important than final demand growth, the shift in final preferences, or privatisation.

Although shifts in the system of intermediate deliveries in the market sector can be pinpointed as the main explanatory factor, it is impossible to quantify empirically between the effects of product innovation, process innvation, different outsourcing practices, and institutional changes. Product innovation and product differentiation in the BS industry generate demand for specialised and diversified products. This in turn can lead to a new system of intermediary deliveries between market industries, with a larger weight for the BS industry. In the case of outsourcing, client firms change the production mode of in-house service activities: provision by outside BS firms substitutes service provision by own employees of the outsourcing firm. On the basis of empircal and qualitative observations, the conclusion is warranted that a shift has taken place from pure displacement outsourcing, in which in-house service and the now externally supplied BS product were close substitutes, to a form of outsourcing in which the outsourcing goes along with an upgrading of the service quality. The human-capital content of outsourced services activities is rising. In the recent wave of outsourcing, even specialist and close-to-management service activities that were thus far considered to be core company domains have become eligible for outsourcing. BS branches producing client-specific business services (tailor-made for client firms) gained strongly in the most recent outsourcing wave. Deregulation is an institutional factor that contributed significantly to a stronger role of BS industry in the system of intermediary deliveries. Deregulation refers to a relaxation of government-imposed rules on market transactions. Important in this respect was the impact on labour contracts, firm startup regulations, quality requirements for products and services, professional qualifications, and requirements for existing firms. The impression is that BS industry may have benefited more from deregulation tendencies than other market industries.

With regard to the role of final-demand related factors behind structural growth of BS industries, a few partial conclusions could be drawn. Growth of direct final demand probably could not explain structural growth of the BS industry's until the mid-1980s. The situation has changed since then. Particularly since the early 1990s, consumer demand for software products and export demand for BS products increased faster than for the market sector as a whole. Both factors related to direct final demand can explain part of recent structural BS growth. Shifts in final demand preferences towards industries with above-average BS input intensities cannot explain recent structural growth of the BS industry.

The structural growth of employment in BS industry vis-à-vis other market industries is to a considerable extent caused by a stagnating labour productivity development in the BS industry. relative to the rest of the market sector.

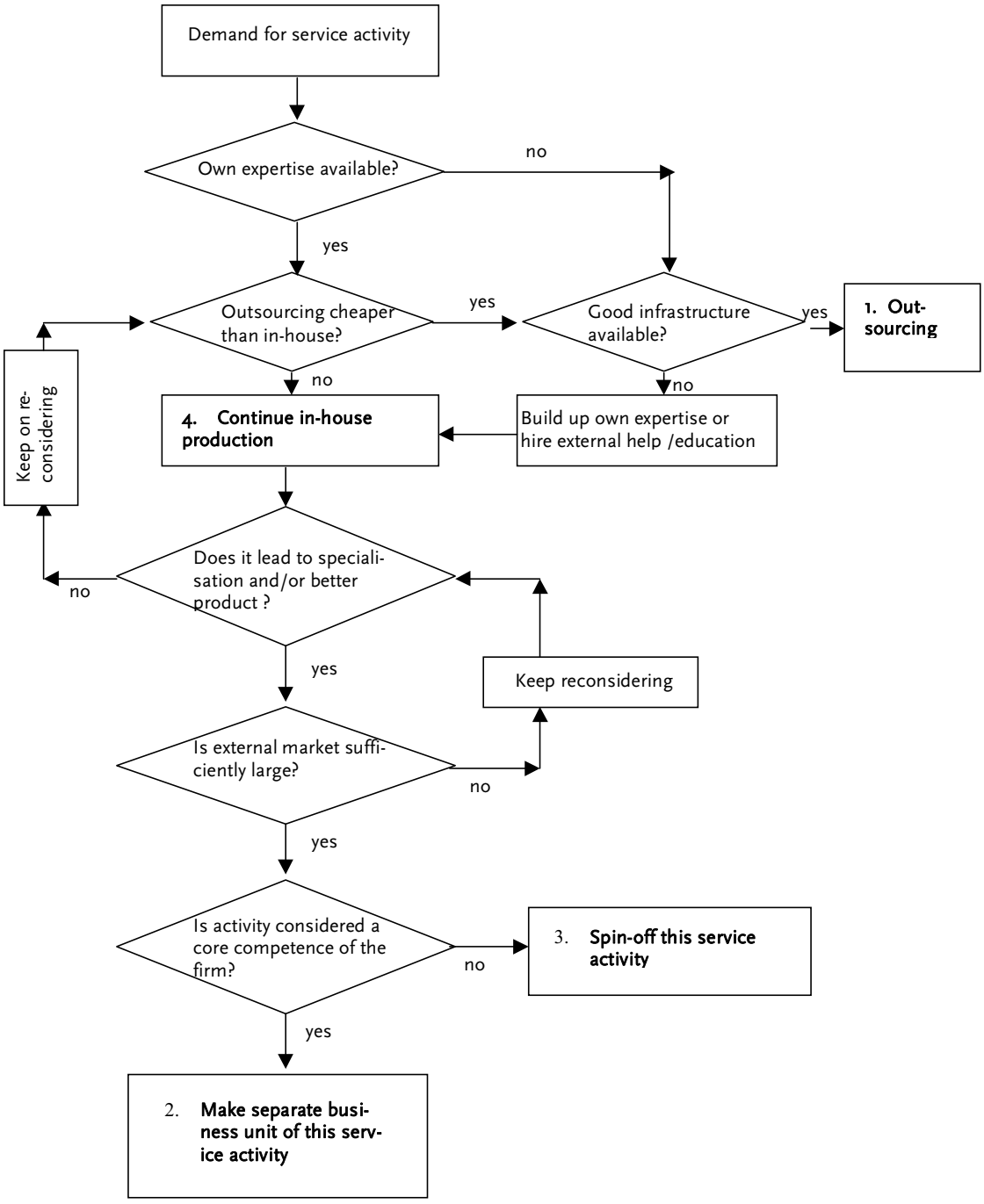
Annex I Structural employment growth of BS industry by sub-period

Annex table A1 Growth gap between growth of employment [a] in BS and other market services

Country	1971-80	1981-85	1986-90	1991-95	1996-98
			%-point, average annual growth difference [f]		
Belgium[b) c) g)]	2.3	1.9	2.5	1.3	3.4
Denmark	..	..	..	0.8	5.2
Finland	2.1 [m)]	4.5	5.9	1.0	5.9
France[j)]	2.2 [k)]	1.4	5.7	0.9	3.4
Germany	..	..	..	3.4 [p)]	3.7
Italy[b)]	..	..	3.1 [o)]	1.4	4.9
Neth. incl. TW[h)g)]	2.2	3.7	4.2	3.7	6.1
Neth. excl. TW[h)g)]	2.0	3.2	2.6	3.1	3.4
Sweden[i)]	..	2.3	4.9	0.6	2.8
UK[d)]	0.9 [n)]	2.6	3.1	1.4	2.4
USA	3.1	4.7	3.4	2.2	4.2 [q)]

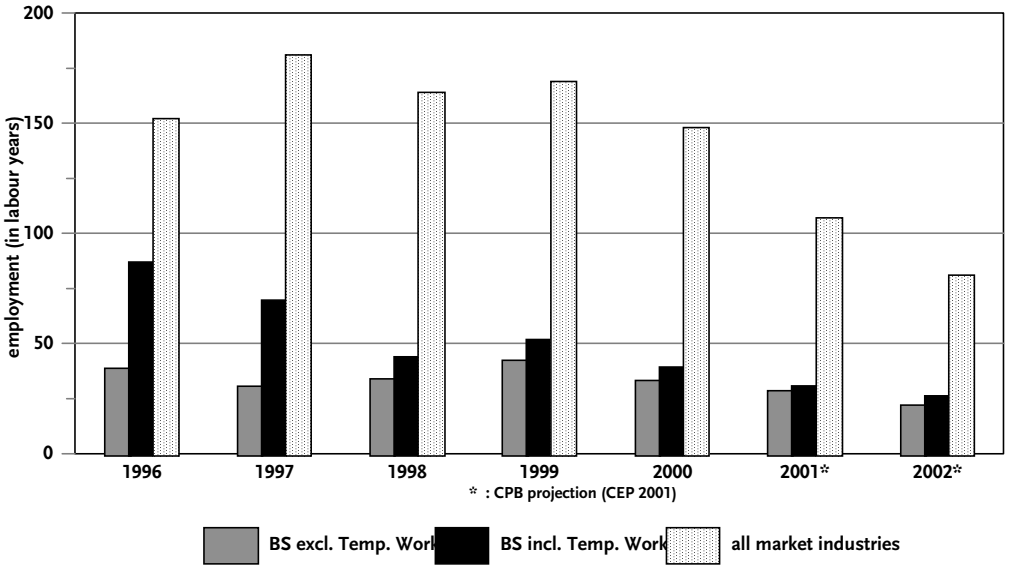
Notes: a) in persons employed. b) BS plus real estate. c) For the years before 1995 estimated as 50% of total employment in community, social and personal services (benchmark year 1995). d) BS plus real estate plus finance and insurance. e) Because of inter-country differences in the degree of commercialisation of social services, health and education, a wide definition of market sector has been used. Market sector employment is calculated as total employment in all industries less employment in '*Producers of Government Services* (ISIC2)' or *'Public Administration and Defence*' (ISIC3, group 3.1). f) 'Other market services' is defined as total market services less business services. g) Data up to 1995 based on ISIC 2; after 1995 on ISIC 3. h) TW stands for 'temporary work agencies'. i) 1987-1990. j) Data up to 1990 based on ISIC 2; after 1990 on ISIC 3. k) 1973-80. m) 1975-80. n) 1978-80. o) 1988-90. p) 1992-95. q) 1996-97. Source: OECD, Services: Statistics on Value Added and Employment (SVAE), May 2000. Dutch BS data from CBS (prepared by Fred Kuijpers, CPB).

Annex 2 Decision framework for outsourcing



Annex 3 Contribution of BS industry to job creation in Dutch market sector, 1996-2002

Figure A2 Creation of new jobs in BS industry and the Dutch market sector, 1996-2002



Annex 4 Country differences in BS input intensities (value-added based)

Table A2 International comparison of BS-input intensities in value added, selected industries, 1990

	Rank Netherlands	Netherlands	France	Germany	UK	USA
	ranking (1-5)	*value of BS inputs as percentage of value added* [a]				
Agriculture, forest, fishery	*3*	*5.0*	*1.8*	*4.0*	*6.2*	*9.7*
Food, beverages, tobacco	*3*	*18.2*	*24.9*	*30.8*	*16.1*	*14.3*
Textiles, clothing, leather prod.	*3*	*15.2*	*19.4*	*27.0*	*12.7*	*6.9*
Paper and printing products	*5*	*16.0*	*17.6*	*22.1*	*26.6*	*14.9*
Industrial chemicals	*5*	*14.5* [b]	*19.1*	*26.8*	*16.4*	*14.9*
Drugs and medecines	*5*	*11.7* [c]	*14.7*	*..*	*13.3*	*39.4*
Iron and steel	*2*	*10.9* [d]	*5.1*	*3.5*	*14.2*	*4.9*
Non-ferrous metals	*3*	*10.9* [d]	*2.9*	*4.4*	*21.0*	*24.1*
Metal products	*2*	*10.0*	*8.8*	*6.9*	*17.1*	*8.3*
Non-electric machinery	*3*	*15.7*	*43.7*	*24.8*	*14.3*	*8.8*
Office, computing machinery	*4*	*12.0* [e]	*54.4*	*26.0*	*22.2*	*1.8*
Automobile industry	*4*	*16.5*	*29.7*	*25.9*	*18.1*	*6.0*
Construction	*5*	*10.8*	*32.5*	*20.6*	*20.5*	*14.4*
Repair, wholesale & retail trade	*3*	*14.2*	*8.9*	*25.1*	*20.8*	*13.8*
Transport and storage	*4*	*9.0*	*10.2*	*14.9*	*15.7*	*7.8*
Communication	*3*	*3.8*	*2.2*	*2.1*	*9.9*	*5.9*
Credit and insurance	*5*	*8.3*	*30.1*	*23.0*	*64.4*	*22.7*
Business services	*5*	*8.8*	*18.0*	*19.0*	*43.4*	*16.0*
All market industries	*5*	*9.2*	*13.4*	*17.7*	*17.6*	*12.3*

Notes: a) All in current prices. b) Chemical industry c) Rubber and plastics industry. d) Base metals. e) Electrotechnical industry. Sources: input intensities for France, Germany , UK and USA calculated from i/o tables in OECD database; Dutch input intensities calculated from CBS i/o table (using industry aggregates of OECD).

References

Abraham, K.G. and S.K. Taylor, 1993, *Firms' use of outside contractors: theory and evidence*, NBER Working Paper No. 4468, NBER, Cambridge, MA.

Accardo, J. L. Bouscharain and M. Jassi, 1999, Le progrès technique a-t-il ralenti depuis 1990? in: *Economie et Statistique*, INSEE, No. 323 and Erratum in *Economie et Statistique*, No. 328, p. 113-5.

Alladin, S., Y. Bernardt, D.Brus and T. Dunnewijk, 1998, *Employment in the Dutch market services sector, 1969-1993: an input-output decomposition study*, CPB Interne Notitie No. 98/III/1, CPB, The Hague.

Alladin, S., F. Suijker and A. Kuypers, 1999, *Heterogeniteit in de sector tertiaire diensten*, Memo, December 8th 1999, CPB, The Hague.

Bandt, J. de, 1995, Indirect productivity of business services, through non-material investments, in: E. Felli *et al.* (eds, *The service sector: productivity and growth*, Physica Verlag, Heidelberg, pp. 157-73.

Barker, T. and O. Forsell, 1992, Manufacturing, services and structural change - 1979-84, C. Driver and P. Dunne (eds, *Structural change in the UK economy*, CUP, Cambridge, pp. 14-44.

Barro, R.J. and X. Sala-i-Martin, 1995, *Economic growth*, McGraw-Hill, New York.

Baumol, W.J., 1967, Macroeconomics of unbalanced growth: the anatomy of urban crisis, *American Economic Review*, vol. 57, pp. 415-26.

Beyers, W.B. and D.P. Lindahl, 1996, Explaining the demand for producer services: is cost-driven externalisation the major factor?, *Papers in Regional Science*, vol. 75(3), pp. 351-74.

Boog, J. and M. van Lin, 2001, *Reductie administratieve lasten door ICT*, EIM publication Nr. A0012, EIM, Zoetermeer.

Browning, H. and J. Singelmann, 1978, The transformation of the US labor force - the interaction of industry and occupation, *Politics a & Society*, vol. 8, no. 3/4.

Brus, D. , 1998, Baumol's disease in the Netherlands, *CPB Report*, No. 1998/4, pp.35-38.
Burda, M.C. and B. Dluhosch, 2000, *Cost competition, fragmentation and globalization*, CESifo Working Paper Nr. 393, Center for Economic Studies & IFO Institute for Economic Research, München.

Clark, C., 1938, *Australian economic progress against a world background*, J. Fisher Lecture.

Coffey, W.J. and A. Bailly, 1991, Producer services and flexible production: an exploratory analysis, *Growth and Change*, vol 22 (Fall), pp. 95-117.

Deutsche Bank, 1996, Die längerfristige Entwicklung des privaten Verbrauchs in Deutschland und seine Bestimmungsgründe, *Monatsbericht*, vol. 48 (7), pp. 17-29.

Dunnewijk, Th., 2001, Temporary work agencies in the Netherlands: emergence and perspective, *CPB Report* - Quarterly Review of CPB Netherlands, No. 2001/1, pp. 37-44.

Dixit, A.K. and J.E. Stiglitz, 1977, Monopolistic competition and optimal product diversity, *American Economic Review*, vol. 67, pp. 297-308.

Edwards, B.K. and R.M. Starr, 1987, A note on indivisibilities, specialisation and economies of scale, *American Economic Review*, vol. 77 (1), pp. 192-4.

Eering, P. and H. van der Wiel, 1999, *Input-output analyse: een instrument met grenzen*, CPB Interne Notitie No. 98/III/21.

Ethier, W.J., 1982, National and international returns to scale in the modern theory of international trade, *Americam Economic Review*, vol. 72 (3), pp. 389-405.

Feenstra, R.C., J.R. Markusen and W. Zeile, 1992, Accounting for growth with new inputs, in *American Economic Review*, vol. 82, pp. 415-21.

Fisher, A.G.B., 1939, Production, primary secondary, tertiary, *Economic Record*, vol.15 , June, 24-38.

Fixler, D.J. and D. Siegel, 1999, Outsourcing and productivity growth in services, *Structural change and economic dynamics*, vol. 10, pp. 177-94.

Francois, J.F., 1990, Producer services, scale and the division of labor, *Oxford Economic Papers*, vol.42, pp. 715-29.

Goe, W.R., 1991, The growth of producer services industries: sorting through the externalisation debate, *Growth and Change*, vol 22 (Fall), pp. 118-41.

Groot, H.L. de, 2001, Macroeconomic consequences of outsourcing: an analysis of growth, welfare and product variety, *De Economist*, vol.149, pp. 53-79.

Grubel, H.G and M.A.Walker, 1991, The dominance of producers services in the US economy, *Banca Nazionale del Lavoro Quarterly Review*, vol. 1976, pp. 57-68.

Grubel, H.G., 1995, Producer services: their important role on growing economies, in: E. Felli *et al.* (eds), *The service sector: productivity and growth,* Physica Verlag, Heidelberg, pp. 11-41.

Gullickson, W., 1992, Multifactor productivity in manufacturing industries, *Monthly Labor Review*, October, pp. 20-79.

Gundlach, E., 1994, Demand bias as an explanation for structural change, *Kyklos*, vol. 47, pp.249-67.

Hagedoorn, J. *et al.*, 1986, *Inventarisatie van ontwikkelingen in dienstverlening aan de industrie*, Studiecentrum voor Technologie en Beleid, TNO, Apeldoorn.

Helpman, E. and P.R. Krugman, 1985, *Market structure and foreign trade: increasing returns, imperfect competition and the international economy*, MIT Press, Cambridge MA.

Hoeven, W. van der, A. Kwaak and M. Lever, 1997, *Internationalisering, technologische ontwikkeling en arbeidsmarkt: kwantitatieve verkenning*, OSA Werkdocument W157, OSA, Den Haag.

Hulshoff, H. et al., 1998, *New services: strategic exploratory survey of a dynamic phenomenon*, EIM, Zoetermeer.

Kavanagh, I. and D. Parker, 2000, *Contracting out of local government services in the UK - a case study in transaction costs,* Research Paper 0009, April 2000, Aston Business School, Birmingham.

Klodt, H., R. Maurer and A. Schimmelpfennig, 1997, *Tertiarisierung in der deutsche Wirtschaft*, Schwerpunkstudie zur Strukturberichterstattung fur den Bundesminister fur Wirtschaft, Institut fur Weltwirtschaft, Kiel.

Klodt, H., 1996, *The transition to the service society: prospects for growth, productivity and employment*, paper to be submitted to the Economic Planning Agency Tokyo, The Kiel Institute of World Economics, Kiel.

Kögel, M.T., 1999, *Services and economic growth*, Diss. Erasmus University Rotterdam, Tinbergen Institute Research Series No. 199, Rotterdam.

Kox, H., 2000, *Impact of monopolistic competition on productivity and industry structure in business services*, Interne Notitie # III/2000/08, Centraal Plan Bureau, Den Haag.

Kox, H.L.M., 2001, *Exposure of business services industry to international competition*, CPB Document No. 6, CPB, The Hague (forthcoming)

Markusen, J.R., 1989, Trade in producer services and in other specialised intermediate inputs, *American Economic Review*, vol. 79, pp. 85-95.

Ministry of Trade and Industry, 2000a, *Videnservice i vækst* (Growth in knowledge services), Ehrvervsministeriet, Copenhagen

Ministry of Trade and Industry, 2000b, *Service i forandring* (The changing face of services-Trends and challenges in the Danish Service Sector), Ehrvervsministeriet, Copenhagen

Momigliano, F. and D. Siniscalco, 1982, The growth of service employment : a reappraisal, *Banca Nazionale del Lavoro Quarterly Review*, vol. 35, pp. 269-306

OECD, 2000, *Economic growth in the OECD area: recent trends at the aggregate and sectoral level*, Economics Department, Document nr. ECO/CPE/WP1(2000)6 and annexes, OECD, Paris.

OECD, 2000b, *OECD Employment Outlook*, June 2000, OECD, Paris.

OECD, 1999, *Strategic business services*, OECD, Paris.

Oliner, S.D. and D.E. Sichel, 2000, The resurgence of growth in the late 1990s: is information technology the story?, *Journal of Economic Perspectives*, vol. 14 (4), pp. 3-22.

Oosterhaven, J. and A.R. Hoen, 1998, Preferences, technology, trade and real income changes in the European Union - an intercountry decomposition analysis for 1975-1985, *The Annals of Regional Science*, vol. 32, pp. 505-24.

Pasinetti, L., 1981, *Structural change and economic growth: a theoretical essay on the dynamics of the wealth of nations*, Cambridge University Press, Cambridge.

Perry, M., 1992, Externalisation and the interpretation of business sector growth, *The Service Industries Journal*, vol. 12 (1), pp. 1-17.

Sen, A., 1973, *On economic inequality*, Clarendon, Oxford.

Stigler, G.J, 1951, The division of labor is limited by the extent of the market, in : *Journal of Political Economy*, vol.59.

Tschetter, J., 1987, Producer services: why are they growing so rapidly?, *Monthly Labor Review*, vol.110, December, pp. 31-40).

Wiel, H. van der, 1999b, *Firm turnover in Dutch business services: the effect on labour productivity*, Research Memorandum No. 159, CPB Netherlands Bureau for Economic Policy Analysis, The Hague.