



Demand Patterns and Employment Structures An Aggregate Analysis

Ronald SCHETTKAT

Utrecht University, The Netherlands

Research Assistance: Joep DAMEN

Utrecht University, The Netherlands

Working paper No 11

February 2004

Demand Patterns and Employment Structures An Aggregate Analysis*

Ronald Schettkat

Research Assistance: Joep Damen

*Demand Patterns and Employment Structures An Aggregate Analysis**

Author

Ronald SCHETTKAT
Utrecht University
Dep. of Socio & Institutional econ.
PO Box 80140
NL 3508 TC UTRECHT
THE NETHERLANDS

E-mail: r.schettkat@fsw.ruu.nl

*I received invaluable comments in the various DEMPATEM workshops and in the discussions at Utrecht University. I am especially indebted to Andrew Glyn, Giovanni Russo and John Schmitt. The usual disclaimer applies.

DEMPATEM working papers are published on behalf of the DEMPATEM research project by the project coordinators, Wiemer Salverda and Ronald Schettkat.

The DEMPATEM working papers are available online as PDF-files at <http://www.uva-aias.net/lower.asp?id=186>; exceptionally paper copies will be made available on request (see address below). The DEMPATEM working papers are intended to make the results of the DEMPATEM-research available to all persons interested. They aim to stimulate discussion. Comments are welcome.

The DEMPATEM research project (2001-2004) addressed *Demand Patterns and Employment Growth: Consumption and Services in France, Germany, the Netherlands, Spain, the United Kingdom and the United States*. It was a joint undertaking of the Universities of Amsterdam, Utrecht, Oxford and Paris-I Sorbonne, and the University Carlos III in Madrid, University College London and 17th Street Economics, Washington DC. The project was financially supported by the Socio-economic Key Action of the Fifth Framework Programme of the European Commission (HPSE-CT-2001-00089). List of the full project membership and all working papers can be found at the end of the paper.

Address:

Amsterdam Institute for Advanced Labour Studies, AIAS

University of AMSTERDAM

Plantage Muidersgracht 4

1018 TV AMSTERDAM

telephone +31 20 525 4199

fax +31 20 525 4301

email aias@uva.nl

EXECUTIVE SUMMARY

The major findings answering partly three of the five major DEMPATEM questions (see DEMPATEM 2000) are:

1) Does the higher share of service industries in employment in the US derive from a larger role of services in the structure of final demand, and is this gap growing?

- The US have a higher share of services in final demand of about 10%-points but all countries show a trend towards services in final demand.
- There is a clear trend to a higher share of services in final demand also in constant prices within countries. Using constant instead of current prices flattens the trend towards services in final demand but it remains.
- The lead of the US in the service share in final demand occurs in current and in constant prices but it seems stable over time.
- The bigger service sector in the US occurs in different data sets. Also as a share in value added the service sector in the US is bigger than in Europe.
- Overall services rise in relative prices whereas overall goods prices are falling in every country. Some service prices rise more than the average, but not all.
- Relative prices for goods rather than for services seems to be lower in the US than in Europe. This is mainly the result of relatively low prices for health and education in Europe, which are usually mixed public-private services in Europe. Other services, especially 'market services' have substantially lower relative prices in the US.
- Measured in international prices the gap in relative service demand between the US and the European countries narrows but the gap remains.

2) Particularly, is consumer demand higher and growing more rapidly in the US? What is its impact on the production of services?

and

3) What is the role of the pattern of consumption in this? I.e., do American households consume more services than European households and why?

- In all countries, private consumption is the most important demand component for services followed by government consumption, which, together, account for about 80 to 95% of all final demand for services.
- Imports (and exports) of services are marginal in overall final demand and in household final consumption.
- In the US the share of private consumption in the overall demand for services is especially high, which favors the share of services in final demand.
- Especially the share of services in private consumption grew in the US,
- There is a clear trade-off between private and public expenditures on services depending on the national institutional arrangements. In part American households spend a higher share of their disposable incomes on services because they need to buy services, which are provided publicly in Europe.
- The share of individual consumption in total public consumption is much higher in Europe than in the US.
- Collective consumption in GDP is roughly similar in all countries. If anything it is higher in the US.
- There is no clear pattern in the US-European difference of private final consumption even in categories where public provision is unimportant (like 'restaurants, hotels') the pattern is diverse. The UK and France have higher expenditure shares, Germany and the Netherlands have lower shares than the US.
- In the US with increasing importance up to the mid 1990s when investment grew substantially.
- The employment share in services seems to be influenced by the relative service productivity, which may be related to differences in skill structure and/or capital deepening.
- Demand per head of the population in working age is about 40% higher in the US than in Europe, which affects both goods and services.

TABLE OF CONTENTS

I	INTRODUCTION: STRUCTURAL ECONOMIC DYNAMICS	I
1.1	Major Questions	1
1.2	Why Focusing on Services? Are Services different from Goods?	6
1.3	Outline of the Paper	9
2	INCOME, PRODUCTIVITY, AND EMPLOYMENT	11
2.1	Income and Productivity Levels	11
2.2	Components of Growth	14
2.3	Income and the Employment Share of Services: Extending the Fuchs Analysis	16
3	THE MECHANICS OF CHANGES IN ECONOMIC STRUCTURE: DEMAND AND SUPPLY	23
3.1	Determinants of Employment Shares	24
3.2	Relative Demand Patterns	26
3.3	Relative Supply Patterns, Prices	29
3.4	The Way to Equilibrium: Locating Hypotheses	31
4	PRICES	35
4.1	Price Levels	35
4.2	Price and Volume Similarities	38
4.3	Price Trends	39
4.4	Service Shares in National and International Prices	41
4.5	Conclusions	45
5	ALPHAS: THE SHARE OF SERVICES IN NOMINAL AND REAL EXPENDITURES WITHIN COUNTRIES	47
5.1	Demand in Various Data Sources	47
5.2	The Share of Services in Nominal and in Real Final Demand Within Countries	48
5.3	The Composition of Consumption, Public - Private	51
5.4	Import of Services	55
5.5	Determinants of Changing Service Shares: Shift-Share Analysis	57

6	CONCLUDING SUMMARY: DEMAND AND SUPPLY, LEVEL AND STRUCTURE	59
	REFERENCES	67
	APPENDIX I: WORKING HOURS	71
	APPENDIX II: DEFINITION OF SECTORS IN THE INPUT-OUTPUT DATA (UP TO 1990)	75
	APPENDIX III: UTILITY FUNCTIONS SUBSTITUTION	77

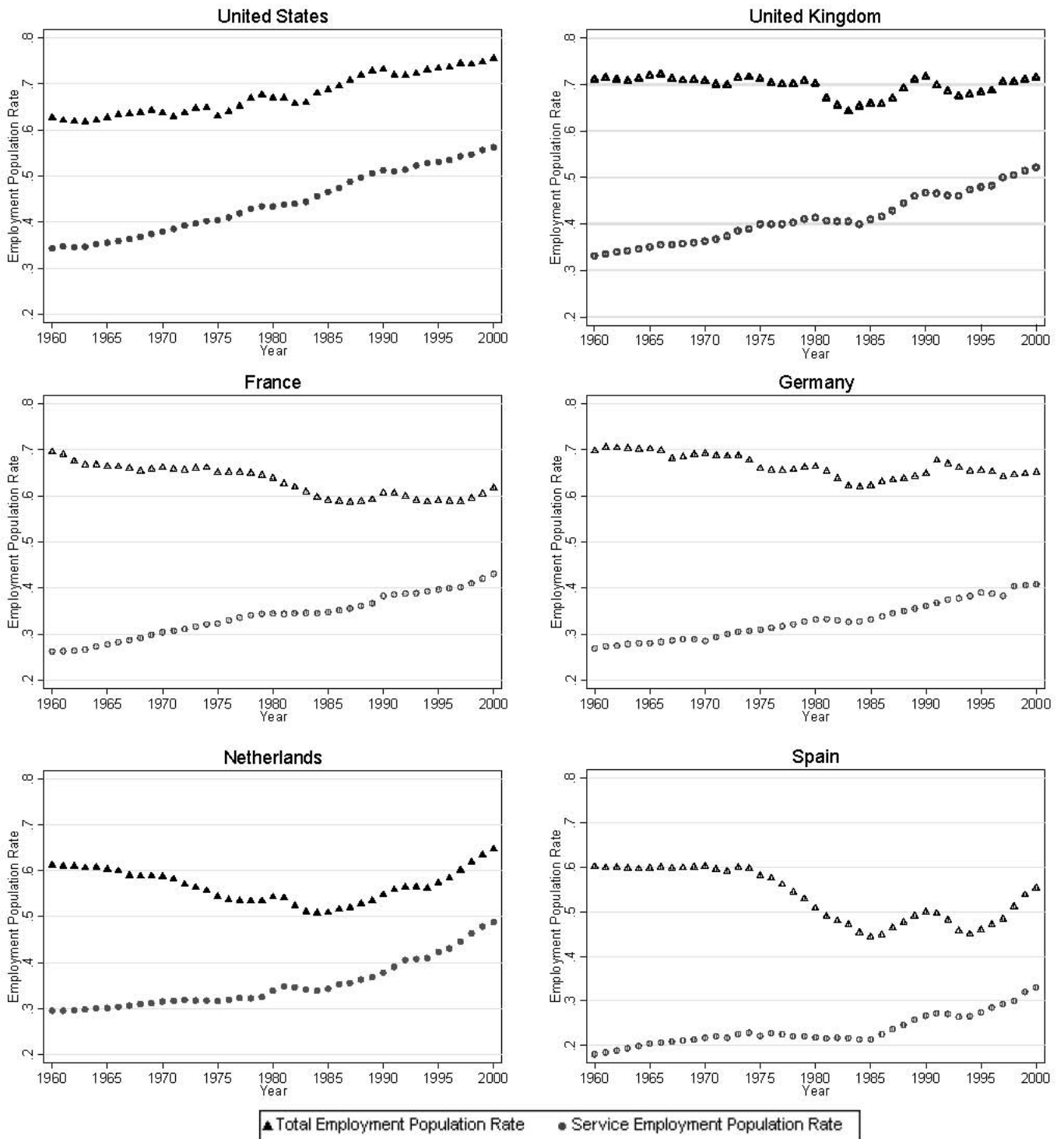
I INTRODUCTION: STRUCTURAL ECONOMIC DYNAMICS

I.1 MAJOR QUESTIONS

All 'highly industrialized' economies were 'service economies' by the turn of the century. For decades net employment growth occurred in the service sector only, while manufacturing employment was on the decline. This trend was clearly led by the US, where, at the beginning of the 21st century, 55% of its working age population (15-64) was employed in services compared to about 40% in a typical European country. The US also integrated an increasing share of its working age population into employment, achieving an employment-population rate of 75% in 2001 compared to about 65% in a typical European country. At the dawn of the 21st century it is the rule for an American woman to work, whereas in several European countries less than half of the female working age population has a job. The divergence in employment trends between the US and Europe occurred since about 1970 when most European countries had similar or higher employment rates than the US (Figure I.1). The different trends are even sharper if working hours are taken into account (Figure I.2).

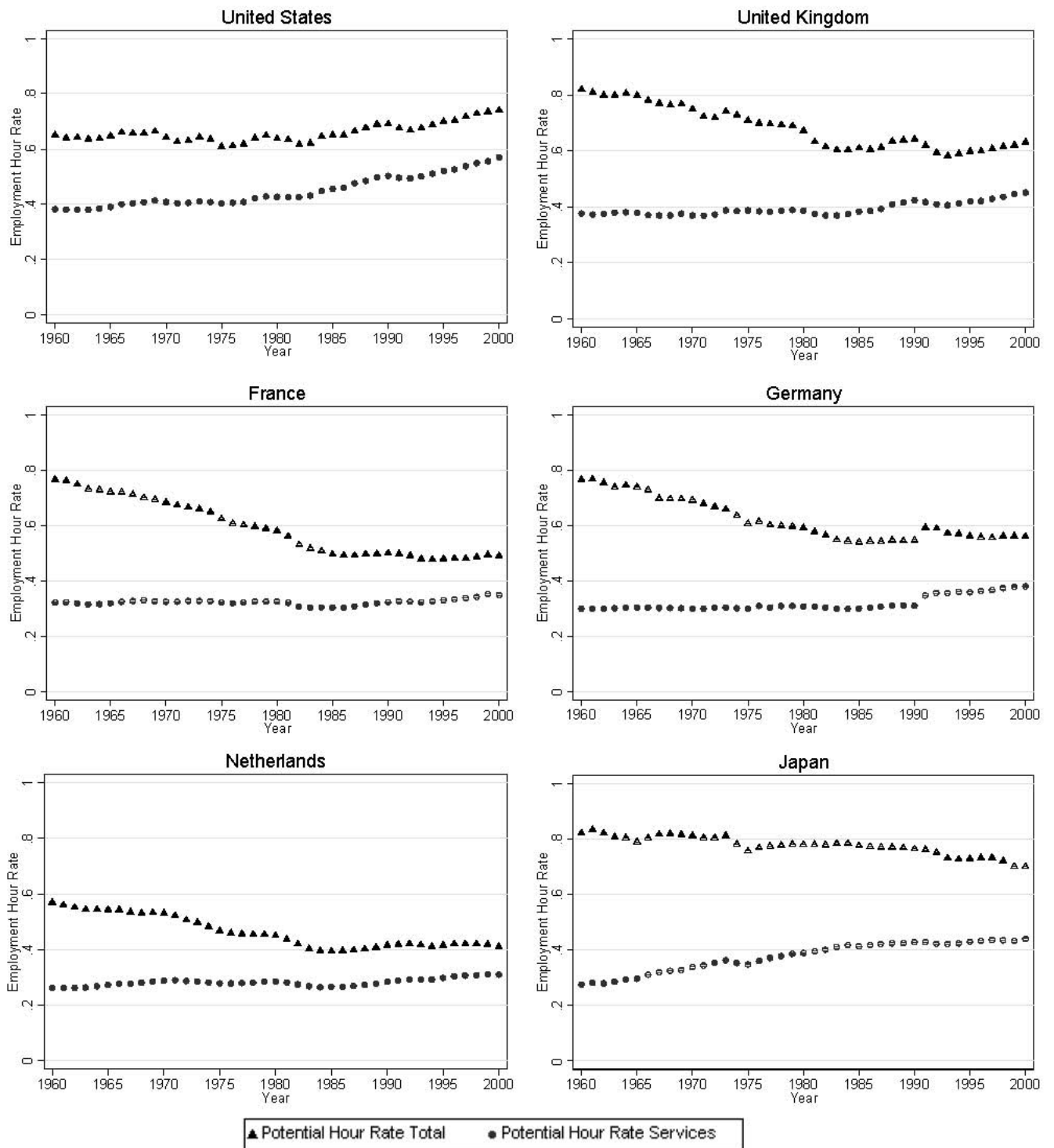
Rising employment-population rates in the US coinciding with the expansion of service sector employment has led many economists to search for institutional explanations for the diverging US-Europe employment trends. Most popular is the view that American labor market institutions permit flexible wages, which allow service industries that suffer from technological stagnancy to expand. According to this hypothesis Americans accept high and rising inequality as the price for high employment (inequality hypothesis or wage-compression hypothesis). In Europe, on the contrary, it is argued that high minimum wages - caused by high unearned income from the social security system, or by high statutory minimum wages, or high bargained wages respectively- prevent service industries to expand and thus create a lack of jobs for low-skilled workers. Wages affect prices and overly high wages and corresponding prices extinguish whole (service) industries. American institutions, so the argument goes, integrate a large part of the population, including the low-skilled, into employment at the price of high inequality. European institutions on the other hand prevent high and rising inequality at the price of the exclusion of especially low-skilled workers from employment. Although the inequality hypothesis fits the aggregate data well, detailed studies fail to establish this relation (for a summary see Freeman/Schettkat, 2002).

Fig. 1.1: Employment Population Rates for the DEMPATEM countries (population 15-64)



Source: Economic Outlook, OECD Statistical Compendium, 2000 #2.
 Calculation: Employment (total or in services) / Population between 15-64 years old.

Fig. 1.2: Actual/Potential Work Hour Rate



Source: O'Mahoney (2002), CBS Statline (online), OECD (2000).
 Calculation: $Employment * Annual\ Hours\ worked / pop_{15-64} * avg.\ hours\ worked\ 1970$

Given the European belief in institutional differences as the major cause for US-European service employment differences it may be surprising that many studies that focus especially on services argue that employment in service industries depends mainly (if not solely) on per capita income. Wealthier societies have a higher share of service employment either because

they demand more services (hierarchy of needs hypothesis) or because service provision is technologically stagnant and therefore experiences rising relative prices, which result in a larger share of current expenditures and employment to be allocated to services. The latter is Baumol's cost disease (cost disease hypothesis), which assumes, contrary to the hierarchy of needs hypothesis, that demand for services in constant prices is fixed and does not rise with per-capita income. Thus, according to Baumol's hypothesis, the rising share of services in employment and nominal GDP is due to technological stagnancy in services but technological progress in the rest of the economy (i.e. in manufacturing). In his 1980 paper on *Economic Growth and the Rise of Service Employment*, Victor Fuchs was able to show that the share of service employment in overall employment indeed follows a predictable logistic curve against income per capita. Surprisingly enough the Fuchs model still holds after 25 years (see section 2.3 of this paper). But Fuchs also pointed out that the rising labor force participation of women might lead to a different demand structure favoring services (which is one of the major hypotheses guiding DEMPATEM). Households may outsource part of their own production. This means that the way a certain level of income per capita is created is also important, and big differences exist on either side of the Atlantic.

The regularity of service sector employment in relation to per-capita income between and within countries over time, is quite astonishing. This regularity, though, is as much a theoretical phenomenon as an irregular development would be, because so many variables (besides income) may affect service employment. What underlying structures and mechanisms lead to this phenomenon? What forces determine the expansion of service employment?

In general, the industry structure of employment may differ between two countries for several reasons:

- Differences in per-capita income
- Differences in final product demand
- Differences in relative prices
- Differences in the vertical organization of production (integration and outsourcing of various tasks)
- Differences in productivity between industries (technology, skills, capital deepening)
- Differences in working hours between industries

These differences may again be caused by numerous variables. For example, the differences in relative final demand for services may be due to differences in the weights of the various aggregate final-demand components (private consumption, government consumption, investment, imports, exports) and differences in service shares within these components, which again may be caused by differences in income levels, tastes, prices, household composition, specialization in the economy. Furthermore, as has been argued by William Baumol, the share of service employment may increase even without any changes in relative real demand for services, but only through the lack of productivity growth in service activities. Rising income in combination with unbalanced productivity growth can result in the expansion of service employment. Thus, the analysis of the employment structure is necessarily complex and there can hardly be any straightforward answer to why one country has a higher share of service employment than another.

DEMPATEM analyzes the causal mechanisms between economic growth and service demand and the reverse causation that service sector expansion promotes economic growth. DEMPATEM intends to provide a better understanding of the mechanisms that create the US-European employment gap, thus giving impetus to the general debate on employment policies in Europe. The project moves beyond the simple use of more (US) vs. less (EU) inequality to which the employment gap is too often ascribed, although distributional issues are taken into account. DEMPATEM looks simultaneously at the product market and the labor market in a systematic and comparative fashion, using different data sources. To our knowledge DEMPATEM is the first project that develops such an integrated approach, spanning product and labor markets in an international comparison of employment trends and their causes. Changing structures are related to long-term changes and the relevant periods here are the 1970s, 80s and 90s.

DEMPATEM analyses the full complexity of the differences in industry structure of employment using the US as the benchmark country. The major questions are (DEMPATEM proposal, p. 6):

1. Does the higher share of service industry employment in the US derive from a larger role of services in the structure of final demand, and is this gap growing?
2. Particularly, is consumer demand higher and growing more rapidly in the US? What is its impact on the production of services?
3. What is the role of the pattern of consumption in this? I.e. do American household consume more services than European households do and why.

4. What determines the pattern of consumption? What role do household characteristics, including labor participation, income inequality and consumer attitudes play?
5. How does consumer spending on services translate into the structure of production and employment?
6. What is the structure of employment in these industries by skills, gender, age, and pay? And how does this depend on female labor supply?

This paper partly tackles questions one to three.

1.2 WHY FOCUSING ON SERVICES? ARE SERVICES DIFFERENT FROM GOODS?

DEMPATEM focuses on services, but actually 'service' is an amorphous concept (Griliches, 1992) that lacks a clear-cut definition, even though many efforts have been made to clearly distinguish services from goods. The sharpest description of the difference between goods and services is probably that a service is 'something that you can't drop on your foot' (Harker, 1995: 1). Often, negative definitions are applied, which merely define what a service is not. Services cannot be stored, and the production and consumption of services (often) occur simultaneously. Services may therefore require time both from its producer and from its consumer (Petit, 2000)¹. In several cases, the quality of the service depends on the participation of the consumer (Griliches, 1992: 5), as in the case of education, where a tutor will achieve nothing without her student's cooperation.

However, to assert that services are time consuming, would be an invalid generalization. Although it may be true for some consumer services (such as haircuts, tennis lessons and the like) it does not apply to all activities that are classified as services. Consultancy, tax and cleaning services, for example, may be aimed at saving the 'consumer's' time. There are also activities that are classified as services, but which cannot easily be distinguished from goods-production activities. 'Car repairs', for example, are classified as services, although roughly 70% of the time spent on a car repair can be classified as goods rather than service production (Freeman/Schettkat, 1999).

The service sector is very heterogeneous. Service activities can be found in each sector of the economy, which makes the range of skill requirements and wages as heterogeneous as the economy itself (Freeman/Schettkat, 1998, 1999). The major question probably is, whether the professional provision of services delivers a productivity gain for individuals and for society as a whole. Therefore, it may be useful to distinguish services requiring expertise,

that is that services in which the professional provider has a productivity advantage, from services that do not require expertise and for which the productivity differential between market provision (buying) and self-provision is minimal. Another distinction should be made by the main user of the service, i.e. whether it is an intermediate or a consumer services (including public services) although most services are intermediate and final at the same time (Schettkat/ Yocarini 2003). Consumer services can in turn be divided into services that are time consuming and services that are time saving; compare a meal in a first-class restaurant with a meal in a McDonald's.

An additional problem is that measuring the quality of services is extremely difficult². Does a shop provide a better service if it has longer opening hours or if it arranges its goods nicely? 'What is the productivity of a milkman?', is a famous question asked by Nicolas Kaldor (1966). Does the milkman double his productivity if he drops off two bottles of milk instead of one? It is often thought that output measurements are easier in the manufacturing industry than in the service sector because output is more homogeneous (Griliches, 1992: 7). Although this argument has certain validity, quality changes in manufacturing products have also been difficult to measure. If the price of a car increases by 10%, how much of that increase is caused by improvements in the car, and how much just results from inflation? (Oi and Rosen, 1992, Gordon 1990, Gordon, 1998). This has been a problem ever since the National Income and Product Accounts statistics were first created and it has never fully been solved³.

Professional services, such as legal advice, tax and accounting consultancies, are bought in the market because it would be impossible for each household or small firm to gain the necessary expertise. The concentration of expertise in certain professions thus creates 'economies of scale' as the huge 'fixed investment' in human capital can be spread over many users. Because of such economies of scale, services requiring professional expertise can be acquired much cheaper from external providers than by internal provision. This helps to explain why firms outsource some services rather than produce them in-house.

Professionalization mainly affects so-called business services, but the distinction between

¹ Time can be seen as a constraint on consumption (Petit, 2000). Scarcity of leisure may therefore result in more 'efficient consumption' as Linder (Linder, 1970), and more recently the Economist (Economist, 1997), have pointed out with respect to the 'American way of leisure'.

² Services and their quality changes formed the heart of the debates about the validity of the US CPI (Consumer Price Index), see: Boskin et al. 1998, Abraham et al. 1998.

³ OECD (1996) gives an overview of various methods used to estimate real value added in services ranging from double deflation –regarded as preferable (page 7)- to direct deflation by a wage rate index.

business and consumer services is rather blurred. Legal and tax advice, for example, are also 'consumed' by private households and the professionalization advantage also works for many consumer services. Private households may also apply the principle of opportunity costs when deciding whether to purchase services or to opt for self-provision. Especially if the service requires little expertise, like cleaning (Schettkat, 2002). The productivity of such services will be roughly equal for self-provision and purchased services. Taking set-up costs into account (for example, travel time to the place of service provision) may increase the efficiency advantage of self-provision even further.

Another argument is that all products are composite products. There are no services without any goods as intermediate input and no goods without some intermediate service input⁴. So why does DEMPATEM focus so much on services while services are not a clear-cut category? There are several answers:

1. The major differences in employment-population rates between the US and Europe occur in service industries. The 'Employment in Europe 2002' report of the European Commission shows (page 29) that the difference in sectoral employment structure between the EU and the US is entirely in service industries.
2. Services are assumed to have a high income elasticity (some of these assumptions will be investigated in this paper, others are evaluated in other DEMPATEM sub-projects, e.g. income elasticity in the DEMPATEM Consumption and Input-Output papers)
3. Services are assumed to be technologically stagnant or at least asymptotically stagnant
4. Services are assumed to experience higher price rises than goods
5. Services are assumed to be less capital and more labor intensive
6. Service demand mainly affects the domestic economy and inter-country service demand differences may be especially relevant for employment

Table I.1 shows employment measured by employment-population rates (population 15-64

⁴ Sometimes it is argued that services depend on good production; i.e. nobody can live on services alone. This is true, but it does not mean that services cannot capture a big share of the economy. We still need agriculture, but only a very small fraction of the labor force is occupied in agriculture and still production is higher than ever. The reason is that productivity growth in agriculture has outpaced demand growth, leading to a decline in agricultural employment. Similarly, manufacturing employment may decline sharply for the same reason: productivity rising faster than demand. For many services, however, the reverse holds (Gregory/ Russo 2003).

years) and final demand and consumption per head of the population 15-64 years by broad sectors in % of the US figures. Many European countries have employment and final demand figures close to or even higher than the US in manufacturing but the gaps are substantial for services. Somehow the major difference between the US and the DEMPATEM countries seems to originate in services. This investigates some of the causes.

Table I.1 Employment, final demand and private household consumption per head of population (15-64 years, US=100, 1995)

	US*	UK*	F	GER	NL	ES
Employment (FTEs)						
Overall	100	86.4	78.6	87.6	77.6	69.8
Agriculture	100	73.7	143.3	94.3	105.6	189.9
Manufacturing	100	109.1	93.3	137.4	88.6	94.3
Services	100	81.9	71.9	70.7	73.4	58.1
Final Demand						
Overall	100	78.3	70.7	65.2	82.9	50.1
Agriculture	100	112.8	91.0	56.3	234.9	94.8
Manufacturing	100	94.8	92.8	88.9	99.9	62.4
Services	100	67.6	59.8	54.1	72.0	43.4
Consumption						
Overall	100	70.3	63.3	54.8	56.8	42.6
Agriculture	100	141.9	150.6	93.8	47.5	129.0
Manufacturing	100	90.1	83.7	59.1	38.2	49.8
Services	100	63.0	58.2	53.6	60.9	40.5

Source: Computations based on OECD Input-Output database for demand and STAN for employment.

* US data refers to 1998, UK data refers to 1997

1.3 OUTLINE OF THE PAPER

This paper mainly investigates the first three DEMPATEM questions, namely:

- Does the higher share of service industry employment in the US derive from a larger role of services in the structure of final demand, and is this gap growing?
- Particularly, is consumer demand higher and growing more rapidly in the US? What is its impact on the production of services?
- What is the role of the pattern of consumption in this? I.e. do American households consume more services than European households do and why.

The paper also links demand to employment. First up is an overview of income and productivity and differences in the growth process of the US, the UK, France, Germany, the

Netherlands and Spain (the DEMPATEM countries). Then a model of economic structure will be sketched, that shows that, the share of services in expenditures (ALPHAs), but also the relative productivity of services (BETAs) determine the employment structure. Thus, the major variables of the 'hierarchy of needs' hypothesis (the structure of demand) and the 'cost disease' hypothesis (relative productivity growth rates) are analyzed. The emphasis will be on demand trends.

2 INCOME, PRODUCTIVITY, AND EMPLOYMENT

2.1 INCOME AND PRODUCTIVITY LEVELS

Level estimates of GDP per capita show convergence between Europe and the US up to the 1980's, but divergence afterwards (see Table 2.1)⁵. GDP per employed person, however, continues to converge to the US level, indicating a change in the income generating process in the US compared to the European countries. Most remarkably, GDP per hour worked in Europe converged to US levels, even though average hours worked, which remained roughly constant in the US, declined markedly in Europe. Measured in GDP per capita the European countries are clearly behind the US, but measured in GDP per hour worked (i.e. productivity) many European countries are at similar levels as the US (see Table 2.1, Gordon, 2002, Freeman/Schettkat, 2002, Bailey/Solow 2001⁶). Thus, it may well be that the US achieved a higher service employment share due to higher per capita income, but most theories of expanding nominal service demand assume that per-capita income grows through technological progress rather than through additional labor input. But, the difference in per capita income between some European countries and the US is clearly achieved through higher labor input in the US, rather than higher productivity. Higher labor input itself, however, may also affect service demand.

⁵ The data shown in Table 2.1 is based on 1999 EKS PPPs, the most recent benchmark of the OECD (2002). Data from BLS (2000), for example, show similar trends, but at times deviate by about 5%-points from the OECD estimates.

⁶ Bailey/ Solow (2001) restrict their estimates of the level productivity to the market sector and find (2001: 154): '... a modest gap between the United States and the continental European countries, at around 10 percent for France and Germany. Within a reasonable margin of error, we can say that the Netherlands is very close to both the United States at one end and also to France and West Germany.'

Table 2.1 Real GDP per capita and per employed person (United States = 100)

Year	US	UK	FR	GER ¹⁾	NL	ES	SW
OECD							
(converted to U.S. Dollars using 1999 EKS PPP's)							
GDP per capita							
1960	100.0	75.3	83.1	63.7	75.8	37.4	74.9
1970	100.0	71.2	88.8	74.3	82.5	52.2	82.9
1980	100.0	69.1	92.7	78.3	82.2	53.9	78.7
1990	100.0	70.6	90.2	75.1	77.3	55.8	75.2
2000	100.0	66.8	71.9	68.3	76.9	55.4	68.3
GDP per worker							
1960	100.0	57.9	64.5	54.0	73.9	35.8	56.7
1970	100.0	61.4	77.8	69.4	86.2	54.4	66.4
1980	100.0	67.3	92.3	83.6	99.9	72.7	67.4
1990	100.0	71.5	95.4	89.7	86.6	80.1	68.4
2000	100.0	71.3	80.6	84.2	76.7	76.7	72.3
GDP per hour worked							
1960	100.0	52.0	58.3	51.1	66.2		57.7
1970	100.0	56.5	73.3	65.9	86.9		70.0
1980	100.0	65.7	92.3	84.7	108.0		77.0
1990	100.0	71.2	100.2	97.3	102.2	74.2	74.7
2000	100.0	73.4	91.7	93.6	98.2	72.3	76.0
BLS							
(converted to U.S. Dollars using 1996 EKS PPP's)							
Real GDP per capita							
1960	100.0	74.4	73.4	63.7	69.7		73.8
1970	100.0	69.8	78.0	74.3	76.6		81.4
1980	100.0	67.5	81.3	78.4	76.3		77.3
1990	100.0	68.9	79.0	76.0	71.8		73.3
1992	100.0	68.6	84.7	78.2	73.3		68.6
1998	100.0	66.3	76.7	68.7	74.1		65.5
Real GDP per employed person							
1960	100.0	61.0	59.0	56.3	65.7		57.7
1970	100.0	62.7	71.1	71.5	77.0		66.8
1980	100.0	67.7	82.6	84.8	85.4		67.6
1990	100.0	71.0	85.0	91.2	82.1		66.7
1992	100.0	72.7	87.9	92.8	79.1		65.5
1998	100.0	70.9	90.2	86.1	77.5		70.0

Computations OECD Section based on: OECD Statistical Compendium, 2000 #2, OECD (PPPs and Real Expenditures, 1999 Benchmark Year). Hours from O'Mahoney, OECD (Spain & Sweden), CBS (Netherlands). Calculations: these values were obtained by dividing the GDP of the individual countries (after converting it to US dollars using the 1999 EKS PPPs) by population, employment, or total hours worked respectively and then setting the US at 100 for the individual years. Source: BLS, Comparative Real Gross Domestic Product Per Capita and Per Employed Person, Tables 2 & 4, p.9, 11.

¹⁾ Before 1990 the OECD Data covers Western Germany

Differences in GDP per capita can be decomposed into different parts: one representing differences in productivity, another representing differences in average working hours and a third representing differences in employment population rates (Table 2.2).⁷ Although the output (GDP) as well as the input measures (hours worked) are estimates and should

7

⁷ The formula is:

$$\frac{A^o}{A^{us}} + \left(\frac{Y^o/Emp^o}{Y^{us}/Emp^{us}} - \frac{A^o}{A^{us}} \right) + \left(\frac{Y^o/Pop^o}{Y^{us}/Pop^{us}} - \frac{Y^o/Emp^o}{Y^{us}/Emp^{us}} \right) = \frac{Y^o/Pop^o}{Y^{us}/Pop^{us}}$$

Y = GDP, E = employment, pop = population 15-64, h = average hours worked

therefore be investigated carefully, they show a remarkable development of productivity (GDP per hour) in Europe. In the 1960s the productivity level in Europe was about half the US level but in 1990 many European countries (West-Germany, France, the Netherlands) achieved similar productivity levels as the US. The latter, however, regained the lead again in the late 1990s, when the widely discussed productivity growth recovery started, which was too quickly classified as the 'new economy' with never-ending growth (for a critical discussion of the 'New Economy', see Gordon, 2000). Although the recovery of US productivity growth seems to be investment driven (see also below) and highest in durable manufacturing, service industries seem to have benefited as well (see for estimates based on gross output: Stiroh, 2002: 1564).

Lower employment-population rates, except for the Netherlands and Sweden, and lower average working hours (especially in the Netherlands) reduce income per capita in most European countries compared to the US. Except for the UK, Spain and Sweden productivity differentials to the US are minor. Longer working hours compensate the productivity gap in Spain but the low employment population rate reinforces it. These cross-country differences hint to major differences in the growth path of the economies. Small differences should not be taken overly serious, given the estimation character of the underlying data (see Appendix I for discussion of working hour estimates). Nevertheless, productivity trends, working hour trends and employment population trends are substantial and these trends are significantly different in Europe compared to the US.

Table 2.2 Decomposition of cross-country differences in GDP per Capita.

	GDP per hour worked:		Effect of Work Hours	Effect of Emp./ Pop. Ratio	GDP per Capita:	
	In 1999 US\$	US=100			In 1999 US\$	US=100
1960						
US	19.7	100.0	0.0	0.0	13761	100.0
UK	10.3	52.0	5.9	17.5	10369	75.3
FR	10.1	51.1	2.9	9.7	8771	63.7
GER	11.5	58.3	6.2	18.6	11437	83.1
NL	13.1	66.2	7.7	1.9	10437	75.8
ES	-	-	-	1.6	5152	37.4
SW	11.4	57.7	-1.0	18.2	10312	74.9
1970						
US	26.3	100.0	0.0	0.0	18254	100.0
UK	14.9	56.5	4.9	9.8	13004	71.2
FR	17.3	65.9	3.5	4.9	13567	74.3
GER	19.3	73.3	4.5	11.0	16202	88.8
NL	22.8	86.9	-0.7	-3.7	15065	82.5
ES	-	-	-	-2.2	9524	52.2
SW	18.4	70.0	-3.7	16.5	15128	82.9
1980						
US	30.0	100.0	0.0	0.0	22513	100.0
UK	19.7	65.7	1.5	1.8	15553	69.1
FR	25.4	84.7	-1.1	-5.3	17629	78.3
GER	27.7	92.3	0.0	0.5	20872	92.7
NL	32.5	108.0	-8.1	-17.7	18513	82.2
ES	-	-	-	-18.8	12129	53.9
SW	23.1	77.0	-9.6	11.4	17728	78.7
1990						
US	34.9	100.0	0.0	0.0	28132	100.0
UK	24.9	71.2	0.3	-0.9	19856	70.6
FR	34.0	97.3	-7.7	-14.5	21140	75.1
GER	35.0	100.2	-4.8	-5.2	25373	90.2
NL	40.2	115.1	-17.6	-20.2	21744	77.3
ES	25.9	74.2	5.9	-24.3	15689	55.8
SW	26.1	74.7	-6.3	6.8	21163	75.2
2000						
US	41.7	100.0	0.0	0.0	35280	100.0
UK	30.6	73.4	-2.1	-4.4	23578	66.8
FR	39.0	93.6	-9.3	-15.9	24114	68.3
GER	38.2	91.7	-11.0	-8.7	25381	71.9
NL	46.4	111.2	-24.4	-9.9	27148	76.9
ES	30.1	72.3	4.5	-21.3	19551	55.4
SW	31.7	76.0	-3.7	-4.0	24079	68.3

Source: OECD (2000). Hours from O'Mahoney, OECD & CBS.

2.2 COMPONENTS OF GROWTH

Table 2.3 shows the productivity catch-up of Europe but also the differences in working hours and employment-population rates, revealing substantial inter-period differences in the contribution of the three components to the US-Europe income-per capita gaps. Growth in income-per-capita (rather than the levels) is decomposed in a component reflecting changes in labor market engagements (employment population rates), labor productivity and hours

worked.⁸ This simple decomposition-exercise reveals the dramatic change in processes underlying economic growth between countries and over time.

First, it is obvious that in every country income per capita and labor productivity grew at much lower rates after the 1970's than before. Growth rates of income per capita differ much less between countries after the 70's than before. Most important, up to the 1970's growth in income per capita was primarily determined by the growth in labor productivity accounting for about 90% or more of income growth. After the 1970's, income in the US (but also in Sweden) grew through higher employment population rates compensated by modest reductions in average hours worked. In contrast, in the European countries labor productivity growth continued to be the major sources of income growth compensated by reduction in average hours worked and lower employment population rates.

It is one of the core hypotheses of DEMPATEM that difference in the growth process between Europe and the US changed the employment and hence the consumption patterns. The inter-period differences in the growth patterns support the supply-side part of this hypothesis. Although in the 1990's the US seemed to be back at productivity growth patterns of the 1960's when GDP growth was generated by rising productivity, the employment-population rate continued to increase in the US, although less than in other periods.

⁸ $\frac{Y}{pop} = \frac{E}{pop} * h * \pi$, where: h= average hours worked, π = labor productivity, E = employed persons, pop =

population, Y = income, or in growth rates: $\left(\frac{Y}{pop}\right) = \left(\frac{E}{pop}\right) + \dot{h} + \dot{\pi}$

Table 2.3 Components of Growth in three different periods.

	Average Annual Rates (%)				Contributions to GDPpc growth			
	1960-1973				1960-1973			
	GDP per capita (15-64)	Labor Productivity	Employment Population Rates	Work Hours	GDP per capita (15-64)	Labor Productivity	Employment Population Rates	Work Hours
US	2.6	2.8	0.3	-0.5	100.0	107.0	11.6	-18.4
UK	3.0	4.0	-0.1	-0.8	100.0	133.1	-4.8	-27.1
FR	4.3	5.4	-0.4	-0.7	100.0	126.3	-8.8	-16.1
GER	4.0	5.2	-0.1	-1.1	100.0	130.2	-1.7	-27.2
NL	3.3	5.7	-0.6	-1.6	100.0	171.3	-19.2	-48.5
ES	6.5		-0.1		100.0	-	-1.3	-
SW	3.6	4.7	0.1	-1.1	100.0	130.6	1.8	-30.9
JP	7.7	8.2	-0.3	-0.2	100.0	106.2	-3.3	-2.5
	1974-1990				1974-1990			
US	1.7	1.3	0.8	-0.4	100.0	74.7	45.7	-21.3
UK	1.6	2.3	0.1	-0.7	100.0	143.4	3.2	-45.2
FR	1.6	3.2	-0.5	-1.0	100.0	195.4	-30.7	-61.5
GER	1.6	2.7	-0.3	-0.8	100.0	170.4	-19.9	-48.7
NL	1.1	2.4	-0.2	-1.1	100.0	214.8	-13.4	-97.2
ES	1.5		-1.0		100.0	-	-64.6	-
SW	1.7	1.4	0.6	-0.3	100.0	81.9	35.6	-17.2
JP	2.8	3.0	0.1	-0.2	100.0	104.2	4.7	-8.7
	1991-2001				1960-1973			
US	2.3	1.8	0.4	0.1	100.0	77.8	17.3	4.4
UK	1.8	2.1	0.0	-0.2	100.0	114.3	-2.7	-11.0
FR	1.5	1.4	0.3	-0.1	100.0	87.6	19.8	-7.5
GER	1.6	2.7	-0.4	-0.6	100.0	165.5	-24.3	-39.7
NL	2.5	1.6	1.7	-0.7	100.0	61.6	66.8	-28.2
ES	2.4	1.5	0.9	0.0	100.0	64.2	38.5	-1.9
SW	1.5	1.9	-0.9	0.5	100.0	131.2	-61.7	32.2
JP	1.4	2.4	0.3	-1.3	100.0	170.6	21.4	-90.1

Source: Computations based on: *Economic Outlook (OECD, 2000)*, hours: O'Mahoney, CBS & OECD.

¹ Does not include growth in the year of German unification (1991).

GDPpc = GDP per capita in working age

2.3 INCOME AND THE EMPLOYMENT SHARE OF SERVICES: EXTENDING THE FUCHS ANALYSIS

Building on the basic assumption that at zero income per capita, economies will employ all labor in agriculture and none in services, while at higher levels of income this pattern will be reversed, Victor Fuchs (1980) developed a non-linear model of the development of the share of service employment in overall employment. In this model the share of service employment starts at zero (at zero GDP) and grows with GDP, asymptotically approaching one. The share of agricultural employment, on the other hand, starts at one and then decreases with GDP asymptotically approaching zero. Fuchs used the following equations:

$$\text{For the share of agricultural employment: } A = e^{-\beta(\text{GDP}_{pc}^{\alpha})}$$

$$\text{For the share of service employment: } S = 1 - e^{-\delta(\text{GDP}_{pc}^{\gamma})}$$

The share of industry employment is one minus the two shares.

where GDPpc is GDP per capita and β , α , δ , γ are parameters to be estimated.

Fuchs estimated the parameters of his nonlinear model with time series data for the US (1870 to 1978) and with cross-country data from OECD (1960, 1970, 1980). He showed that this model predicts the service share in overall employment remarkably well. The coefficients of correlation between the actual and predicted values of the service share in employment were between 0.80 and 0.99. We applied Victor Fuchs' model to more recent data and again Fuchs's model predicts the share of services in overall employment remarkably well.

Table 2.4 Regression Results: sector shares of civilian employment as a function of GDP per capita, US and OECD Time Series.

		Fuchs Estimates				Our Extension						
		US	OECD ¹⁾	OECD	OECD	U.S.	OECD ²⁾	OECD	OECD	OECD	OECD	PooledOECD
		1870-1978	1960	1970	1976	60-01	1960	1970	1980	1990	2001	1960-01
Number of datapoints		12	23	24	23	42	22	22	22	22	22	924
Agriculture	β	-.787 (.044)	-.895 (.131)	-.716 (.147)	-.722 (.158)	-1.04 (.064)	-.305 (.130)	-.238 (.135)	-.306 (.200)	-.309 (.194)	-.517 (.350)	-.395 (.023)
	α	.861 (.040)	.831 (.159)	.945 (.166)	.904 (.158)	.365 (.020)	.776 (.183)	.845 (.213)	.732 (.226)	.716 (.203)	.550 (.206)	.644 (.019)
Services	δ	-.306 (.011)	-.263 (.028)	-.232 (.033)	-.242 (.037)	-.177 (.011)	-.184 (.053)	-.182 (.076)	-.163 (.088)	-.258 (.141)	-.215 (.114)	-.111 (.006)
	γ	.633 (.028)	.634 (.119)	.714 (.118)	.720 (.113)	.582 (.019)	.498 (.127)	.498 (.158)	.565 (.186)	.440 (.177)	.520 (.161)	.717 (.017)

Source: Computations based on OECD Economic Outlook database, OECD Annual Labor Force Statistics, OECD PPPs and Real Expenditures (1999 Benchmark Year)

Note: Standard Errors in parentheses.

¹⁾ The coefficients from Fuchs' work differ from ours, because Fuchs used GDPpc in 1970 US\$ while we used 1999 dollars and PPPs. In 1999 PPPs the horizontal axis is more stretched, which results in different values for the coefficients.

²⁾ Includes Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK & US

Table 2.4 displays the coefficients estimated by Fuchs and our own estimates. The correlation coefficients between the predicted values and actual values are all around 0.6 or higher (see Table 2.6). As expected, they are generally higher for time-series than for cross-sections. The fit of the Fuchs model is also illustrated in Figures 2.1 and 2.2. Figure 2.1 shows

the predicted trend of the service share in employment based on 22 OECD countries (not including the US) and the actual values for the US between 1960 and 2001, when the US achieved per-capita income between 13,800 and 36,700 US\$ (in constant prices). The US does not seem to be an exceptional case: it is developing roughly along the estimated curve, with service shares in employment above until 1996, and slightly below after 1997. It seems that much of the higher share in service employment in the US is related to a higher level of income per capita. However, the function in Figure 2.1 for 22 OECD countries is based on income per capita values, which are fairly below the actual US values in the alter years. Therefore we also show the predicted service share using US coefficients obtained from the US time series (1960 to 2001) and the actual service shares of the DEMPATEM countries for selected years (Figure 2.2). The figure shows that countries such as the Netherlands, France and the UK reach even higher service employment shares than the US at certain levels of per capita GDP. Germany, on the other hand, is systematically below the predicted values although part-time shares are similar in the US and in Germany. However, the employment shares are based on persons and it has to be kept in mind though, that hours worked are not accounted for. If a large part of employment in the service sector works part-time (like in the Netherlands), these employment shares will overestimate the size of the service sector. Table

2.5 suggests they do, because hours per person employed are lower in service industries than in the rest of the economy although hours worked seem to be difficult to measure (see Appendix I).

Table 2.5 Hours worked per employed person in services in % of hours worked per employed in the rest of the economy (1999)

	US¹⁾	UK¹⁾	FR¹⁾	GER¹⁾	NL²⁾	ES
Services	1629	1588	1509	1563	1371	
Rest	1998	1893	1625	1583	1572	
%	81.5	83.9	92.9	98.7	87.2	No Data

Source: ¹⁾ Computations based on O'Mahoney's NISEC '02 Dataset ²⁾ Computations based on OECD Structural Analysis industrial database (STAN)

Fuchs points out that accurate and stable predictions are not so common in economics and he explicitly mentions that one has to be aware that these results are “not tests of theoretically grounded hypotheses”. No appropriate economic theory has been developed to explain this phenomenon. Consequently, a major question is why this pattern is so persistent. Is it due to shifts in demand, a new industrial division of labor (outsourcing), or was Baumol correct in pointing at differential productivity growth in the different sectors?

How can it be that GDP per capita influences these factors so consistently even in such widely diverging institutional frameworks and differences in growth processes (see above)?

Fig. 2.1 Predicted Service Share OECD and Actual Values United States (1960-2001)

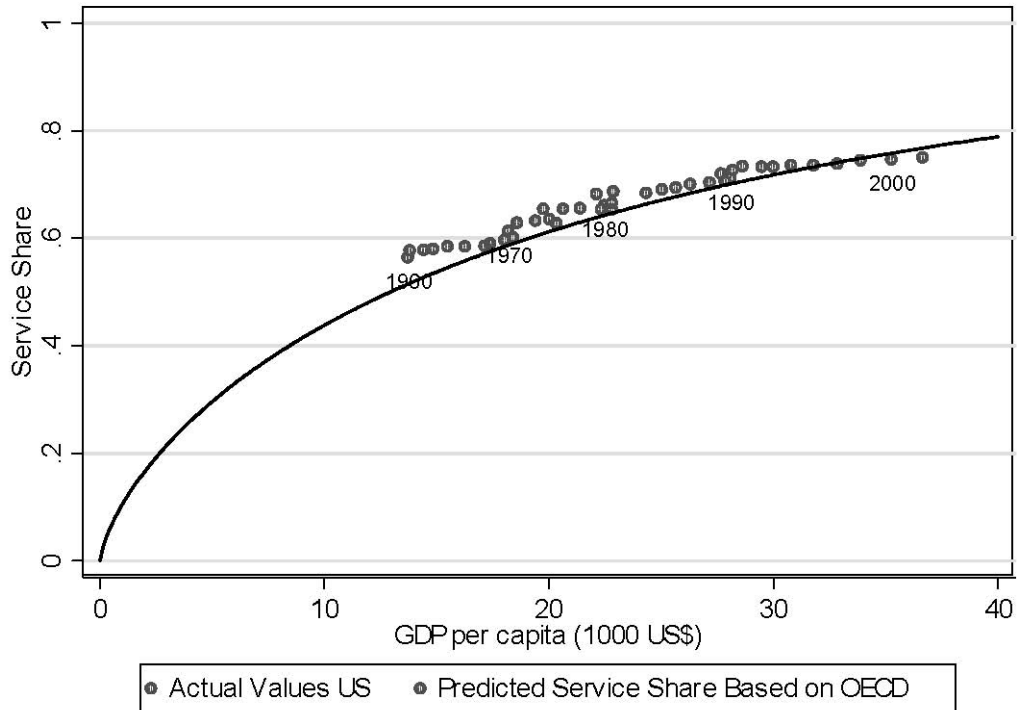


Fig. 2.2 Predicted Service Share in Employment United States and Actual Values UK, Netherlands, Germany, France and Spain (1960, 1970, 1980, 1990, 2000)

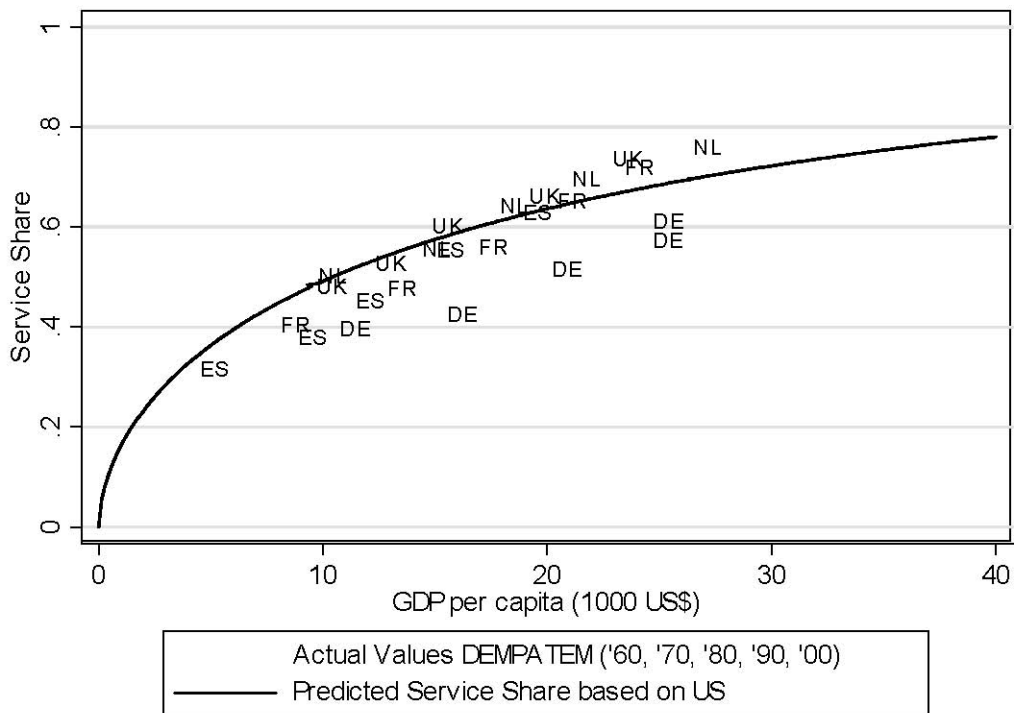


Table 2.6 Coefficients of correlation between actual and predicted service sector shares of employment, US and OECD Time series, and OECD cross-sections

Predicted share, based on:	Actual Share						
	US 1960-01	OECD 1960	OECD 1970	OECD 1980	OECD 1990	OECD 2001	OECD 1960-01
US 1960-2001	.981	.724	.636	.646	.570	.632	.850
OECD 1960	.980	.723	.634	.643	.565	.630	.850
OECD 1970	.980	.723	.634	.643	.564	.630	.850
OECD 1980	.981	.723	.634	.644	.566	.631	.850
OECD 1990	.980	.726	.637	.646	.569	.631	.850
OECD 2001	.981	.725	.637	.647	.570	.632	.850
OECD 1960-2001	.981	.720	.633	.643	.567	.632	.851

For Fuchs' correlation coefficients see footnote⁹.

How does employment in services relate to other variables like value added? Does it develop in line with the service employment share? The comparison of the service share in value added and in employment can produce useful information on the trends in relative productivity of services. If productivity growth is low in services, the share of service in value added should have a flatter slope than the service share in employment. As William Baumol and Edward Wolff (1984) pointed out, does value added per worker (a common proxy for labor productivity) tend to equalize in functioning labor markets. This is actually the basis for Baumol's 'cost disease' and it is intuitively clear if one assumes for simplicity that value added consists of wages only. In a perfect labor market, similarly qualified workers will earn the same wage independent of their industry. Thus, value added per worker in nominal terms will be roughly the same throughout the economy and it is therefore meaningless as a measure for relative industry productivity.¹⁰ However, similar problems occur when referring to constant-price value added share.

Constant-price value added per worker depends on the base year in which constant and current price value-added are equal. With different price trends, the difference value-added per worker between two industries is just a function of time and with the 'right' base year any difference in industry 'productivity' levels can be produced (Baumol/ Wolff 1984). For productivity level comparisons between industries, the common output unit is missing. Oranges are different from apples although we may assign money values to them.

Predicted share, Actual Share		based on: US 1870-1978 OECD 1960 OECD 1970 OECD 1976			
US	1870-1978	.987	.796	.842	.871
OECD	1960	.987	.796	.842	.870
OECD	1970	.987	.796	.842	.869
OECD	1976	.987	.796	.842	.869

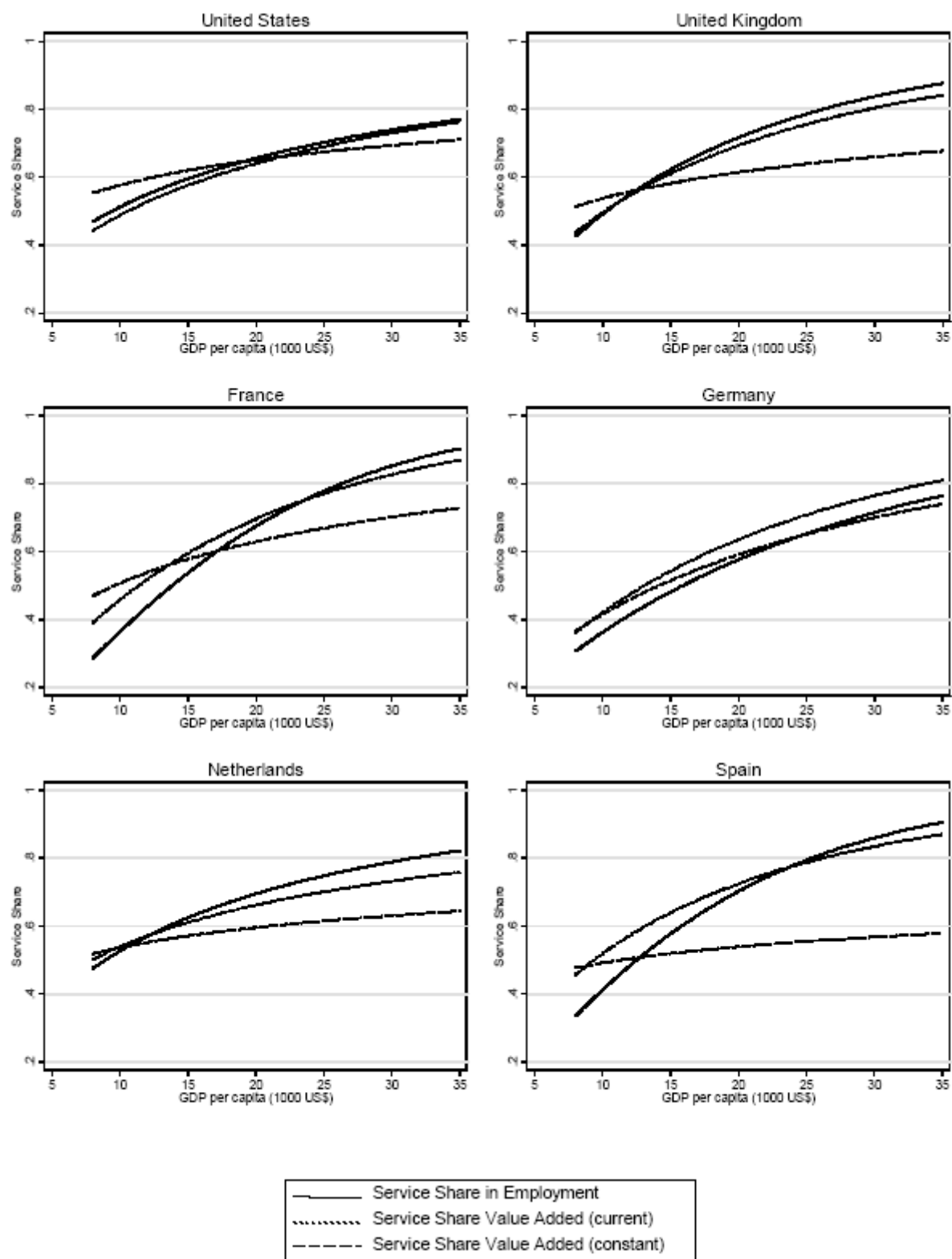
Source: Fuchs, 1980, p. 10

¹⁰ Work by Krueger and Summers (1988) showed, however, that industry wage differentials are obviously persistent and not transitory, which hints to labor market imperfections.

Nevertheless, the growth rates or time trends are informative and Figure 2.3 displays estimated values for the service share in value added in current prices and in constant prices of 1970, as well as the service share in employment. The two functions for value added cross in 1970 (the base year for constant prices) and the current shares are constantly above the constant-price shares, which illustrates the effect of Baumol's 'cost disease'. This indicates either labor market imperfections or differences in the skill composition of employment. Germany and the US may represent two extremes here: in the US the employment share is constantly above the value added share, hinting to shorter relative working hours in US services (see Table 2.5) and/or a larger share of low skilled labor in the US service industries (Freeman/Schettkat 1999). In Germany the reverse occurs: the value added function is constantly above the employment function reflecting the high relative working hours in German services (Table 2.5) and the higher skill level in German services (see Freeman/Schettkat 1999 and also Schettkat, 1992). In many countries (France, the Netherlands, Spain) the value added function falls below the employment function but in Germany both seem to progress in tandem.

The functions in Figure 2.3 reveal another interesting aspect. Although the functions for value added in constant prices are generally flatter than the functions in current prices, the slope of the former is still far away from zero. This indicates that an investigation of both the demand side and the supply side is required when studying the development of the service share and the determinants of service employment. How these actually relate to each other will be discussed in the following section where we lay out the mechanics of structural economic dynamics.

Table 2.6 Coefficient of correlation between actual and predicted service sector shares of employment, US and OECD Time series, and OECD cross-sections



3 THE MECHANICS OF CHANGES IN ECONOMIC STRUCTURE: DEMAND AND SUPPLY

In general, the difference in the share of workers by industry in overall employment (between two countries, or between two points in time) will depend on both the demand and the supply side. Differences in income, the composition of final product demand and relative labor productivity¹¹ will shape the distribution of employment across industries. Both sides of the market are interdependent but they may nevertheless follow a different logic. The expansion of supply is driven by technological progress and labor inputs, but whether additional supply meets additional demand depends on various variables such as income, income-elasticity of demand, prices, own as well as cross-price elasticities, demographics, preferences, etc. In the static demand and supply model, resources and everything else is given and prices equilibrate the two sides of the market. In a model of evolving markets, resources develop and demand and supply are interlinked. Rising prices may reduce upward demand trends but if these are driven by other variables such as income or demographics, demand for specific products may rise even with increasing prices. In this case rising prices may slow the expansion of an industry but they cannot prevent it. The economy will move to a new structure better serving the changed needs. The two sides of the market may equilibrate by quantity responses rather than price variations. Quantity response, however, may require labor mobility from the declining to the expanding industries (see e.g. Schettkat 1992, 1996)

The structure of demand may be important to determine employment, but the level of demand is relevant as well. A core question, however, is whether the level depends on structure or whether the level determines structure. It may be that the possibilities for consumption (e.g. long shop opening hours, nice presentation of the products, etc.) affect the level of spending. Demand levels and structures may be endogenous if households outsource services traditionally produced within the household, which may create service jobs because households may buy services instead of self-provision, but also goods may substitute or support household production. Prepared food and frozen food are examples, but also durables such as dish-washers and washing machines to name just some equipment which may help to substitute household production time. The reverse causation may also be possible: household equipment may free household production time, which may then initiate

¹¹ Labor productivity, of course, is not influenced by the efficiency of labor alone but depends on skills (human capital), physical capital and TFP. However, labor productivity and TFP seems to follow largely similar trends. '... differences in labor productivity are not substantially explained by differences in capital intensity.' (Bailey/ Solow 2001: 157).

participation in market work (Tijdens, 1995). It is one of the key hypotheses of DEMPATEM that especially the expansion of service demand is caused by high female labor force participation and outsourcing of services formerly provided within households (see also Fuchs, 1980, Freeman/Schettkat, 2002). Decisions on long working hours and high labor force participation may then be endogenous.

In the following, the determinants of industry employment shares are discussed in a somewhat formalized fashion. Relative demand and supply patterns will be described and equilibrium in a multi-sectoral economy will be discussed. Finally, the major hypotheses on structural change will be located in the developed demand-supply framework and predictions from these hypotheses for relative demand and productivity trends will be discussed.

3.1 DETERMINANTS OF EMPLOYMENT SHARES

Assuming for simplicity vertically integrated sectors, i.e. sectors which incorporate all stages of production so that demand in an industry directly affects output and employment in the particular industry (Pasinetti, 1983, Schettkat/Russo, 2001). This is a rough approximation, of course, but except for input-output data (the inter-industry division of labor is discussed in Gregory/Russo, 2003) this assumption need to be made and it simplifies the relations.

Let $Y_{r,i}^d$ be demand (expenditures) in constant prices for product i and A_i labor productivity (Y/E)¹². That is that the capital stock used in production is implicitly included in the measure of labor productivity (A), which, of course, does not depend on the efficiency of workers alone (for an analysis of productivity taking labor skills and capital stock into account: Glyn/Salverda, 2003). Employment (E) in industry i is then given by:

$$E_i = Y_{r,i}^d * A_i^{-1} \tag{3.1}$$

where $Y_{r,i}^d$ is real effective demand for product i in the vertically integrated industry i .

The share of industry i in overall employment¹³ will then be given by:

¹² For simplicity, working hours are assumed to be constant or identical unless mentioned otherwise.

¹³ Allowing for variations in working hours and expressing the industry share in working volume rather than in persons employed:

$$\frac{WV_i}{WV_*} = \frac{E_i * h_i}{E_* * h_*} = \frac{Y_{r,i}^d * A_i^{-1} * h_i}{Y_{r,*}^d * A_*^{-1} * h_*} = \frac{Y_{r,i}^d}{Y_{r,*}^d} * \frac{A_*}{A_i} * \frac{h_i}{h_*} = \alpha * \beta^{-1} * \gamma$$

where: WV = working volume, h = average hours worked, A is labor productivity in output per person. For

$$\frac{E_i}{E_*} = \frac{Y_{r,i}^d * A_i^{-1}}{Y_{r,*}^d * A_*^{-1}} = \frac{Y_{r,i}^d}{Y_{r,*}^d} * \frac{A_*}{A_i} = \alpha * \beta^{-1} \quad (3.2)$$

That is that the employment share of industry i depends on two components: the share of that industry's product in real final demand (α) and the inverse of the relative productivity of that industry to overall productivity ($\beta = \frac{A_i}{A_*}$)

Expenditures (effective demand) are the product of quantity and price ($Y = q * p$) and for comparisons over time within countries, but also for inter-country comparisons, one may want to take price changes and price levels into account to get the 'real' magnitudes. The quantity given expenditures can buy depends on the price. Therefore, changes in expenditure shares need to be corrected for price changes if one is interested in quantity changes.¹⁴ Similarly, in international comparisons the real share of product-specific expenditures in overall demand will depend on relative prices in the countries involved. If price trends for various items develop differently, changes in nominal shares will hide the actual quantities purchased. Taking price changes into account, the quantity share (α) represented by expenditures in current prices will be:

$$\alpha_i^{t,t-1} = \frac{q_i^t * P_i^t * \frac{P_i^{t-1}}{P_i^t}}{q_*^t * P_*^t * \frac{P_*^{t-1}}{P_*^t}} = \frac{q_i^t * P_i^t * \theta_i}{q_*^t * P_*^t * \theta_*} \quad (3.3)$$

where q = quantity, P = price, i = subscript for items, $\theta = \frac{P^{t-1}}{P^t}$ the price index, t = time superscript.

That is that the relative quantity represented by a given ratio of nominal expenditures will depend on the inverse of the price trends for item i and the overall economy. Similarly for inter-country comparisons of relative quantities bought, nominal shares need to be adjusted for differences in price level.¹⁵ However, the difficult question is, what quantity would

a given working volume of industry i in overall working volume the employment share measured in persons will be $\left(\frac{E_i}{E_*} = \frac{W V_i}{W V_*} * \frac{h_i}{h_*} \right)$ Thus, stark inter-industry differences in working hours may affect relative employment substantially.

¹⁴ Expenditures in current prices are, of course, relevant to evaluate spending behavior.

¹⁵ The demand share in country c in prices of a reference country is

$$\alpha_i^{c,rc} = \frac{q_i^c * P_i^c * \frac{P_i^{rc}}{P_i^c}}{q_*^c * P_*^c * \frac{P_*^{rc}}{P_*^c}} = \frac{q_i^c * P_i^c * \theta_i}{q_*^c * P_*^c * \theta_*}$$

where $\theta = P^{rc}/P^c$ now represents the inverse of the price level in country c

actually have been consumed at different prices. Is the quantity consumed of a certain good independent from the price or does quantity demanded depend on price? Whenever demand is price-elastic, changes in prices will affect the quantity bought, the inherent problem of price indices. The problem has been ‘solved’ by using either the quantities of the initial year (Laspeyre price index) or the quantities of the final year (Paasche price index).¹⁶ Because relative productivity entails the same ingredients¹⁷ as the demand share equation but enters the employment share equation as inverse, the differences in price changes (relative levels, respectively) cancel out, when computing changes or differences in employment shares. Therefore, country differences in the employment share of an industry are real and not just an artifact of different relative prices in the mechanical sense discussed¹⁸.

3.2 RELATIVE DEMAND PATTERNS

Although differences in relative prices between countries affect both expenditures and productivity and are thus unimportant for employment shares, they nevertheless affect the quantities demanded in a country through the own price elasticity or cross-price elasticities (substitution effects). In general the level and structure of final demand depend on income, income distribution, prices and preferences, which may vary systematically between different household types (see DEMPATEM consumption project). However, the pattern of demand by major aggregates such as private consumption, public consumption, investment and net exports, will also affect the structure of demand because the share of services differs within these categories.

$$Y \cdot = C + G_i + G_c + I + X - Q \quad (3.4)$$

Where $Y \cdot$ is effective aggregate demand, C is private household consumption (including non-profit institutions serving private households), G_i is government spending on individual

divided by the price level of the reference country (rc).

¹⁶ Conventionally the weights were changed every 5 years, but in recent revisions of national accounting methods weights are changed annually in the so-called chain-linked method (see Tuke, A., 2003).

¹⁷ Relative productivity for item i in country c but in prices of the reference country are:

$$\beta_i^{c,rc} = \frac{q_i^c * P_i^c * \frac{P_i^{rc}}{P_i^c} * (E_i^c)^{-1}}{q_i^* * P_i^* * \frac{P_i^{rc}}{P_i^*} * (E_i^*)^{-1}} = \frac{q_i^c * P_i^c * \theta_i * (E_i^c)^{-1}}{q_i^* * P_i^* * \theta_i * (E_i^*)^{-1}}$$

$$\frac{E_i^c}{E_i^*} = \alpha_i^{c,rc} * \beta_i^{c,rc-1} = \alpha_i^{c,c} * \frac{\theta_i}{\theta_i^*} * \beta_i^{c,c-1} * \frac{\theta_i^*}{\theta_i} = \alpha_i^c * \beta_i^{c-1}$$

¹⁸ where $\alpha_i^{c,rc}$ the share of expenditures on item i in country c in prices of the reference country.

consumption¹⁹, G_c is spending on collective consumption ($G_i + G_c =$ conventional G), X is exports and Q is imports

Since international trade is overwhelmingly in goods rather than in services, countries with an export surplus tend to have a larger share of its workforce in manufacturing industries and v.v. If private households spend their holidays in foreign countries, this is counted as imports of services from rest of the world (r.o.w.). Thus, foreign travel will reduce service expenditures in the domestic economy and if travel habits differ between countries, this may affect expenditure and employment patterns. However, it is net exports, which affect domestic employment and the ‘service import’ hypothesis turns out to be not overly important when net service imports are taken into account (see section 5.3).

Overall effective demand in the domestic economy depends on domestically generated income plus transfers from r.o.w. ($Y = Y_{dom} + Y_{inflow}$). Of this income, the share is α directed to service demand and $(1 - \alpha)$ to goods. Since trade is almost entirely in goods rather than in services (see section 5.4) and a net export deficit will lower the goods demand in the domestic economy and thus raise the share of service employment.

$$Y = \alpha Y + (1 - \alpha)Y$$

and demand effective for domestic employment (Y_d):

$$Y_d = \alpha Y + [(1 - \alpha)Y - NX]$$

where NX is net exports and is assumed to be goods only, which is a rough approximation to actual numbers (see section 5.3).

The share of service employment will then be:

$$\frac{E_s}{E_*} = \frac{\alpha Y A_s^{-1}}{\alpha Y A_s^{-1} + [(1 - \alpha)Y - NX] A_m^{-1}} \quad (3.5)$$

Thus, a net export deficit raises relative service sector employment in the domestic economy and a surplus reduces it. Furthermore, if capital inflows or transfers from row raise a country’s income, expenditures will be higher than otherwise and they may even exceed domestic production.

Private household consumption depends on disposable income and the average propensity to consume [$C = c * Y_{dh}$ where Y_{dh} is disposable household income ($Y_d - (I - T)$), T is the tax

¹⁹ In the 1993 System of National Accounts ‘individual consumption’ covers private household purchases in markets but also publicly provided but individually consumed items (United Nations Statistics Department, 2003). The concept of ‘individual consumption’ has improved the international comparability and reveals surprising results (see section 5.2).

rate, including contributions to social insurances]. Private household expenditures for a particular product may be described by:

$$C_i = \beta_0 + \beta_1 Y_{dh} + \beta_2 P_i + \beta_3 P_i/P_j + \beta_4 D + \varepsilon_i \quad (3.6)$$

3

7 Where Y_{dh} is disposable household income, P_i is the price of item i , P_i/P_j is a vector of cross prices ($i \neq j$), D is a vector of demographic variables describing the structure of the households (see DEMAPATEM consumption project) and ε is an error term.

Changes in private household demand for product i are then the result of the changes in disposable income and the income elasticity of demand, changes in price and the own price elasticity, the sum of all substitution effects due to differential price trends, plus changes in the demographic structure (and probably in the income distribution, see consumption project of DEMAPATEM).

Whether prices of other products are relevant for the decision to purchase a specific item depends on the utility function, i.e. whether and to what degree other products are substitutes.²⁰ The elasticity of substitution between goods and services may be very limited or even zero as for example with educational services and cars. In other cases the substitutability may be very high, as for example in the case of laundry services and washing machines (see the interesting differences in ownership of washing machines in the US and Europe in the DEMAPATEM consumption papers). However, most important is the substitution of private services by public services, where the relative price (P_i/P_j) may be very high or even indefinite if services provided by the government are free. Thus, in countries with developed public services, private demand for these services is expected to be low or even non-existing. There will be a trade-off between public and private consumption concentrated in services,²¹ but, of course, a large provision of public services affects disposable income, which will c.p. presumably be lower in countries with a developed public sector.

²⁰ The underlying utility functions assumed explicitly or implicitly vary between analyses (see Appendix III).

²¹ the share of private household expenditures in total consumer demand shows a clear trade-off to public services. Share of private household expenditures in total consumption, 1995

	US*	UK**	France	Germany	NL	Spain
Agriculture	92.83	100.00	100.00	99.53	100.00	98.63
Goods	84.32	100.00	96.88	99.27	91.71	96.08
Services	81.20	66.82	58.51	59.40	55.06	68.20

Source: calculated from OECD input-output data *US; year=1997, ** UK: year=1998.

Thus, investigating private household demand only will be biased in the sense that countries with a low share of public services will have low private spending on services (see also section 5.3).

Countries differ severely in the public-private dimension of service provision. Pension insurances, for example, may be publicly organized or they may be privately organized, they may be compulsory or voluntary. If private pension funds dominate, demand for and employment in the financial industries will be higher, compared to an otherwise similar publicly organized scheme where employment will be in social security or government services. Thus, the public/private provision of services is expected to affect the spending patterns of households severely. One way to handle this problem is to exclude the critical areas from the comparison, which will leave a 'clean' set of expenditures, supposedly unaffected by institutional arrangements (see e.g. Freeman/Schettkat 2002, DEMPATEM consumption papers). The 'cleanliness', however, comes at the price of selectivity and excluding information on important parts of individual consumption.²²

3.3 RELATIVE SUPPLY PATTERNS, PRICES

Potential supply expands either through technological improvements²³ (productivity) or through the expansion of inputs. Labor productivity depends (among others) on capital used, and for the sake of simplification we can use the following relation:

$$Y_{supply} = E * A$$

where $A = Y/E$, i.e. labor productivity, and

$$\dot{Y} \approx \dot{E} + \dot{A} \quad 24$$

where the $\dot{\cdot}$ above the variables indicates the growth rate.

If the growth of supply through technological improvements exceeds demand growth in a particular industry, workers must move away from that industry or working hours in that industry must be reduced. An alternative equilibrating mechanism, however, would be declining prices, which stimulate demand for the product of that industry but this requires demand to be sufficiently price-elastic. If demand growth leads supply growth opposite considerations apply.

What are the relative prices? Assuming mark-up pricing with a uniform mark-up ($\mu \geq 0$) and ignoring capital costs, prices (P) in industry i will be given by:²⁵

²² The 1993 SNA distinguishes government consumption according to individual and collective consumption

²³ Technology includes organizational measures.

²⁴ Including working hours $\dot{Y} \approx \dot{E} + \dot{A} + \dot{h}$, where h is average working hours. the inter-country difference in the expansion of supply: $\dot{Y}_c - \dot{Y}_s = (\dot{E}_c + \dot{A}_c + \dot{h}_c) - (\dot{E}_s + \dot{A}_s + \dot{h}_s)$

²⁵ Including non-wage labor costs: $P_i = E_i w_i (1 + \tau + \mu) / Y_{i,r} = w_i (1 + \tau + \mu) A_i^{-1}$ where τ represents non-wage labor costs. Non-wage labor costs may for simplicity be integrated into the markups.

$$P_i = E_i w_i (1 + \mu) / Y_{i,r} = w_i (1 + \mu) A_i^{-1} \quad (3.9)$$

Where: w is the wage rate, A is labor productivity (Y_r / E), Y_r is real output, E is employment and i is an industry subscript.

Relative prices are then given by:

$$P_i / P_* = w_i (1 + \mu) A_i^{-1} / w_* (1 + \mu) A_*^{-1} = w_i / w_* * A_* / A_i$$

Assuming constant mark-ups and constant relative non-wage labor costs, changes in relative prices can be approximated by:

$$\left(\frac{\dot{P}_i}{P_i} \right) \approx \dot{P}_i - \dot{P}_* = \left(\dot{w}_i - \dot{w}_* \right) - \left(\dot{A}_i - \dot{A}_* \right)$$

Thus, changes in relative prices and their changes depend on wage growth in industry i relative to the overall economy and the relative productivity growth in that industry. The difference in relative wage growth in service industries is the core of the argument that US service demand and employment is higher than in Europe. Downward flexible wages in the US allow for lower prices of industries lacking productivity growth and attract more demand (or loose less demand, respectively) and technologically stagnant service industries can thus create more employment in the US than in Europe. Wage flexibility may reduce or compensate the price-rising effect of lacking productivity growth. In a well functioning labor market, however, wages should be independent of the industry and rise with similar rates everywhere (Baumol 1967, 2001). In other words, value added per worker²⁶ (per hour respectively) measured in current prices should equalize across the industries because wages should equalize (Baumol/ Wolff,

1984, $\frac{VA_i}{VA_*} = \frac{E_i}{E_*} = \frac{w_i}{w_*}$ is the wage). Controlled for skills, permanently lower wages in service industries require imperfect labor markets. If one takes technology as exogenous, industries with productivity levels much lower than average productivity cannot exist with equal wages. Or if one regards productivity as endogenous, wage equality will diminish inter-industry productivity differentials in this case. Both

²⁶ controlled for skills

arguments have been made.²⁷ High wage differentiation in the US but low wage differentiation in Europe is the most popular explanation for the US-Europe service employment gap, but when comparing average industry wages in the US and Germany one finds the same industries at almost exactly the same relative wage position (Freeman/Schettkat, 1999)²⁸ but they may nevertheless qualitatively different products (Bailey/ Solow 2001).²⁹

3.4 THE WAY TO EQUILIBRIUM: LOCATING HYPOTHESES

The major hypotheses to explain the rising shares of service sector employment can now be located in demand and supply space. For Clark (1951) and Fisher (1935) it was relative saturation for manufacturing products and a shift of demand to services, which was the main reason for expanding relative service employment.³⁰ I.e. the demand share for services in constant prices (α) will be rising according to their hypothesis. Changes in productivity are regarded as relatively unimportant. Baumol (1967, 2001) challenged this view with a radical supply side hypothesis. He assumed the alphas (the share of service demand in overall demand) to be constant but the productivity ratio ($\beta = A_i / A^*$) to decline. Fuchs (1968, 1980) confirmed that demand for services is relatively constant but he adds complexity in arguing that not only the level of income per capita but also the way a certain income level is achieved affects the structure of demand. A high degree of female labor force participation will necessarily reduce household production, which then may be substituted by market services and goods (Freeman/Schettkat 2002).

Assuming constant employment population rates and constant working hours, income (per capita) depends on overall productivity growth. If services are technologically stagnant, the relative service-sector productivity (β) should depend on the advancement of the economy, which then depends entirely on productivity trends in the non-service part of the economy (say manufacturing). Therefore, given this assumption, relative service-sector productivity

²⁷ For example, Herbert Giersch (1983) argued that wage equality in Europe force low productive services

(i.e. services with a low β -ratio) out of the market (technological unemployment of third degree as Giersch labeled it). For the impact of wages on productivity see Kleinknecht/Naastepad (2002).

²⁸ Non-wage labor costs may lift the wage costs in the low-paying industries more in Germany than in the US (see Freeman/Schettkat, 2002).

²⁹ Bailey and Solow argue that the compositions of services is different in Europe and the US. Relatively low wages allow marginal services to survive in the US but relatively high European wages extinguish these service-jobs in Europe (Bailey/ Solow 2001).

³⁰ For a more comprehensive overview of theories of structural change see Schettkat/Yocarini, 2002.

(β) should be lower in the more advanced economies because high incomes in these economies are the result of rising productivity in the technologically progressive goods production. However, comparative inter-industry-productivity levels must remain a theoretical construction (Baumol/ Wolf 1984).

If it is assumed that the rising income is spent in fixed real proportions on goods and services, employment in the technologically stagnant service industries will rise. Measured in current prices the employment and expenditures of service industries will expand. However, this is solely the effect of technological stagnancy in services and rising incomes caused by technological progress in goods production and not a shift of demand away from goods to services (in real terms), i.e. in Baumol's analysis the α s are constant.

Thus, the Baumol³¹ analysis suggests that the difference in service employment shares between the US and Europe results from higher per capita income in the US caused by a higher level of productivity in the US goods production. The advancement of goods production leads to higher productivity differential between services and the rest of the economy. Therefore, productivity in non-service industries is predicted in the Baumol framework to be higher in the US than in Europe.

What may be the rational for constant α s? One possibility is that there is no substitution between goods and services, i.e. that it is a Leontief-type utility function. Another possibility is that positive income elasticity and negative price elasticity of service demand just compensate (Appelbaum/Schettkat, 2001).³² Obviously, the negative price elasticity of service demand is important and it may even overcompensate the income effect (Fuchs, 1980). As discussed above, the extent to which relative prices for services rise, depends on relative productivity growth but also on relative wage growth. Wage differentiation became the main explanation for differences in price levels between the US and Europe. Flexible and widely differentiated wages in the US, but rigid and narrow wages in Europe, so goes the story,

³¹ Baumol assumes α s to be constant and that changes in the employment share of services are entirely caused by rising productivity differentials between services and the rest of the economy. Productivity in non-service industries rises over time and thus the β s decline.

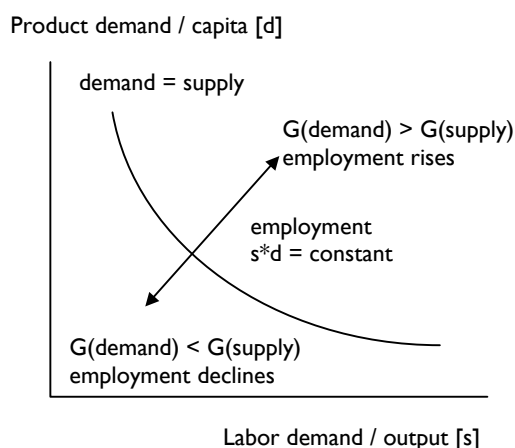
$$\frac{E_s^t}{E_s^*} - \frac{E_s^{t-1}}{E_s^{*t-1}} = \alpha^t * \beta^{t-1} - \alpha^{t-1} * \beta^{t-1-1}$$

since by Baumol's assumption $\alpha^t = \alpha^{t-1}$ the RHS simplifies to the $\alpha * (\beta^{t-1} - \beta^{t-1-1})$ with $\beta^{t-1} < \beta^{t-1-1}$ because $A_s^t = A_s^{t-1}$ but $A_g^t > A_g^{t-1}$ the β s may decline because the non-service part of the economy experiences rising productivity or because productivity in services actually declines. Since it is labor productivity, a different composition of the workforce in services, a reduction of the capital stock etc. may cause the decline, see Glyn/ Salverda, 2003. The above formula also applies for inter-country differences since Baumol implicitly assumes constant α s in all countries (see section 4.1) when referring to Summers' (1985) analysis as cross-country support for the assumption of constant α s.

³² A given nominal income would increase in real terms if one or more products fall in price. Hicks (1956) proposed to determine the substitution effect keeping utility constant, whereas Slutsky (1952) suggested to determine the substitution effect keeping real income constant. The observed change in demand in response to a price change is the combination of the income and the substitution effect.

allowed for an expansion of low-skill, low-wage service industries in the US. Given similar technological conditions in these industries, this option was blocked in Europe by rigid wages, causing overly high prices for services. In a way, this hypothesis shares many aspects with Baumol's model but relaxes Baumol's assumption of competitive labor markets and assumes wages differentiated by industry productivity.

Figure 3.1 Productivity, Demand, and Employment



Baumol assumed income per capita to rise through technological progress. Actually, however, income levels (income per capita) are the outcome of the share of the population in employment (employment population rates), average working hours and labor productivity. Thus, the income level may change over time or may differ between two countries because these components change, most likely affecting also expenditure patterns. Why would service demand expand if additional income is generated through additional labor input? Here, relative productivity between market work and household production must be a key variable (Schettkat, 2002).

The major hypotheses may be summarized as follows:

$\alpha \uparrow$	Clark/ Fisher
$\beta \downarrow$	Baumol
$\beta \downarrow$ and $\alpha \uparrow$	Fuchs

Which of these hypotheses actually holds is an empirical question.³³ Even if α turns out to be constant the question remains at which level that occurs at the aggregate economy, the

³³ Many European economists argue that a declining relative service sector productivity ($\beta \downarrow$) should be cured by rising wage differentials between service industries and the rest of the economy ($w_s/w \downarrow$).

level of household expenditures, government consumption. In the following sections price levels and trends, demand and supply conditions (i.e., α s and β s) will be analyzed.

4 PRICES

4.1 PRICE LEVELS

It is a commonly held belief that services are relatively cheaper in the US than in Europe and that they are consequently in higher demand there³⁴. The EU-OECD project on purchasing-power-parities reveals the opposite, however. Table 4.1 shows indices of the price level³⁵ in selected European countries for GDP, total goods & services as well as private household consumption and a dozen subcomponents (see OECD, 2002) as a percentage of the GDP price level (upper panel) and of the US price level (lower panel). For the most recent benchmark year, 1999, the price level of GDP in the DEMPATEM countries is in the range of the US price level (row 21 in Table 4.1). Only Spain's overall price level is significantly lower and Sweden's is substantially higher than the US level. Prices for total goods is below the overall GDP-price level in the US and Sweden, but above in the other European countries, whereas the reverse holds for services. Relative to the US prices for total goods are about 20 to 30 percent higher in Europe (except for Spain) than they are in the US, however, for total services the European price level is about 10 percent lower than in the US. In the Netherlands and Spain, service prices are even 20 and 30 percent under the US price level (compare table 4.1, upper panel). For consumer services the difference is less pronounced, but nevertheless it shows a similar pattern. In other words, one dollar buys more services but less goods in Europe. This seems to contradict the hypothesis that the US service sector is bigger than its European counterpart due to a more service-friendly price structure.³⁶

³⁴ Baumol, however, implicitly assumes that the relative quantities of goods and services demanded are fixed, that is, that they are not substituted against each other according to changes in relative prices, or that price and income effects just balance. The latter is unlikely and therefore the Baumol argument must rely on a non-substitutability Leontief-type utility function.

³⁵ The advantage of 'price levels' over PPPs here is that the latter gives the purchasing power of different currencies by eliminating the difference in price levels between countries. PPPs show the price of the 'same' product in national currencies over the price in another currency, e.g. 'haircut in €/haircut in \$'. Thus, PPPs are useful for price comparisons only if compared with the exchange rate or for comparisons between products. 'Price levels' can be compared directly. They are computed by dividing the PPP by the exchange rate and are thus without a dimension. (compare OECD 2002:12)

³⁶ The standard textbook model assuming substitutability and utility maximization suggests that the product with the higher price will be substituted by the product with the lower price (if we assume an homothetic utility function on both sides of the Atlantic, services should be in higher demand in the country with the lower price level).

Table 4.1: Comparative price levels, GDP = 100

1993 SNA	US	UK	FR	GER	NL	ES	SW
Comparative price levels (1999 Benchmark, US=100)							
1 Gross domestic product	100	100	100	100	100	100	100
2 Total goods	89	107	108	101	112	109	98
3 Total services	111	94	95	100	91	95	102
4 Consumer services	105	96	95	95	89	95	107
5 Government services	122	93	98	111	95	95	99
6 Collective services	114	89	100	112	101	91	99
7 Individual services	132	95	98	109	90	99	100
8 Actual individual consumption	100	101	98	98	96	100	103
9 Food and non-alcoholic beverages	88	93	98	91	93	101	96
10 Alcoholic beverages, tobacco and narcotics	97	153	95	82	92	76	120
11 Clothing and footwear	82	115	109	117	122	130	105
12 Housing, water, electricity, gas and other fuels	101	89	99	114	95	91	91
13 Household furnishings, equipment, maintenance	94	107	102	96	114	104	92
14 Health	135	80	82	82	67	95	95
15 Transport	91	126	107	101	120	120	103
16 Communication	109	143	66	100	152	109	127
17 Recreation and culture	91	102	104	96	100	111	111
18 Education	153	92	97	118	96	89	90
19 Restaurants and hotels	80	134	110	97	97	121	184
20 Miscellaneous goods and services	93	97	106	97	95	100	103
Comparative price levels (1999 Benchmark, US=100)							
21 Gross domestic product	100	105	103	104	95	79	117
22 Total goods	100	132	122	119	121	100	129
23 Total services	100	89	88	94	78	68	107
24 Consumer services	100	96	93	94	80	72	119
25 Government services	100	80	83	94	74	62	95
26 Collective services	100	82	90	103	84	64	102
27 Individual services	100	76	77	86	65	59	89
28 Actual individual consumption*	100	106	101	102	91	79	120
29 Food and non-alcoholic beverages	100	110	115	108	100	91	127
30 Alcoholic beverages, tobacco, narcotics	100	165	101	88	90	62	145
31 Clothing and footwear	100	147	136	148	141	125	149
32 Housing, water, electricity, gas etc.	100	92	101	118	89	72	105
33 Household furnishing, equipment, maintenance	100	119	112	106	115	87	114
34 Health	100	63	63	63	47	56	82
35 Transport	100	145	121	115	125	104	132
36 Communication	100	138	63	96	133	79	136
37 Recreation and culture	100	117	117	110	104	97	142
38 Education	100	63	66	81	60	46	69
39 Restaurants and hotels	100	175	141	126	115	120	268
40 Miscellaneous goods and services	100	110	117	109	97	85	130

91

* individual cons. according to the 1993 SNA, i.e. including individual consumption provided by the public sector Source: Computations based on EKS 1999 PPPs (OECD, 2002).

Investigating the price structure for individual consumer services (rows 8 to 20, 28-40 respectively in table 4.1)³⁷ reveals a more diverse picture. Price levels of some services in Europe, like health and education, are well below US price levels, while other services – especially those traded in markets (like hotels, restaurants, recreational and cultural services)- have a markedly higher relative price in Europe. The most obvious difference occurs in restaurants and hotels, where prices in Europe are between 15 (in the Netherlands) and 168 percent (in Sweden) higher than in the US. Similarly, in recreational and cultural services, where one can expect prices to be largely determined by market forces, the price level in Europe is generally above that of the US. The same applies to miscellaneous goods and services. The only exception here is Spain.

Health and education have substantially lower relative prices in Europe than in the US. Both these industries are characterized by a mix of public and private provisions and/or financing. For consistency reasons³⁸ the price levels displayed for these industries are derived from ‘total price’, which is the mean of the prices governments and private households have to pay for this service (see OECD, 2002: 16). The price levels displayed in Table 4.1 lead to the correct volumes when applied to the combined private and public expenditures for health and education. However, the lower price levels for these services in Europe are the result of the complex financing structures in these sectors; they are not an indicator of actual market prices. Nevertheless, government involvement in health and education, which is especially in health is stronger in Europe than in the US (see section 5.2), does seem to reduce the price level in these industries.

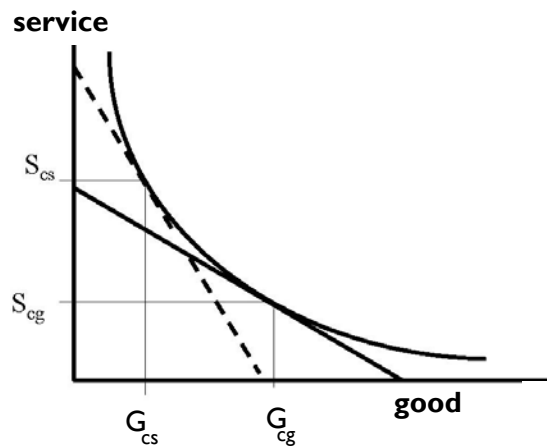
Assuming substitutability between goods and services and identical, homeothetic indifference curves in the countries, consumers in the country with the lowest relative service prices should put a higher share of their budget into services and vice versa (as illustrated in Fig. 4.1). In the country with higher services prices (cg) the budget curve is flatter and thus the share of income spent on services should be lower. Assuming homeothetic indifference curves, the income levels should not affect the distribution of expenditures between services and goods. Against the common view, the US relative prices in services are not generally

³⁷ Prices in table 4.1 are derived from PPPs aggregated with the EKS method (EKS stands for Eltetö-Köves-Szulc) which calculates in the first step a set of binary PPPs between each pair of countries. These bilateral PPPs are then made transitive. EKS indices are considered to be better suited for comparisons of prices and volumes of individual aggregates across countries whereas GK PPPs (which use weights, GK stands for Geary-Kahmis) are regarded as suited for volume and price structure comparison (compare OECD 2002 page 165 and see below)

³⁸ Here ‘consistency’ refers to the fact that that expenditures are equivalent to the product of price and volume.

lower than in Europe, although some services are. For relative prices to strongly affect the expenditure structure, a high price elasticity of demand must be assumed. The volume structure should correlate highly with the price structure, which is investigated in the following section.

Figure 4.1: The impact of relative prices on demand structure in a model with substitutability between goods and services



4.2 PRICE AND VOLUME SIMILARITIES

Table 4.2 displays correlation coefficients for the price and volume structure of actual private household consumption and GDP based on 'GK-PPPs'³⁹ in the DEMPATEM countries and Sweden. The coefficients for the price structure are quite high and higher than those for the volume structure of both GDP and private household consumption. It also seems to be the case that, with the exception of Spain, price and volume structure correlations are higher between the European countries than between the U.S. and any European country for both GDP and household consumption. Spain correlates low with both the US and the other European countries with respect to the volume structure. These correlations may be taken as a hint that volume structure of household consumption and of GDP are influenced by other variables besides relative prices. In particular income effects and preferences seem to be important factors to explain the differences in consumption patterns between countries.

³⁹ GK stands for Geary/Khamis.

Table 4.2: Inter-country correlation coefficients for private household consumption and GDP US

Actual individual consumption of private households Volume Similarities

		UK	FR	GER	NL	ES	SW
US	1.000	0.752	0.805	0.805	0.823	0.676	0.723
UK		1.000	0.869	0.903	0.898	0.756	0.877
FR			1.000	0.874	0.920	0.823	0.917
GER				1.000	0.916	0.690	0.878
NL					1.000	0.751	0.887
ES						1.000	0.678
SW							1.000

		Prices					
	US	UK	FR	GER	NL	ES	SW
US	1.000	0.861	0.807	0.910	0.871	0.888	0.836
UK		1.000	0.956	0.949	0.961	0.948	0.932
FR			1.000	0.973	0.965	0.964	0.928
GER				1.000	0.968	0.949	0.888
NL					1.000	0.964	0.900
ES						1.000	0.918
SW							1.000

		GDP Volume similarities					
	US	UK	FR	GER	NL	ES	SW
US	1.000	0.737	0.709	0.768	0.651	0.672	0.497
UK		1.000	0.782	0.844	0.722	0.711	0.650
FR			1.000	0.828	0.863	0.776	0.842
GER				1.000	0.848	0.665	0.767
NL					1.000	0.635	0.876
ES						1.000	0.512
SW							1.000

		Prices					
	US	UK	FR	GER	NL	ES	SW
US	1.000	0.878	0.886	0.914	0.882	0.885	0.838
UK		1.000	0.954	0.953	0.961	0.947	0.923
FR			1.000	0.971	0.971	0.961	0.910
GER				1.000	0.970	0.948	0.896
NL					1.000	0.961	0.909
ES						1.000	0.917
SW							1.000

Source: OECD 2002: Tables A5-A8, pp. 188-204.

4.3 PRICE TRENDS

How did prices in various categories of private household consumption develop over time? Did service prices rise faster than those in the rest of the economy? In other words, do services show the expected effects of the cost disease? Table 4.3 displays the difference between the price trends of individual expenditure categories and the price trend of final

private consumption.⁴⁰ Price trends are derived from private household expenditures in current and constant prices as published in the OECD National Accounts Statistics. This means that price deflators are implicit, i.e. they are not derived from observed price trends of individual items, but instead they include quantity reactions of demand to the changing price structure. One expects quantity demanded to be price elastic and therefore demand for items with above-average price increases to diminish, because these items are substituted by others, or because of an 'own-price elasticity'. If demand is price-elastic and relative prices rise, the quantity actually bought in $t+1$ would be less than the quantity, which would have been bought with unchanged prices (or if the price elasticity had been zero). Thus, the comparison between current and constant price expenditures represents a mixed effect of changes in income, preferences and actual changes in prices. For this reason, implicit price deflators underestimate the true price trends in case of rising prices and overestimate them in case of falling prices.

To compare between countries, Table 4.3 also shows the trend in the implicit price deflator for the individual expenditures as a difference from overall final consumption. Price trends for total services are significantly higher than for goods as the data reveals. From 1980 onward, the prices for goods rose by 2.7%-points annually (averaged but unweighted over all countries). Prices for services grew by about 0.5%-points or more. In all countries, prices for services consumed by private households rose more than overall final consumption and consequently relative goods-prices were declining in all countries (see lower row in table 4.3).

Relative prices for housing were usually rising. In some service categories (like recreation, which includes education) price trends were below the average. Relative prices of miscellaneous goods and services rose almost everywhere, but for health a split occurs. The US, UK and France face rising relative prices, but in the other countries these are declining. However, one has to keep in mind that these categories do not exclusively cover services but that they also cover some goods and that 'goods' also includes distributional services. That is surely true for the category 'medical services', for example, which covers not only expenditures on services but also on goods. Restaurants & hotels are clearly seen as a service but, of course, they contain a substantial amount of goods. All services and all goods are composite products but to different degrees as discussed in section 1.2.

⁴⁰ Price trends were computed as trends of the implicit price deflator as derived from the ratio of current over constant prices. The time series were taken from the OECD National Accounts volume II. The categories for the 1990s onwards (in some countries from the beginning of the 1990s, in other countries a bit later) follow the 1993 SNA classification, which is not strictly comparable with the earlier data. The major categories used here, however, fit quite well.

Table 4.3: Implicit price trends in individual categories of private household consumption, deviation from overall price trend of final consumption, in %-points, 1980+.

	US	UK	FR	W-GER	NL	ES	SW
Food	0.03	0.04	-0.06	-0.58	-0.4	-0.15	-0.59
Clothing	1.43	1.65	2.65	1.67	0.47	3.79	2.52
Housing	0.17	0.31	0.49	1.02	0.97	0.07	1.15
Furnishing	0.33	1.16	-0.05	0.22	0.88	-0.13	0.46
Health	0.67	0.36	-1.09	-0.04	-0.93	-0.19	-0.78
Transp & Comm.	0.32	0.35	-0.08	0.29	0.48	0.25	0.73
Recreation	-2.2	-1.44	-0.2	-0.63	-0.63	0.06	-0.3
Miscellaneous	1.01	0.44	0.13	0.56	0.56	0.33	-0.57
Education	2.05	1.6	1.55	2.65	2.28	1.12	0.74
Rest. & Hotels	-0.18	0.38	0.7	-0.85	-0.07	-1.9	0.74
Total Goods	-0.76	-0.92	0.05	-	-1.65	-	-0.87
Total Services	3.21	3.68	3.05	-	2.22	-	4.84

Source: Computations based on OECD National Accounts (OECD, 2000)

4.4 SERVICE SHARES IN NATIONAL AND INTERNATIONAL PRICES

In current prices the service share in demand and output is predicted to rise according to the 'hierarchy of needs' hypothesis of Clark and Fisher as well as according to Baumol's 'cost disease' hypothesis. Both hypotheses, however, can differ with respect to service share in output and demand at constant prices. This section investigates these trends in

53 both current and constant prices. First a reanalysis of Robert Summers' earlier work, in which he argued that in constant prices⁴¹ the service share on GDP is constant with respect to income per capita. The section continues with an analysis of services in final demand and in the major final demand categories in real figures. Then the public-private division of consumption is analyzed. Services as they appear in different data sources will be discussed and finally the major components in the change of relative service demand are presented.

William Baumol (e.g., 2001) supported his assumption that the service share in real GDP does not rise with income per capita but rather remains constant with Robert Summers' analysis of the Penn-World-Tables (1985). Summers found that the share of services in nominal GDP (national currency and prices) increases with per-capita income but that the service share in real GDP (international prices) is constant over a wide range of per-capita incomes in a cross-section. I.e. Summers must have assumed that all countries had the same share of services in GDP. This is stronger than the original Baumol hypothesis, which only assumes constant service shares in GDP with rising income within a country but not

⁴¹ It is common to label 'international prices' as 'real' because expenditures in different countries are expressed in 'common prices levels'. "They are therefore the spatial equivalent of a time series of GDP for single country expressed in constant prices" (OECD 2002:11).

necessarily identical service share in different countries. Table 4.4 displays regressions of the service-share on relative per-capita income (relative to the US) as published in the Penn-World-Tables. Without doubt, the significant coefficient of income in the regressions of the share of services in nominal GDP (GDP measured in national current prices) on income per capita disappears or becomes even negative when regressing the share of services in real GDP (based on international prices) on income per capita. This confirms the evidence from the Summers' analysis as cited by William Baumol (2001, Figure 2.1)⁴²

However, transforming national into international prices, mainly lifts the service shares in countries with relatively low-income levels (Figures 4.2, 4.3) and although the positive slope between income and expenditures on services disappears, the variation remains (Table 4.5), which is not expected if international differences in the share of services are due to price effects only. Raising the service shares of low-income countries led the relation of services and income to become negative. Why would low-income countries spend such a high share of their income on services? It is hard to argue that low prices for services and income inequality in these countries are not part of the story. The question then is, however, whether services bought at very low prices in low-income countries would also be bought at 'international prices' (i.e., whether assuming a price elasticity of zero for service demand is a reliable assumption, see Appelbaum/Schettkat, 1999).⁴³

If demand is negatively price-elastic the quantity demanded will be reduced with rising prices. This effect is ignored if expenditures are valued with international prices as in the Penn-World-Tables. In other words, the share of services in real (international price) GDP will be severely overestimated in countries where prices are substantially lower than in the reference country. This is the so-called Gerschenkron effect or price effect. The functions in Figure 2.3 suggested that the service share in value-added rises with income per capita and also analysis for recent OECD data (2002) indicates a positive relation between the two variables among the core OECD countries.⁴⁴ Therefore, we investigate trends in services in nominal and real GDP within countries in Section 5.

⁴² A general criticism may be that income and productivity estimates for levels are very diverse. For example Madison (1996) estimates West-Germany's income per capita at 90% of the US income level for 1992. The BLS (2000) estimate for the same year is 84.7%. Also BLS estimates seem to differ from Penn-World-Tables estimates. The PPP aggregation method EKS (Eleto-Köves-Szulc, i.e. countries equally weighted) versus GK (Geary-Khamis, i.e. countries weighted according to GDP) can produce deviations of 5% (BLS 2000: 15/16), which vary between countries.

⁴³ Falvey and Gemmel (1996) conclude that the price effect is stronger than the income effect and conclude on the basis of the 1990 version of the Penn-World-Tables that the service share declines with income per capita. However, this analysis is again based on cross-section data.

⁴⁴ Including East-European countries changes the picture because these countries still have a very big public sector, which counts as services.

Fig. 4.2: Scatter plot of 1985 Service Shares in National Prices

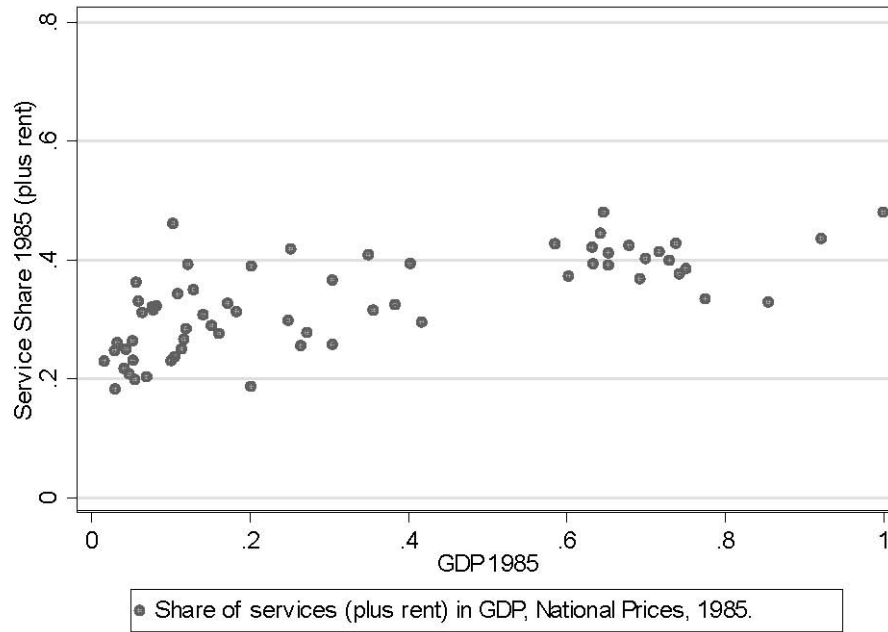


Fig. 4.3: Scatter plot of 1985 Service Shares in International Prices

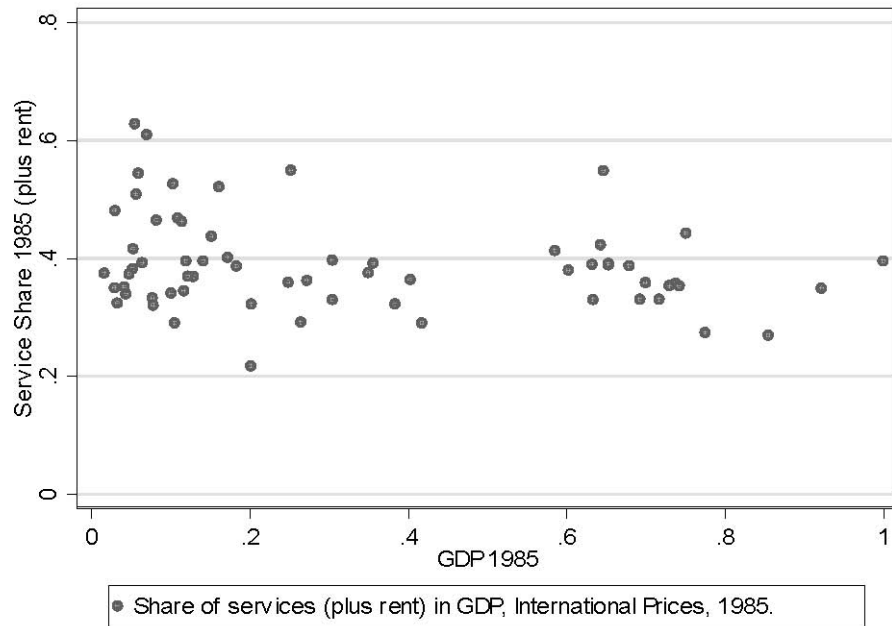


Table 4.4 Regressions of the share of service expenditures in GDP in national and international prices on the relative income position, cross-country, various countries

	National Currency				International Prices			
	Coef.	Std. Err.	n	R ²	Coef.	Std. Err.	n	R ²
Penn World Tables Data								
1970								
Incl. Rent	0.147	0.036	16	53.9	0.007	0.021	16	0.7
Excl. Rent	0.113	0.031	16	48.8	-0.020	0.031	16	2.9
1975								
Incl. Rent	0.230	0.035	34	57.7	0.012	0.036	34	0.4
Excl. Rent	0.177	0.031	34	49.8	-0.043	0.036	34	4.4
1980								
Incl. Rent	0.173	0.021	61	52.4	-0.021	0.026	61	1.1
Excl. Rent	0.151	0.018	61	53.7	-0.061	0.026	61	8.6
1985								
Incl. Rent	0.183	0.025	64	49.5	-0.067	0.035	64	5.8
Excl. Rent	0.141	0.024	64	34.9	-0.149	0.033	64	24.2
1990								
Incl. Rent	0.135	0.050	24	24.6	-0.066	0.052	24	6.8
Excl. Rent	0.111	0.045	24	21.7	0.067	0.043	24	9.9

Note: Incl. Rent: Rents are counted as services; Excl. Rent: rents are excluded from services Source: Computations based on Penn World Tables, for a list of the included see the Penn World Tables (Heston, A., Summers, R. and Aten, B., 2002). Incl. Rent = including rent as service expenditures Excl Rent = excluding rent from service expenditures

Table 4.5 Coefficients of cross-country variation of service shares measured in national and in international prices

Variable	n	Coefficient of variation		Coefficient of Variation international / national prices [%]
		National prices	International prices	
OECD countries				
Serv_plus_70	8	12.434	6.698	53.9
Serv_min_70	8	12.386	8.451	68.2
Serv_plus_75	13	11.698	13.080	111.8
Serv_min_75	13	12.107	15.463	127.7
Serv_plus_80	17	11.129	12.732	114.4
Serv_min_80	17	12.512	13.711	109.6
Serv_plus_85	20	12.873	11.560	89.8
Serv_min_85	20	10.915	13.923	127.6
Serv_plus_90	21	13.932	13.584	97.5
Serv_min_90	21	13.644	13.474	98.8
Penn-World-Table Countries				
Serv_plus_70	16	19.375	7.368	38.0
Serv_min_70	16	18.959	13.073	69.0
Serv_plus_75	34	26.342	15.883	60.3
Serv_min_75	34	25.813	19.211	74.4
Serv_plus_80	61	22.556	16.290	72.2
Serv_min_80	61	24.393	20.015	82.1
Serv_plus_85	64	25.249	20.679	81.9
Serv_min_85	64	25.898	27.042	104.4
Serv_plus_90	24	13.963	12.930	92.6
Serv_min_90	24	15.790	15.134	95.8

Source: Computations are based on Penn-World-Tables

4.5 CONCLUSIONS

- US relative prices are generally lower for goods, but higher for services compared to European price levels. Aggregate services in 1999 show a lower price level in Europe than in the US, but this does not hold for 'private services' (such as restaurants/hotels) where price levels in Europe are substantially above the US price levels.
- Lower relative prices for overall services seem to be caused by the impact of publicly provided services, which are especially important in health and education.
- Since volume similarities are lower than price similarities for private household consumption and GDP, other variables than just the price structure seem to severely influence the structure of demand.
- When analyzing price trends it becomes clear that some services seem to continuously suffer from the cost disease but that others do not. Even for health services some countries show declining relative prices.
- Overall price trends were very different between countries but have converged in the 1990s.
- There is a positive relation between service shares in GDP and relative income in cross-country analysis when measured in national prices.
- There is no (or even a negative) relation between the service share in GDP and relative income in a broad group of diverse countries when measured in international prices. But there is a positive relation of the service share measured in international prices among the OECD countries.
- The cross-country variation of service shares is roughly similar whether the shares are measured in national or in international prices and the question remains why countries have different shares in services
- Cross-country analysis may hide developments within countries.

5 ALPHAS: THE SHARE OF SERVICES IN NOMINAL AND REAL EXPENDITURES WITHIN COUNTRIES

5.1 DEMAND IN VARIOUS DATA SOURCES

Several data sources provide information on demand in the economy. First, National Income and Product Account data (NIPA) provides the most accurate and consistent information on the main aggregates such as household consumption, government consumption, investment etc. In addition, NIPA data breaks down household consumption expenditure into various categories such as food, housing, personal services etc. Information on services as well as international comparability improved over time, but for time series many compromises still need to be made. The 1993 SNA (System of National Accounts) splits public consumption into a part representing individual consumption, for example health services, and another part representing true public consumption and thus provides data on 'true' individual and collective consumption respectively (UN Statistical Division, 2003).

Second, input-output data also provides information on the final demand categories within the major aggregates (private household consumption, government consumption, investment, imports, exports). The specific advantage of input-output data is that distributional services occur as a separate demand category. In other data (NIPA or expenditure surveys), expenses for distributional services are part of the products purchased. The richest information on private consumption is provided by consumer surveys, which give a detailed insight into the expenditure patterns of private households and usually allow for the control of various household characteristics. For the purpose of the current paper input-output and NIPA data are used. Consumer surveys are the basis for the detailed analysis in DEMPATEM's consumption project.

Table 5.1 Demand in different data sources

National Accounts		Input-output	Expenditure Surveys
Value added of industries	Household expenditures by product	Household demand by product	Household expenditures by product
Information gathered from various data sources. Most reliable data on the aggregate economy		Roughly consistent with NIPA data	Survey data
No distinction by user	User specific		
	SNA 93 includes publicly provided but individually consumed item in individual consumption	Distributional services are separated. Trade services identified	Distributional services are not separated. Trade services are not identified

5.2 THE SHARE OF SERVICES IN NOMINAL AND IN REAL FINAL DEMAND WITHIN COUNTRIES

Table 5.2 shows the development of the sector shares in final demand derived from the OECD Input-Output databases. Input-output data show trading services as a separate category of final demand (for definitions see Appendix 2). The purchase price of a good is split into a component representing the actual good and another representing the distributional service. This is a major difference to expenditure data as published in the National Accounts or in expenditure surveys because in these data the service component is not separated but included in the expenditure for the good.⁴⁵ Final domestic demand data show rising service shares up to 1990 for all DEMPATEM countries except Germany and the Netherlands (1986). These trends occur in current price (nominal) as well as in constant price (Table 5.2). The data for the mid 1990s (although not fully comparable to the earlier years) shows a continuation of these trends. Roughly speaking, the distance of the European countries with respect to the service-sector share in final demand to the US remained at about 10%-points in the UK, France, and the Netherlands, but higher in Germany.

The causes for these differences in service shares of final demand may be related to different compositions of final demand. Exports, for example, consist mainly of manufactured goods and a high share of exports in final demand will thus reduce the service share in overall final demand. By far the most important demand component for services is private consumption, followed by public consumption, which together amount to 80 to 94 percent of final demand for services (Table 5.3). Domestic consumption is also the most important final demand category for manufacturing, although in this sector it is much less dominant than for services. Therefore rising domestic demand will first of all benefit the service industries. The different final demand components have rather different weights in overall final demand in the various countries though.

Looking at this issue from another perspective and asking what share the three broad sectors have within the final demand categories (Table 5.4) shows the dominance of services in the consumption categories (public and private). Especially in private household demand the service share rose substantially over time. The average US households spend three quarter of its overall expenditures on services. This share is generally lower in the European countries but is nevertheless still reaching 60%. The rise of the service share was, of course, at the expense of the relative demand for goods.

⁴⁵ Of course, the distributional service part is related to the purchase of a good. Trade is not a 'stand alone' service (see Glyn/ Salverda, 2003).

Table 5.2 The share of agriculture, manufacturing, and services in final domestic demand, current and constant prices, OECD Input-Output data

		Constant prices			Current prices		
		Agric.	Manuf.	Serv.	Agric.	Manuf.	Serv.
US	1972	1.5	47.1	51.4	1.4	43.4	55.2
	1977	1.9	44.1	54.0	1.8	43.2	55.0
	1985	2.1	44.0	54.0	1.6	40.4	58.1
	1990	1.9	42.5	55.6	1.4	37.7	60.9
	1997				1.2	34.9	63.0
UK	1968	3.4	56.3	40.3	3.6	53.0	43.4
	1979	3.2	53.8	42.9	3.3	52.6	44.2
	1984	4.2	48.6	47.1	4.8	47.0	48.2
	1990	3.4	52.0	44.7	2.5	47.1	50.4
	1995				1.6	40.4	57.9
FR	1972	3.4	54.1	42.5	4.7	61.5	33.8
	1977	2.9	53.7	43.5	3.3	53.9	42.8
	1985	3.7	49.8	46.5	3.5	49.3	47.2
	1990	3.3	51.6	45.1	2.9	48.9	48.2
	1995				1.6	44.7	53.7
GER	1972						
	1978	1.8	57.1	41.0	1.8	56.7	41.4
	1986	1.3	56.7	41.6	1.2	55.5	42.8
	1990	1.4	57.9	40.5	1.3	56.8	41.8
	1995				1.4	47.2	51.4
NL	1972	3.6	53.1	43.2	3.4	55.0	41.5
	1977	4.5	52.6	43.1	4.5	52.1	43.6
	1986	4.3	52.6	43.0	4.6	51.5	44.1
	1990						
	1995				3.8	47.9	48.0
ES	1972						
	1977						
	1986				3.5	45.9	50.6
	1990				1.9	42.2	55.9
	1995				2.5	42.8	54.7

Source: computations are based on the OECD Input-Output databases, the data for the mid 1990s are not fully comparable with those of the earlier periods base year for constant prices: USA 1982, UK 1980, Germany 1985, France 1980, NL 1980, Germany 1995 is united Germany.

Table 5.3 The weight of demand components in overall final demand (current prices)

Year	Final Demand	Consumption			Investment	Changes in Stocks	Exports	Imports	
		Overall	Private	Public					
US	1997 Overall	100.0	72.8	59.6	13.2	17.9	0.5	8.8	9.5
	Agric.	100.0	38.6	35.9	2.8	26.9	3.5	31.0	79.0
	Manuf.	100.0	43.2	36.4	6.8	39.3	1.2	16.3	24.0
	Serv.	100.0	89.8	72.9	16.9	5.9	0.1	4.2	0.1
UK	1995 Overall	100.0	65.1	50.9	14.3	13.6	0.4	20.8	21.5
	Agric.	100.0	42.3	42.3	0.0	7.6	0.2	49.9	66.8
	Manuf.	100.0	38.6	38.6	0.0	28.1	0.9	32.4	41.4
	Serv.	100.0	84.3	59.7	24.6	3.7	0.1	11.8	6.4
FR	1995 Overall	100.0	66.7	46.8	19.9	15.6	0.3	17.3	16.7
	Agric.	100.0	58.3	58.3	0.0	5.1	2.2	34.3	82.2
	Manuf.	100.0	40.3	39.1	1.3	28.0	0.6	31.0	31.0
	Serv.	100.0	88.9	52.9	36.0	5.7	0.0	5.3	2.9
GER	1995 Overall	100.0	61.0	43.6	17.4	18.3	0.2	20.6	18.8
	Agric.	100.0	65.3	65.1	0.2	12.3	0.8	21.6	122.8
	Manuf.	100.0	29.7	29.6	0.1	33.2	0.4	36.7	31.9
	Serv.	100.0	89.5	55.8	33.7	4.8	0.0	5.7	3.9
NL	1995 Overall	100.0	45.8	29.3	17.0	13.1	0.5	40.6	34.5
	Agric.	100.0	9.1	9.1	0.0	4.6	-0.2	86.5	91.6
	Manuf.	100.0	17.8	16.4	1.5	21.1	1.1	60.0	55.8
	Serv.	100.0	76.0	42.6	33.4	5.9	0.0	18.0	9.2
ES	1995 Overall	100.0	65.7	50.1	15.6	18.0	0.3	16.0	19.2
	Agric.	100.0	51.3	50.7	0.7	4.0	1.0	43.6	98.0
	Manuf.	100.0	36.2	34.8	1.4	35.3	0.6	27.9	34.5
	Serv.	100.0	89.4	62.1	27.3	5.2	0.0	5.3	3.6

Source: computations are based on the OECD's Input-Output database

Table 5.4 The distribution of final demand across agriculture, manufacturing and services (current prices)

Year	Final Demand	Consumption		Investment	Changes in Stocks	Exports		Imports	
		Overall	Private			Public	Imports		Exports
US	1997 Agric.	1.2	0.6	0.7	0.3	1.8	7.7	4.3	10.1
	Manuf.	35.1	20.8	21.4	18.1	77.2	77.1	65.3	89.1
	Serv.	63.7	78.5	77.8	81.7	21.0	15.2	30.5	0.8
UK	1995 Agric.	1.6	1.1	1.4	0.0	0.9	0.9	3.9	5.1
	Manuf.	40.4	24.0	30.7	0.0	83.2	84.8	63.1	77.8
	Serv.	57.9	75.0	67.9	100.0	15.9	14.3	33.0	17.1
F	1995 Agric.	1.6	1.4	2.0	0.0	0.5	11.5	3.2	7.9
	Manuf.	44.7	27.0	37.3	2.8	79.8	83.1	80.2	82.8
	Serv.	53.7	71.6	60.7	97.2	19.6	5.3	16.6	9.3
GER	1995 Agric.	1.4	1.5	2.1	0.0	0.9	5.9	1.4	9.0
	Manuf.	47.2	23.0	32.1	0.4	85.7	93.8	84.2	80.3
	Serv.	51.4	75.5	65.9	99.6	13.4	0.3	14.3	10.8
N	1995 Agric.	3.9	0.8	1.2	0.0	1.3	-1.4	8.2	10.2
	Manuf.	47.4	18.5	26.9	4.1	76.5	99.0	70.1	76.8
	Serv.	48.7	80.8	71.9	95.9	22.1	2.5	21.7	12.9
E	1995 Agric.	2.5	2.0	2.5	0.1	0.6	8.8	6.8	12.8
	Manuf.	42.8	23.6	29.7	3.9	83.7	90.6	74.9	77.0
	Serv.	54.7	74.5	67.8	96.0	15.8	0.7	18.3	10.2

Source: computations are based on the OECD's Input-Output database

5.3 THE COMPOSITION OF CONSUMPTION, PUBLIC - PRIVATE

Final consumption is usually typified by the buyer of the product. If a private household purchases a product it is classified as private household consumption. If the government buys or provides the exact same product, it is classified as government or public consumption. Therefore private household expenditures are strongly influenced by institutional arrangements, which differ substantially between countries. There may be efficiency reasons or distributional concerns in the decision to provide a product publicly or privately but in principle 'health services', for example, can be provided on a private market basis, publicly or as a mix of the two. Similarly, pension insurance may be organized by the government or by private companies. To take these differences into account, the 1993 System of National Accounts (SNA) distinguishes government consumption into a part that can be regarded as individual consumption and another part that is 'pure' collective consumption. Adding private household expenditures (including expenditures of nonprofit institutions serving households) and individual consumption expenditures made by the government gives actual individual consumption expenditures.

All European countries except the UK consume a lower share of their GDP than the US. In national currencies the consumption gap is usually around 5%-points, but 9%-points in the Netherlands (row 8 in Table 5.5). These differences are to a large part caused by positive net exports in these countries compared to a trade deficit in the US (see Table 5.3). Analyzing the components of final consumption, one sees a stark contrast in the public-private pattern between the US and a typical continental European country (not so much between the US and the UK and Spain). Table 5.5 includes Sweden as an example of a country with a very high individual component in government consumption. In Europe government consumption is typically between 25 and 35% of final consumption (row 3 of Table 5.5) but in the US this is only 17%. However, the split of government consumption into collective and individual consumption corrects this pattern: in Europe about 60% of government consumption is individual and only 40% is collective whereas in the US this is exactly the opposite (row 4 and 5 of Table 5.5). Thus, in Europe the public sector seems to be an important provider of individual consumption items, which are provided privately in the US (see also Freeman/Rein, 1988).

How big is the collective sector in terms of overall final consumption? Taking the split of government consumption into 'individual' and 'collective' at face value, the share of collective consumption in overall final consumption reveals a surprising result: except for the Netherlands, all countries spend about 10% of overall final consumption on collective consumption (row 6 in Table 5.5). The US looks like a typical European state with respect to collective consumption similar to Sweden! However, considering that Sweden consumes only 77% of its GDP but the US 82%, leaves Sweden with 7.6% collective consumption in GDP compared to 8.7% in the US.

As discussed in section 3, expenditure shares are influenced by the price structure in the economy. Therefore, rows 9-16 in Table 5.5 also display the consumption patterns in international prices based on EKS PPPs. In international prices the final consumption share in GDP (row 16) is generally higher than in national prices in the European countries, but lower in the US. In international (real) prices the share of private household consumption in final consumption is about 4%-points higher in the US than in national prices. The pattern within the countries and the differences between remain, although there are slight changes (see Table 5.5 lower panel).

Table 5.5 The composition of final consumption, private versus public

	US	UK	FR	GER	NL	ES	SW
National prices							
1. Final consumption	100	100	100	100	100	100	100
2. Private households	82.6	78	70.1	75.2	68.6	77.3	65.2
3. Government	17.4	22	29.9	24.8	31.4	22.7	34.8
4. Collective	60.8	39.6	40.1	41.8	47.8	43.2	28.6
5. Individual	39.2	60.4	59.9	58.2	52.2	56.8	71.4
6. Collective in final cons.	10.6	8.7	12	10.4	15	9.8	10
7. Total individual in final cons.	89.4	91.3	88	89.6	85	90.2	90
8. Final consumption in GDP	82.2	83.9	78.1	77.4	73.1	76.8	76.9
International prices							
9. Final consumption	100	100	100	100	100	100	100
10. Private households	86.7	75.5	69.6	77.1	67.5	76.1	63.8
11. Government	14.6	23.6	29.8	22.4	32.2	23.6	35.5
12. Collective	64.8	41.1	39.5	40.9	44.5	45.2	28.6
13. Individual	36.1	58.5	60.1	58.7	54.9	54.7	71.1
14. Collective in final cons.	9.4	9.7	11.8	9.2	14.3	10.7	10.2
15. Total individual in final cons.	91.9	89.3	87.5	90.2	85.1	89	89
16. Final consumption in GDP	80.6	84.7	80.1	77.7	75.4	77.8	75.6
Difference national - international prices							
17. Final consumption	0	0	0	0	0	0	0
18. Private households	-4.1	2.5	0.5	-1.9	1.1	1.2	1.4
19. Government	2.8	-1.6	0.1	2.4	-0.8	-0.9	-0.7
20. Collective	-4	-1.5	0.6	0.9	3.3	-2	0
21. Individual	3.1	1.9	-0.2	-0.5	-2.7	2.1	0.3
22. Collective in final cons.	1.2	-1	0.2	1.2	0.7	-0.9	-0.2
23. Total individual in final cons.	-2.5	2	0.5	-0.6	-0.1	1.2	1
24. Final consumption in GDP	1.6	-0.8	-2	-0.3	-2.3	-1	1.3

Source: OECD 2002

Table 5.6 shows that government expenditure is almost entirely concentrated in service industries and in a few service industries only (the US and the Netherlands show some public engagement in industry as well). Besides public administration, the government is engaged in 'research and development, 'education' and 'health'. In a European state, at least 75% of the final demand in education is government demand and in many cases it is well above 90%. In the US, the negative government share in education and health is a statistical artifact because all value added of the public sector is booked in 'public administration'. The negative numbers reflect purchases of the public sector, for example private payments for meals served in school, which would otherwise be counted twice (as expenditures of private

households and as public consumption). Given that most schools are public and free of charge in the US (see Schmitt, 2003) the US figures then simply reflect the US NIPA system.

46

The health sector is a bit more diverse, illustrating the differences in the organizational structure between countries. In Germany, for example, health insurance is compulsory for most employees. Almost everybody is covered by a health insurance, but about three quarters of health expenditures are classified as private because insurances and service providers are mostly private organizations.⁴⁷ In other countries, like France, the Netherlands and the UK health services are organized through public funds or are provided publicly resulting in a government share of three quarters in health services.

Thus, a major difference between the US and the European countries is the degree to which individual consumption is provided through the public sector. Government consumption is higher in Europe because governments provide individual services, not because 'true' collective consumption is higher in Europe. For collective consumption the US looks like a typical European country.

Table 5.6 The Share of Private Households, Non-Profit Institutions & Governments in Final Demand, 1995.

	US			UK			FR		
	Private HH	Non-Profit	Government	Private HH	Non-Profit	Government	Private HH	Non-Profit	Government
Agriculture	92.8	0.0	7.2	100.0	0.0	0.0	100.0	0.0	0.0
Industry	84.3	0.0	15.7	100.0	0.0	0.0	96.9	0.0	3.1
Services	81.2	0.0	18.8	66.8	4.0	29.2	58.5	1.0	40.5
In detailed services:									
Wholesale and Retail trade, Repairs	97.7	0.0	2.3	100.0	0.0	0.0	95.4	0.0	4.6
Hotels, Restaurants	100.1	0.0	-0.1	100.0	0.0	0.0	100.0	0.0	0.0
Transport, Storage	85.7	0.0	14.3	100.0	0.0	0.0	97.9	0.0	2.1
Post, Communication	86.1	0.0	13.9	100.0	0.0	0.0	100.0	0.0	0.0
Finance, Insurance	96.0	0.0	4.0	99.5	0.5	0.0	100.0	0.0	0.0
Real Estate Activities	97.9	0.0	2.1	100.0	0.0	0.0	92.2	0.0	7.8
Computer & related act.	32.3	0.0	67.7	.	.	.	100.0	0.0	0.0
R&D	1.1	0.0	98.9	0.0	100.0	0.0	0.2	0.0	99.8
Other business activities	73.4	0.0	26.6	92.3	7.7	0.0	100.0	0.0	0.0
Public Administration, Defense, Soc.Sec	0.0	0.0	100.0	5.4	0.0	94.6	0.1	0.0	99.9
Education	127.4	0.0	-27.4	16.0	29.5	54.5	8.6	0.0	91.4
Health and Social Work	110.5	0.0	-10.5	14.5	3.7	81.7	23.6	0.6	75.8
Other Services	100.1	0.0	-0.1	77.6	9.6	12.7	73.0	14.1	12.9

⁴⁶ Nadim Ahmad from OECD kindly clarified this and other input-output issues to us.

⁴⁷ It is a major difference between NIPA and household budget surveys that the former includes employers' contributions to health and pension insurance whereas it is excluded private consumption in the latter (see Hertel/ Statistisches Bundesamt) 1997).

	GER			NL			ES		
	Private HH	Non-Profit	Government	Private HH	Non-Profit	Government	Private HH	Non-Profit	Government
Agriculture	99.5	0.1	0.1	100.0	0.0	0.0	98.6	0.0	1.3
Industry	99.3	0.2	0.5	91.7	0.0	8.3	96.1	0.0	3.9
Services	59.4	3.0	37.6	55.1	1.0	43.9	68.2	1.3	30.5
In detailed services:									
Wholesale and Retail trade, Repairs	100.0	0.0	0.0	95.5	0.0	4.5	96.4	0.0	3.6
Hotels, Restaurants	100.0	0.0	0.0	98.7	0.0	1.3	99.7	0.0	0.3
Transport, Storage	94.1	0.0	5.9	77.0	0.0	23.0	95.8	0.0	4.2
Post, Communication	100.0	0.0	0.0	100.0	0.0	0.0	99.3	0.0	0.7
Finance, Insurance	100.0	0.0	0.0	98.7	0.0	1.3	100.0	0.0	0.0
Real Estate Activities	100.0	0.0	0.0	95.4	0.0	4.6	100.0	0.0	0.0
Computer & related act.	100.0	0.0	0.0	100.0	0.0	0.0	86.9	0.0	13.1
R&D	0.1	27.5	72.4	0.0	0.0	100.0	0.1	0.0	99.1
Other business activities	98.9	0.3	0.8	58.6	0.0	41.4	93.3	0.1	6.6
Public Administration, Defense, Soc.Sec	1.2	0.0	98.8	6.0	0.0	94.0	2.6	0.0	97.4
Education	10.9	9.1	80.0	3.4	0.0	96.6	23.5	0.0	76.5
Health and Social Work	73.3	18.5	8.2	25.1	0.1	74.8	26.5	8.6	64.9
Other Services	70.0	15.6	14.5	62.7	18.0	19.4	78.0	3.4	18.5

Source: computation based on the OECD input output database, tables for total demand. US figures refer to 1997

5.4 IMPORT OF SERVICES

Smaller countries usually have higher shares of imports but also of exports, i.e. they are more open. Smallness of European countries, it is frequently argued, lowers the expenditures on typical private services consumed during vacation, such as hotel services, restaurant meals, etc. Furthermore, especially North-Europeans spend their holidays in the South and thus reduce service expenditures in their home countries. In terms of national accounting they import services and thus raise demand and employment in service industries in the countries of their travel destinations.⁴⁸ Since the US is much bigger, most of the vacation expenditures remain within the country and this positively affects service employment.

Using the import matrix and the total expenditure matrix from the OECD input-output database, the service import hypothesis can be evaluated. Table 5.7 displays the shares of imports in total household expenditures for agricultural products, industrial products and services. Imports are again concentrated in goods and service imports have a minor share

⁴⁸ A favorite destination is Spain, where the share of export of services in private household expenditures was corrected by 7.5% in the OECD 1995 input-output tables. This correction consists mainly of expenditures by foreign household in Spain.

(of around 1%) in total household expenditures in most countries. This share is lower in the US than in Europe. Only in the UK service imports reach about 5% of total household final demand. These numbers suggest that domestic private household expenditure would be about 1 or 1.5% higher if no services were imported.

One percent of overall household expenditures can be a high share if concentrated on a few items only, but this does not seem to be the case, as the lower panel of table 5.7 suggests, which displays the import shares in total household expenditures for detailed services. Table 5.7 displays only the import share and neglects exports of private household services, therefore it overestimates the possible effect on the domestic market. In any case, conceptually the service import hypothesis is right, but the numbers are just too small to make service imports a major reason for lower service employment in Northern Europe.

Table 5.7: Household final demand, imports in % of overall household final demand, 1995 (US 1997)

	US	UK	F	G	NL	ES
Agriculture	17.2	24.6	14.2	40.7	51.8	24.5
Industry	20.0	26.7	19.6	23.1	40.8	22.0
Services	0.1	4.6	1.3	1.3	1.4	0.2
In detailed services:						
Wholesale and retail trade; repairs	-0.6	0.4	1.6	0.0	0.1	0.0
Hotels and restaurants	0.0	14.9	0.0	3.2	0.0	0.0
Transport and storage	4.2	20.5	6.3	6.6	8.9	3.7
Post and telecommunications	0.0	4.5	0.0	5.2	3.5	0.1
Finance, insurance	0.9	1.6	3.1	0.6	3.7	0.3
Real estate activities	0.0	0.7	0.0	0.0	0.0	0.0
Renting of machinery and equipment	0.0	3.0	0.0	0.1	4.8	0.0
Computer and related activities	0.2	0.0	1.5	4.7	14.5	0.0
Research and development	0.0	0.0	0.0	0.0	0.0	0.0
Other business activities	0.3	8.3	5.9	0.3	11.8	1.4
Public admin. and defense; compulsory social security	0.0	0.1	0.0	0.0	0.0	0.0
Education	0.4	0.6	0.0	0.0	0.0	0.0
Health and social work	0.0	0.5	0.0	0.0	0.0	0.0
Other community, social and personal services	0.0	7.6	2.5	3.5	3.2	0.0
Private households with employed persons and extra territorial organizations and bodies	0.0	0.6	0.0	0.0	0.0	0.0

Source: computations are based on the OECD input-output database for the 1990s

5.5 DETERMINANTS OF CHANGING SERVICE SHARES: SHIFT-SHARE ANALYSIS

The share of services in overall final demand clearly differs between countries and it changes over time. Overall final demand relevant for employment in an economy consists of private domestic consumption, government consumption, investment (including changes in stocks), and exports. The share of services in each of these final demand components differs and thus the share of services in overall final demand may change, (1) because service consumption increases within demand components (within effect), (2) because the relative weights of the final demand components (structural effect), and (3) because of the changes of the service share within components in interaction with the change of the weight of the components (interaction effect).⁴⁹ The latter is usually very small if the changes in the other two components are not too big.

Table 5.8 displays the decomposition of the overall changes in the service shares in final demand into a within (change within the final demand components) and a structural (change in the weights of the components) component for current and constant prices for the period of the late 1970s and 1990, 1995 respectively.⁵⁰ Again, the constant-price figures are somewhat lower than the current-prices figures reflected the higher inflation in services. For the period 1977 to 1990 the within and the structural effects reinforce each other in the US, the UK and France, which is –as mentioned earlier- due to the expansion of private consumption in the US and the UK but to public consumption in France. In the Germany, mainly rising exports caused the structural effect to be negative. Nevertheless, the within effect, which reflects the rise in service demand, rose in all countries but in Germany and the Netherlands (in the Netherlands data refers to 1985) the within effect was compensated by shifts in the structure of demand.

Although the data for the mid 1990s is not fully comparable with that of the earlier periods, one can conclude that service demand within the final demand components continued to rise in all countries but surprisingly the US and the French structural effects are now negative.

$$^{49} \Delta(s_i) = \sum_i \Delta s_i * a_i^{t-1} + \sum_i s_i^{t-1} * \Delta a_i + \sum_i \Delta s_i * \Delta a_i$$

overall = within + structural + interaction
effect effect effect effect

⁴⁹ s = services share; a = share of demand category i , s_i = share of services within demand category i ; Δ = change between years.

⁵⁰ For the Netherlands data for 1990 is not available. For Spain input-output data is only available for 1995 (new OECD input-output tables). Data for the mid 1990s is not fully comparable to that of earlier periods because of changes in the classification and definitional changes in the 1993 SNA system.

Part of the explanation is the investment in the US in the 1990s reducing the demand for services but also measurement problems are affecting the results. Software is defined as investment and therefore final demand in 1993 SNA but it was intermediate demand in the earlier SNA. Most important, however, is that the within effects continued to favor services in all countries displayed.

Table 5.8 Shift-share analysis of the service share in final demand

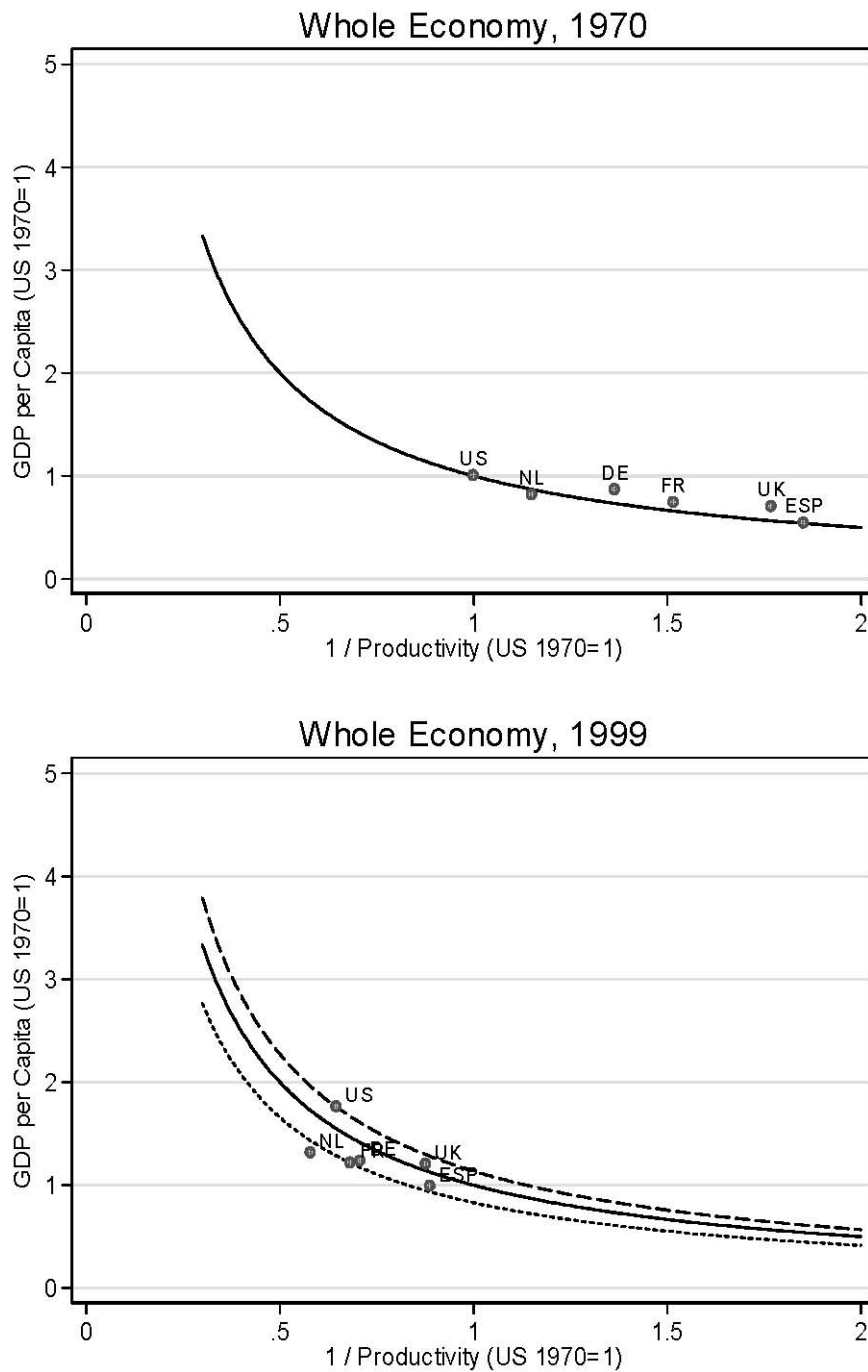
Period	US*	UK*	FR	GER	NL
Current prices					
Within effect					
1985-1977	1.7	2.5	0.3	2.4	1.3
1990-1977	3.8	4.0	2.6	2.5	
1995-1977	9.9	13.0	10.0	7.8	7.1
Structural effect					
1985-1977	0.6	0.9	3.5	-0.9	-0.9
1990-1977	1.3	3.6	2.2	-2.0	
1995-1977	-1.7	1.2	-1.1	2.5	-1.6
Interaction effect					
1985-1977	0.0	0.0	0.0	0.0	0.0
1990-1977	0.0	0.0	0.0	0.0	
1995-1977	0.0	0.0	0.0	0.0	0.0
Overall					
1985-1977	2.3	3.4	3.8	1.5	0.4
1990-1977	5.1	7.6	4.8	0.5	0.0
1995-1977	8.2	14.2	8.8	10.4	5.5
Constant prices**					
Within effect					
1985-1977	-0.9	1.9	-0.4	1.8	1.4
1990-1977	1.5	1.6	0.3	2.0	
Structural effect					
1985-1977	0.1	0.3	3.0	-1.1	-1.5
1990-1977	0.0	1.3	0.9	-2.4	
interaction effect					
1985-1977	0.0	0.0	0.0	0.0	0.0
1990-1977	0.0	0.0	0.0	0.0	
Overall					
1985-1977	-0.6	2.1	-0.6	0.6	-0.2
1990-1977	1.4	3.2	1.4	-0.6	

6 CONCLUDING SUMMARY: DEMAND AND SUPPLY, LEVEL AND STRUCTURE

As developed in section 3, equilibrium employment in the domestic economy depends on demand and supply. The tremendous expansion of service sector employment observed in all highly industrialized countries result from both demand side and supply side trends. In theory the two are often assumed to equate by reference to Say's law, but the two sides of the market actually follow different influences and at least at the sectoral level substantial deviations between demand and supply occur. In demand-supply space as in Figure 6.1 (see also Figure 3.1 in section 3) an initial situation is characterized by the combination of productivity and demand per head of population. This combination results in certain level of employment measured by the employment-population rate. Improvements in labor productivity lead to a move towards the origin, that is less labor is needed to produce a constant output and the economy moves necessarily to a lower employment-population rate. To remain at the same employment-population rate, demand per head of the population must rise proportionally to productivity. The level of final demand in the economy must take pace with the supply improvements (productivity growth) to keep the employment constant. Figure 6.1 shows in the upper diagram the productivity-demand combinations for the DEMPATEM countries in 1970. For the construction of the displayed curve the US values of 1970 were chosen. The curve connects all possible combination of labor productivity and demand, which result in the same employment-population rate as the 1970 US combination. As one can easily see, the European DEMPATEM countries are with small deviations on the same curve as the US.

In 1999, however, the US and the European countries are on very different curves than in 1970 (lower diagram in Figure 6.1). The US raised demand per head more than productivity grew and consequently the US moved to a higher employment curve. The European countries (less so the UK and Spain) caught-up to US productivity levels but expanded demand less than productivity and consequently moved to lower employment in 1999.

Figure 6.1 Economic trends in demand and supply space, aggregate economies



Computations based on OECD (2000) Economic Outlook, ILO (2002), Key Indicators of the Labor Market. Curves: $Y/pop = E/pop^{1.5-64} * h * A$, where pop = population 15-64, h = average working hours, A = labor productivity per hour. GDP per capita calculated using 1999 GK PPPs.

Since the US and France, the Netherlands and Germany (though less the UK and Spain) are roughly at the same productivity level in 2000, the difference in employment must be related to a substantial part to aggregate final demand. However, that would be a mechanical answer, because it does not explain why the US raised demand per head of the population

so much, whereas Europe remained at a comparatively lower level. For sure, a supply-side explanation referring to productivity growth only will fail because it would require the US and the European countries to remain on their initial employment curve and all countries should have been in narrow demand-supply cluster in 2000, which they are not.

Almost similar levels of labor productivity in the US and the European countries also require additions to the prime explanation for a growing or higher share of service-sector employment -Baumol's so-called 'cost-disease' model- as the main explanation for transatlantic employment differences. According to William Baumol's model (1967, 2001) countries would achieve higher incomes per capita due to advancements in the technological progressive sectors (manufacturing) of the economy⁵¹ but spend incomes in fixed proportions on services and goods, which would result in rising relative prices for services and in a rising share of service employment. As shown by Victor Fuchs (1980) and restated for more recent trends in section 2 of this paper, the expansion of the service-employment share follows a remarkably stable pattern, which is actually surprising given the high number of variables potentially influencing service employment.

The interesting but complex question then is, why in 1999 the US spends so much more per head of the working-age population (about 40% more) than the average European DEMPTTEM country in 1999 PPPs) and involves a much higher share of its working-age population for much longer hours in formal economic activities than the European countries?

Taking the international comparisons of productivity levels at face value, the larger US service share in employment cannot result from superior manufacturing productivity alone as the pure 'cost-disease' hypothesis suggests. Instead, there are also fundamental differences in the demand structure, which shifted the US to a higher service share in service employment.

One answer may be that Americans are 'workaholics' and that Europeans prefer leisure over income. Other explanations may refer to differences in incentive schemes, differences in inequality and the like as it is very popular in the economic and political debate. However, referring to these fundamental differences in preference or institutions to explain the differences in employment is a big jump over a long chain of causal links and it requires substantial changes to have occurred since 1970 or so. This paper analyzed the possible reasons before the very general claims. It investigated some of the causal links related to the various components of

⁵¹ This line of reasoning requires $\frac{Y_s}{Y_m}$, the ratio of service sector productivity over manufacturing productivity, to be lower in the US than in Europe because of higher manufacturing productivity, which seems not be the case although service productivity may be lower in the US (Beiley/ Solow 2001).

demand and found systematic differences between the US and the European countries.

Investigating the developments in the three broad sectors show a tremendous catch-up process of the European countries in agriculture productivity with stagnation of demand for agricultural products resulting in the well-known substantial decline in the labor force employed in agriculture. Also in manufacturing the catch-up process of the European countries is clearly visible. By the end of the 1990s the European countries roughly achieved US manufacturing productivity. Although demand for manufacturing products (remember that manufacturing is used here as a short-cut for a broader sector including construction and utilities) rose, the increase was less than the improvements in productivity causing the share of manufacturing workers in the population to decline in all DEMPATEM countries. The big difference between the US and DEMPATEM-Europe is concentrated in the service industries. Here as well productivity in Europe caught-up but in the US the growth in demand for services increased substantially more than the growth in productivity resulting in the observed substantial rise in service-sector employment. However, service demand rose everywhere at a higher pace than productivity grew in service industries, but the levels of service demand show remarkable differences between the countries.

1) Does the higher share of service industries in employment in the US derive from a larger role of services in the structure of final demand, and is this gap growing?

- The US have a higher share of services in final demand of about 10%-points but all countries show a trend towards services in final demand.
- There is a clear trend to a higher share of services in final demand also in constant prices within countries. Using constant instead of current prices flattens the trend towards services in final demand but it remains.
- The lead of the US in the service share in final demand occurs in current and in constant prices but it seems stable over time.
- The bigger service sector in the US occurs in different data sets. Also as a share in value added the service sector in the US is bigger than in Europe.
- Overall services rise in relative prices whereas overall goods prices are falling in every country. Some service prices rise more than the average, but not all.
- Relative prices for goods rather than for services seems to be lower in the US than in Europe. This is mainly the result of relatively low prices for health and education in Europe,

which are usually mixed public-private services in Europe. Other services, especially 'market services' have substantially lower relative prices in the US.

- Measured in international prices the gap in relative service demand between the US and the European countries narrows but the gap remains.

2) Particularly, is consumer demand higher and growing more rapidly in the US?

What

is its impact on the production of services?

and

3) What is the role of the pattern of consumption in this? I.e., do American households consume more services than European households and why?

- In all countries, private consumption is the most important demand component for services followed by government consumption, which, together, account for about 80 to 95% of all final demand for services.
- Imports (and exports) of services are marginal in overall final demand and in household final consumption.
- In the US the share of private consumption in the overall demand for services is especially high, which favors the share of services in final demand.
- Especially the share of services in private consumption grew in the US,
- There is a clear trade-off between private and public expenditures on services depending on the national institutional arrangements. In part American households spend a higher share of their disposable incomes on services because they need to buy services, which are provided publicly in Europe.
- The share of individual consumption in total public consumption is much higher in Europe than in the US.
- Collective consumption in GDP is roughly similar in all countries. If anything it is higher in the US.
- There is no clear pattern in the US-European difference of private final consumption even in categories where public provision is unimportant (like 'restaurants, hotels') the pattern is divers. The UK and France have higher expenditure shares, Germany and the Netherlands have lower shares than the US.

- In the US with increasing importance up to the mid 1990s when investment grew substantially.
- The employment share in services seems to be influenced by the relative service productivity, which may be related to differences in skill structure and/or capital deepening.
- Demand per head of the population in working age is about 40% higher in the US than in Europe, which affects both goods and services.

Summarized more generally, we find a clear trend towards services in final demand, which is not just nominal but real. Although part of the increased demand for services is due to prices for rising more for services than for goods, there is a trend towards a higher share of service in constant-price data as well. Thus, it must be the interplay of alphas –the share of services in real demand- and betas the relative service sector productivity, which is shaping the changes in the sectoral composition. Thus, among the major theoretical hypotheses to explain the expanding service sector as summarized in Section 3:

α (relative demand for services)↑	Clark/ Fisher
β (relative productivity of services)↓	Baumol
β ↓ and α ↑	Fuchs

this paper established evidence that alphas increased over time but also that betas declined over time. This is not surprising since the pure theories try to gain their clarity by more radical assumptions. However, for the US-Europe difference in employment it is important that not only demand in services seems to be higher in the US than in Europe but that also demand for goods is higher contributing to the US trade deficit, which tends to raise the share of relative service employment.

It remains a major conundrum, however, why the US raised income per capita mainly by larger labor inputs in the 1970's and 80's (less so in the 90's), which is most likely related to incentive structure in the US economy favoring the specialization of households (Freeman/Schettkat 2002).

The reason why demand did not keep pace with productivity improvements in the European countries may be related to aggregate macro-economic policy like the tight monetary policy but there is also a structural component to it. Since services are traditionally to a large part provided by the public sector in Europe but European governments restrained public expenditures across the board constraining the expansion of the service sector. Private demand for services could not fill this gap because disposable household income did increase immediately. Since most European countries decided to move to a higher share of private service provision and demand, they get into trouble in the transition period when household

disposable income did not yet sufficiently increase but public provision of services has already been reduced. In this situation households have to substitute formerly public services by private expenditure.

The most relevant questions for the design of future employment and economic policies seem to be in a better understanding of the underlying mechanism causing the very different economic dynamics in the US and in many European countries. First candidates are, of course, the differences in incentive structures, which may range from the impacts of non-work income, taxes and contributions to income improvements related to career steps. A step

REFERENCES

- Abraham, K.G., Greenlees, J.S. and Moulton, B.R. (1998). Working to Improve the Consumer Price Index. *The Journal of Economic Perspectives*, Vol. 12, No. 1, pp. 27-36.
- Appelbaum, E./ Schettkat, R. (1999). Are Prices Unimportant? The Changing Structure of the Industrialized Economies. Reprinted in: Ten Raa, T. and Schettkat, R. (eds.) *The Growth of Service Industries: The Paradox of Exploding Costs and Persistent Demand*. Cheltenham: Edward Elgar, pp. 121-131.
- Bailey, M.N. and Solow, R.M. (2001) International Productivity Comparisons Built from the Firm Level, *Journal of Economic Perspectives*, Vol 15, Number 3, 151-173. Baumol, W. and Wolff, E. (1984) On Interindustry Differences in Absolute Productivity, *Journal of political economy*, Volume: 92, Issue: 6 (December, pp: 1017-1034 Baumol, W.J. (1967). Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis." *American Economic Review*, Volume 62: pp. 415-426.
- Baumol, W.J. (2001). Paradox of the Services: Exploding Costs, Persistent Demand. In: Ten Raa, T. and Schettkat, R. (eds.) *The Growth of Service Industries: The Paradox of Exploding Costs and Persistent Demand*. Cheltenham: Edward Elgar, pp. 3-28.
- BLS. (2000). Comparative Real Gross Domestic Product Per Capita and Per Employed Person. Available online (July 2003): <http://www.bls.gov/fls/flsgdp.pdf>, pp.8-13.
- Boskin, M.J., Dulberger, E.R., Gordon, R.J., Griliches, Z. and Jorgenson, D.W. (1998). Consumer Prices, the consumer Price Index, and the Cost of Living. In: *The Journal of Economic Perspectives*, vol. 12,no. 1, pp 3-27.
- CBS Statline. Werkgelegenheid en lonen. Available online (July 2003): <http://www.cbs.nl>.
- Clark, C. (1951). *The Conditions of economic Progress*. London:MacMillan & Co. Ltd.
- Conference Board, The. (2002). *Performance 2001: Productivity, Employment, and Income in the World's Economies*, p. 14.
- DEMPATEM (2000) proposal
- Economist, 1997 - American way of leisure 10
- Employment in Europe 2002, (2002) European Commission, Employment and Social Affairs, Brussels.
- Falvey, R.E./ Gemmel, N. (1996) Are Services Income-Elastic? Some New Evidencs, *Review of Income and Wealth*, Series 42, Number 3, Sept., 257-269.
- Fisher, A.G.B. (1935). *The Clash of Progress and Security*. London: MacMillan & Co. Ltd.
- Freeman, R.B. (1998). War of the models: Which labour market institutions for the 21st century? *Labour Economics*, 5: issue 1, pp. 1-24.

- Freeman, R.B. and Rein, M. (1988). *The Dutch Choice: a plea for social policy complementary to work*. The Hague: HRWP.
- Freeman, R.B. and Schettkat, R. (1998). *From McDonald's to McKinsey: Comparing German and US Employment and Wage Structures*. Leverhulme II Conference, Institute of Economics and Statistics, Oxford 1998.
- Freeman, R.B. and Schettkat, R. (1999). *Differentials in Service Industry Employment Growth: Germany and the US in the comparable German American Structural Database*. Brussels: European Commission. Freeman, R.B. and Schettkat, R. (2002). *Marketization of Production and the US-Europe Employment Gap*.
- NBER Working Paper, no. 8797. Cambridge (Mass.): National Bureau of Economic Research.
- Fuchs, V.R. (1968). *The Service Economy*. New York: Columbia University Press.
- Fuchs, V.R. (1980). *Economic Growth and the Rise of Service Employment*. NBER Working Paper, no. 486. Cambridge (Mass.): National Bureau of Economic Research.
- Giersch, H. and Wolter, F. (1983). *Towards an Explanation of the Productivity Slowdown: An Acceleration-Deceleration Hypothesis*. *The Economic Journal*, vol. 93, no. 369, pp. 35-55.
- Glyn A. (2002) *An note on industry productivity*, DEMPATEM paper.
- Glyn, A./ Salverda, W. (2003) *analysis of productivity taking skills and capital stock into account* , DEMPATEM paper
- Gordon, R.J. (2000). *Does the "New Economy" Measure up to the Great Inventions of the Past?* *Journal of Economic Perspectives*, vol.4, no.14, pp. 49-74. Gordon, R.J. (2002). *Two Centuries of Economic Growth: Europe Chasing the American Frontier*. Gordon, R.J. et. al. (1998). *Consumer Prices, the Consumer Price Index, and the Cost of Living*. *The Journal of Economic Perspectives*, vol. 12, no. 1, pp. 3-26.
- Gordon, R. (1990) *The measurement of durable goods prices*, Chicago : University of Chicago Press.
- Gregory, M./ Russo, G. (2003). *The Employment Impact of Differences in Demand and Production Structures*.
- Griliches, Z. (1992). *Introduction*. In: Griliches, Z. (ed.). *Output Measurement in the Service Sector*. Chicago: The University of Chicago Press. Harker, P.T. (1995). *The service quality and productivity challenge*. In: Harker, P.T. (ed.) *Service Quality and Productivity Challenge*. Norwell, MA: Kluwer Academic, pp. 1-10.
- Hertel, J. "Einnahmen und Ausgaben der privaten Haushalte 1993: Ergebnis der Einkommens und Verbrauchsstichprobe." In: Statistisches Bundesamt. *Wirtschaftsrechnungen*. 1997-4.
- Heston A., Summers, R. and Aten B. (2002). *Penn World Table Version 6.1*. Center for International Comparisons at the University of Pennsylvania (CICUP).

- Hicks, J. (1956). *A Revision of Demand Theory*. Oxford, Oxford University Press.
- ILO. (2002). *Key Indicators of the Labour Market (CD-Rom)*.
- Ironmonger, D. (1973). *New Commodities and Consumer Behaviour*. Cambridge, Cambridge University Press.
- Kaldor, N. (1966). *Causes of the slow rate of economic growth of the United Kingdom [Inaugural lecture]*. Cambridge: Cambridge University Press. Kleinknecht, A. and Naastepad, C.W.M. (2002). *The Dutch Productivity Slowdown: The Culprit at Last?* Technical University Delft, mimeo. Krueger, A. B./ Summers, L. H. (1988), *Efficiency Wages and the Inter-Industry Wage Structure*, in: *Econometrica*, Vol 56, No. 2, 1988, pp. 259-293
- Linder, S.B. (1970). *The Harried Leisure Class*. New York : Columbia University Press, p.325.
- Maddison, A. (1991). *Dynamic Forces in Capitalist Development*. Oxford: Oxford University Press.
- Madison, A. (1996). *Macroeconomic Accounts for European Countries*. In Van Ark, B. and Crafts, N.F.R. (eds.) *Quantitative Aspects of Postwar European Economic Growth*. Cambridge: Cambridge University Press. O'Mahoney, M. (2002). *National Institute sectoral productivity dataset 2002*. Available online (July 2003): <http://www.niesr.ac.uk/research/nisec.htm>.
- OECD (1996) *Services, Measuring Real Annual Value Added*, Paris.
- OECD input output database
- OECD Online. *Average actual annual hours worked per person in employment*. Online Labour Market Statistics (availably July 2003: www.oecd.org).
- OECD. (2000). *OECD Statistical Compendium: Edition 02 # 2000 (CD-Rom)*.
- OECD. (2002). *Purchasing Power Parities and Real Expenditures: 1999 Benchmark Year*, Paris. Oi, W.Y., and Rosen, S. (1992). *Productivity in the Distributive Trades*. In: Grilliches, Z. (ed.) *Output Measurement in the Service Sector*. Chicago: The University of Chicago Press.
- Pasinetti, L. (1983). *Structural Change and Economic Growth: An Essay in the Dynamics of Wealth of Nations*. Cambridge: Cambridge University Press.
- Petit, P. (1986). *Slow Growth and the Service Economy*. London: Frances Pinter.
- Petit, P. (2000). *Europe in the Triad: Growth Pattern and Structural Changes*. In:
- Petit, P. and Soete, L. (eds.) *Technology and the Future of European Employment*. Cheltenham: Edward Elgar.
- Schettkat, R. (1992). *The Labor Market Dynamics of Economic Restructuring: The United States and Germany in Transition*. New York: Praeger Publishers.
- Schettkat, R. (1996). *Labor Market Flows over the Business Cycle: An Asymmetric Hiring Cost Explanation*. *Journal of Theoretical and Institutional Economics*, 1996, pp. 641-653.

- Schettkat, R. (2002). Differences in US-German Time-Allocation: Why Do Americans Work Longer Hours than Germans? IZA: Discussion Paper Series.
- Schettkat, R. and Russo, G. (2001). Structural Dynamics en Employment in Highly Industrialized Economies. In: Petit, P. and Soete, L. (eds.) Technology and the Future of European Employment. Cheltenham: Edward Elgar.
- Schettkat, R. and Yocarini, L. (2003). State of the Art in the Analysis of Structural Changes: DEMPATEM in Perspective, DEMPATEM paper.
- Schmitt, J. (2003) Estimating Household Consumption Expenditures in the US using the Interview and Diary Portions of the 1980, 1990, and 1997 Consumer Expenditure Surveys, DEMPATEM paper.
- Sharpe, A. and Gharani, L. (2000) The Productivity Renaissance in the U.S. Service Sector , mimeo, Center for the Study of Living Standards.
- Slutsky, E.E. On the Theory of the Budget of the Consumer. In: Stigler, J. and Boulding, K.E. (Eds.) (1952). Readings in Price Theory. Chicago: Richard D. Irwin, Inc.
- Stiroh, K.J. (2002). Information Technology and the U.S. Productivity Revival: What Do the Industry Data Say?, American Economic Review, Vol 92, No.5, 1559-1576.
- Summers, R. (1985). Services in the International Economy. In: Inman, R.P. (ed.) Managing the Service Economy. Cambridge: Cambridge University Press, pp. 27-48.
- Tijdens, K. (1995). Huishoudelijke hulp en huishoudtechnologie, strategieën van vrouwen om tijd te besparen bij huishoudelijke arbeid? Mens en Maatschappij. Vol.70, no.3, pp.203-219.
- Tuke, A. (2003) Developments in the National Accounts chain-linking project, Royal Economic Society Newsletter, January, 13-14.
- United Nations Statistics Division. (2003). National Accounts: About the System of National Accounts 1993. Available online (July 2003): <http://unstats.un.org/unsd/sna1993/introduction.asp>.
- University of Groningen and The Conference Board. (2003). Groningen Growth and Development Centre: Total Economy Database. Available online (July 2003) <http://www.eco.rug.nl/ggdc>.
- Verspagen, B. (2000) Growth and Structural Change: Trends, Patterns and Policy Options, conference paper, Eindhoven Center for Innovation Studies, Eindhoven

APPENDIX I: WORKING HOURS

Working hour estimates, crucial as they are for the analysis of productivity, differ substantially between sources. For example, for the United States in 1990, the OECD reports 1838 hours per year (OECD Online Labor Market Statistics) and 1943 hours per year in its *Employment Outlook of 2000*, while Mary O'Mahoney and Angus Maddison (1991) report 1691 and 1604 (for 1989) respectively.

Also between-country comparisons within datasets may show rather diverging numbers. O'Mahoney, for example, estimates that in 1990 Germans worked an average of 1611 hours, which is only 80 hours less than her estimates for the US. This seems too small of a difference, considering that Germans work fewer hours a week and take four more weeks of holidays each year, while part-time shares are comparable.

Visual inspection of the graphs that plot the hour estimates of the different sources (which all claim to report actual hours worked) is quite revealing and shows that large discrepancies between data sources occur mainly for the US (Figure A1.1). There is much more agreement between sources for, for example, the Netherlands. By looking at the percentage difference between the maximum and the minimum value for 1990, one can get an idea of this discrepancy (see the rightmost column in Table A1.1). For the US, the difference was more than 20%, while for West-Germany this value was 1.8%. Although to a lesser extent than in the US, the UK also faces data problems, whereas the various sources give more consistent figures for the other countries with a variation of less than 10% in 1990.

Fig. A1.1: Working Hour Estimates

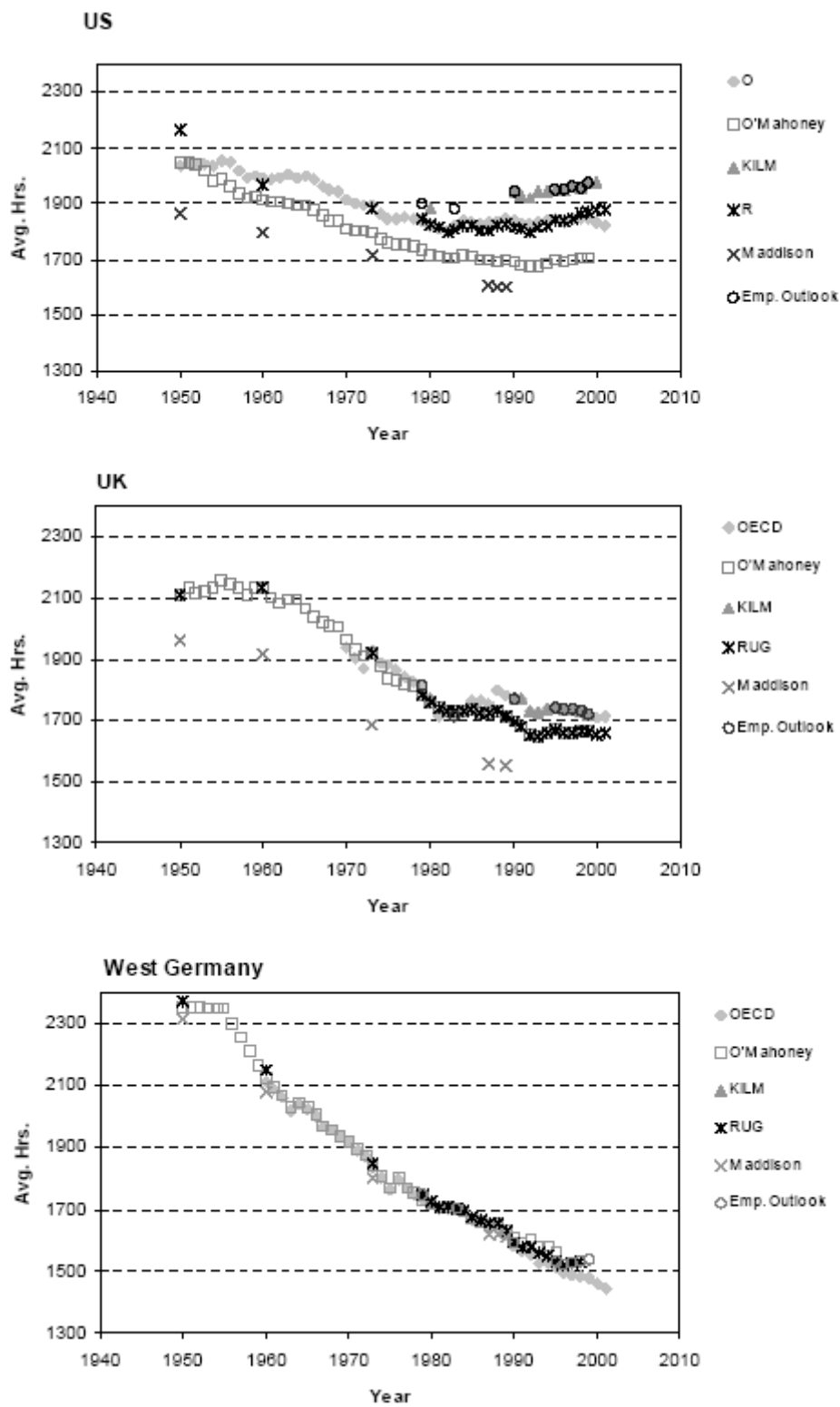
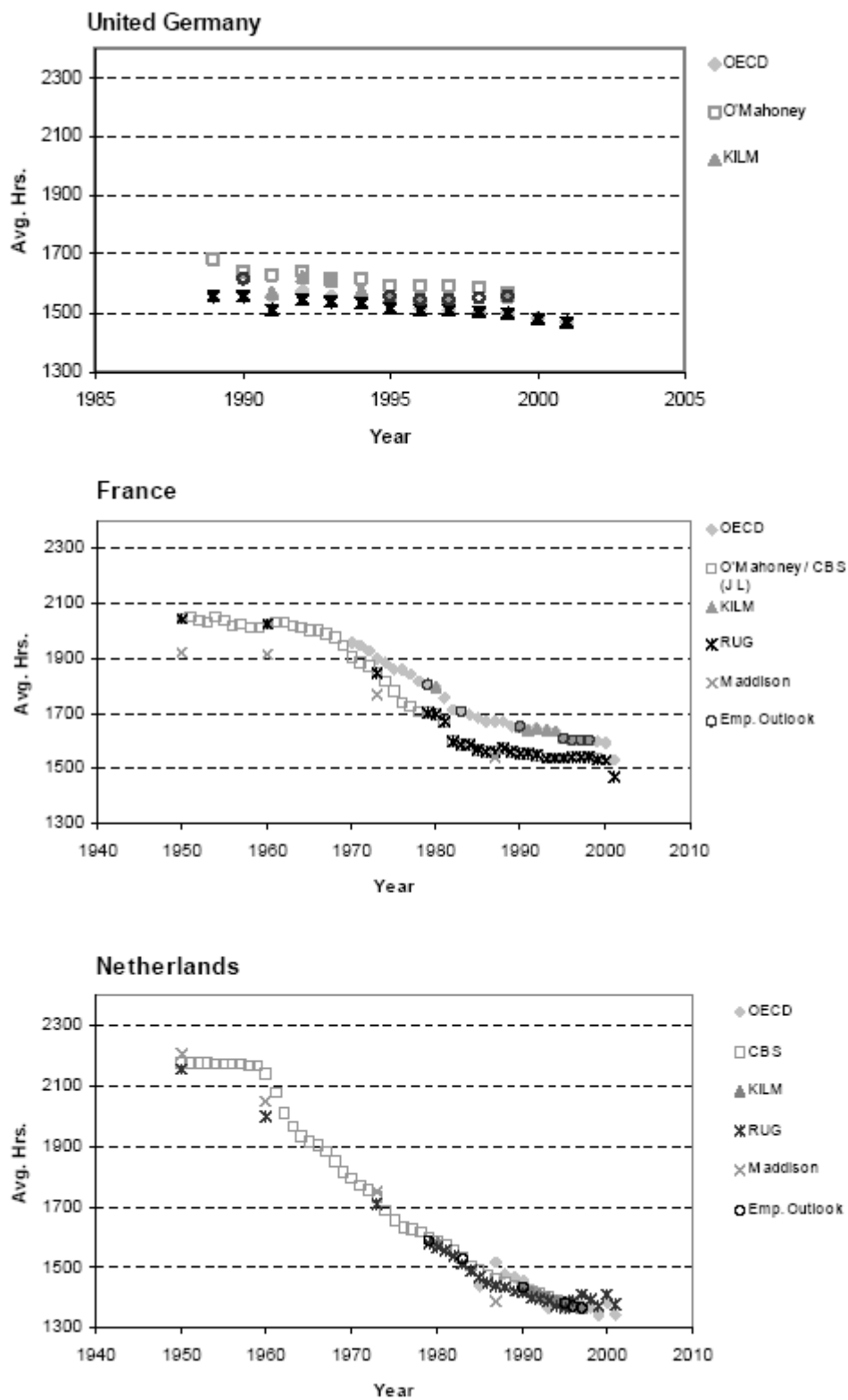


Fig. A1.1: Continued



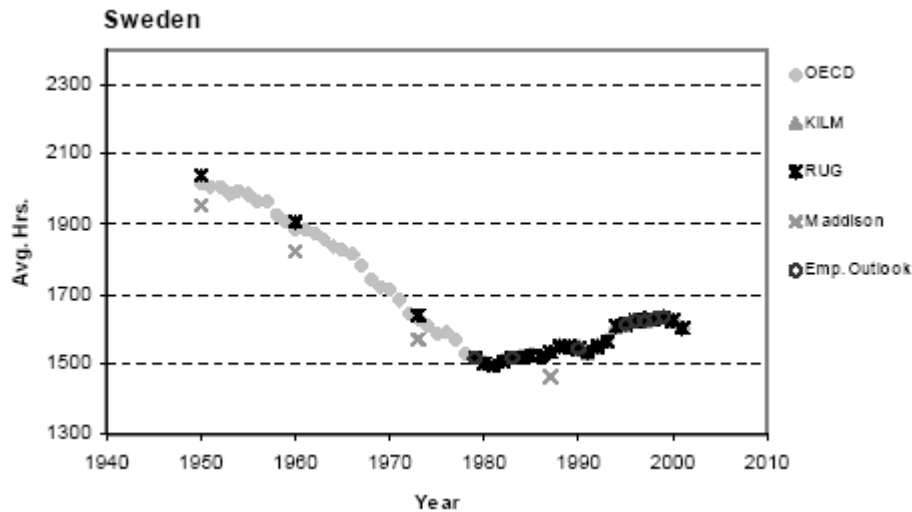


Table A1.1: Working Hour trends and differences between sources.

Country	Trends (Slope of Best Fit Trend-Line, i.e. annual change))						% Difference between Min. and Max. value 1990
	OECD (online)	O'Mahoney	KILM	GGDC	Maddison	Employment Outlook	
US	-5.1	-7.7	4.5	-4.1	-6.9	3.9	21.1
UK	-6.1	-12.4	-2.5	-10.1	-11.3	-2.6	13.9
FR	-12.4	-13.7	-10.7	-11.4	-10.7	-9.9	7.4
GER	-10.4	-9.2	-11.7	-6.7	n/a	-7.3	5.5
W-GER	-16.1	-19.1	-13.1	-17.3	-17.7	-11.7	1.8
NL	-9.0	(CBS) -20.7	-12.8	-15.3	-22.4	-12.5	4.8
ES	-0.8	n/a	-8.2	-5.9	n/a	-8.9	0.5

Sources: OECD Online, O'Mahoney (2002), ILO (2002) University of Groningen and The Conference Board. (2003), Maddison (1991, pp.270-271), OECD (2000), CBS Statline (online).

APPENDIX II: DEFINITION OF SECTORS IN THE INPUT-OUTPUT DATA (UP TO 1990)

Table A2.1: Definition of sectors in the input-output data (upto and after 1990)⁵²

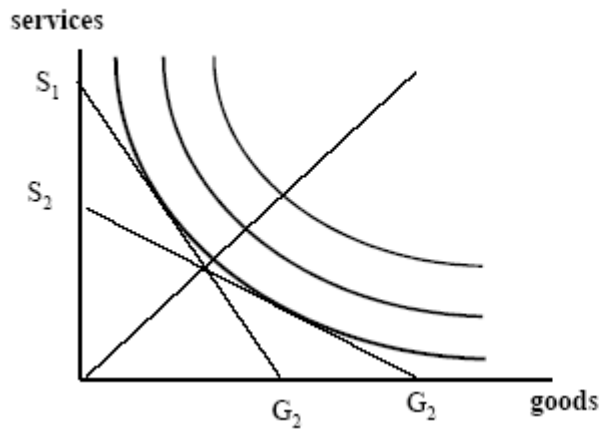
	Until 1990	Mid 1990's
Primary (Agriculture)	Agriculture, forestry & fishing Mining & quarrying	Agriculture, hunting, forestry & fishing Mining & quarrying
Secondary (Manufacturing)	Food, beverages & tobacco Textiles, apparel & leather Wood products & furniture Paper, paper products & printing Industrial chemicals Drugs & medicines Petroleum & coal products Rubber & plastic products Non-metallic mineral products Iron & steel Non-ferrous metals Metal products Non-electrical machinery Office & computing machinery Electrical apparatus, nec Radio, TV & communication equipment Shipbuilding & repairing Other transport Motor vehicles Aircraft Professional goods Other manufacturing Electricity, gas & water Construction	Food products, beverages & tobacco Textiles, textile products, leather & footwear Wood & products of wood & cork Pulp, paper, paper products, printing & publishing Coke, refined petroleum products & nuclear fuel Chemicals excluding pharmaceuticals Pharmaceuticals Rubber & plastics products Other non-metallic mineral products Iron & steel Non-ferrous metals Fabricated metal products Machinery & equipment, n.e.c. Office, accounting & computing machinery Electrical machinery & apparatus, nec Radio, television & communication equipment Medical, precision & optical instruments Motor vehicles, trailers & semi-trailers Building & repairing of ships & boats Aircraft & spacecraft Railroad equipment & transport equipment n.e.c. Manufacturing n.e.c. & recycling Electricity, gas & water supply Construction
Tertiary (Services)	Wholesale & retail trade Restaurants & hotels Transport & storage Communication Finance & insurance Real estate & business services Community, social & personal services Producers of government services Other producers	Wholesale & retail trade; repairs Hotels & restaurants Transport & storage Post & telecommunications Finance, insurance Real estate activities Renting of machinery & equipment Computer & related activities Research & development Other business activities Public admin. & defence; comp. social security Education Health & social work Other community, social & personal services Private households with employed persons & extra territorial organisations & bodies

⁵² The Input-Output data for the mid 1990s follows a more detailed classifications of the service sector.

OECD IO Industry	Nomenclature	ISIC Rev 3 Class	Original Country Table Class - USES NACE
1	Agriculture, hunting, forestry and fishing	01-05	01-05
2	Mining and quarrying	10-14	10-14
3	Food products, beverages and tobacco	15-16	15-16
4	Textiles, textile products, leather and footwear	17-19	17-19
5	Wood and products of wood and cork	20	20
6	Pulp, paper, paper products, printing and publishing	21-22	21-22
7	Coke, refined petroleum products and nuclear fuel	23	23
8	Chemicals excluding pharmaceuticals	24ex2423	24
9	Pharmaceuticals	2423	N/A
10	Rubber and plastics products	25	25
11	Other non-metallic mineral products	26	26
12	Iron & steel	271 2731	27
13	Non-ferrous metals	272 2732	N/A
14	Fabricated metal products, except machinery and equipment	28	28
15	Machinery and equipment, n.e.c.	29	29
16	Office, accounting and computing machinery	30	30
17	Electrical machinery and apparatus, nec	31	31
18	Radio, television and communication equipment	32	32
19	Medical, precision and optical instruments	33	33
20	Motor vehicles, trailers and semi-trailers	34	34
21	Building and repairing of ships and boats	351	35
22	Aircraft and spacecraft	353	N/A
23	Railroad equipment and transport equipment n.e.c.	352, 359	N/A
24	Manufacturing nec; recycling	36-37	36-37
25	Electricity, gas and water supply	40-41	40-41
26	Construction	45	45
27	Wholesale and retail trade; repairs	50-52	50-52
28	Hotels and restaurants	55	55
29	Transport and storage	60-63	60-63
30	Post and telecommunications	64	64
31	Finance, insurance	65-67	65-67
32	Real estate activities	70	70
33	Renting of machinery and equipment	71	71
34	Computer and related activities	72	72
35	Research and development	73	73
36	Other business activities	74	74
37	Public admin. And defence; compulsory social security	75	75
38	Education	80	80
39	Health and social work	85	85
40	Other community, social and personal services	90-93	90-93
41	Private households with employed persons and extra territorial organisations and bodies	95-99	95-99
42	SBFD + adj		Non-Residents Spending

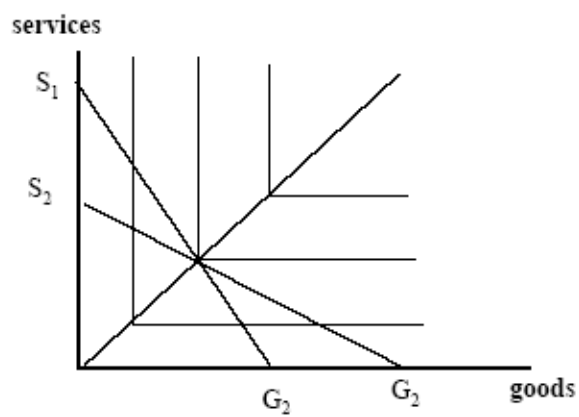
APPENDIX III: UTILITY FUNCTIONS SUBSTITUTION

Substitution



Relative product prices affect quantities demanded

Fixed proportions (Leontief type)



Relative product prices leaves quantities demanded unchanged

Hierarchy of wants (Ironmonger)

Strong hierarchy of wants, first goods then services

LIST OF DEMPATEM PARTICIPANTS

Coordination:

Utrecht University, Ronald Schettkat

Amsterdam University, Wiemer Salverda

Research teams:

Oxford University

Mary Gregory	(Input-output)
Andrew Glyn	(Employment)
Justin van de Ven	(Input-output)
Sarah Voitchovsky	(Employment)
Maxim Bouev	(Employment)

Utrecht University

Ronald Schettkat	(Aggregate, Consumption)
Giovanni Russo	(Input-output)
Joep Damen	(Aggregate)
Marijke van Deelen	(Consumption)
Jan Reijnders	(Input-Output) (withdrew for health reasons)
Lara Yocarini	(Aggregate)

Amsterdam University, Amsterdam Institute for Advanced Labour Studies AIAS

Wiemer Salverda	(Employment, Consumption)
Adriaan Kalwij	(Consumption)
David Hollanders	(Employment)

University of Paris I, Sorbonne

Francois Gardes	(Consumption)
Michel Sollogoub	(Employment)
Christophe Starzec	(Consumption)
Robert Lantner	(Input-output) (withdrew for health reasons)

University of Madrid, Carlos III

Javier Ruiz-Castillo	(Consumption)
María Jose Luengo Prado	(Consumption)

Washington, 17th Street Economics

John Schmitt	(Consumption, Employment)
--------------	---------------------------

University College London

Stephen Machin	(Consumption)
Laura Blow (at the IFS)	(Consumption)

Universität Regensburg

Joachim Moeller	(Employment)
Alisher Alshashev	(Employment)

Output

Ronald Schettkat and Lara Yocarini (Jan. 2003)

DEMPATEM in Perspective. State of the Art in the Analysis of Structural Changes.

Book in preparation:

The US-European gaps in Demand and Employment

Wiemer Salverda and Ronald Schettkat, ed.

Working Papers: (See list below)

LIST OF WORKING PAPERS

Working papers are downloadable at <http://www.uva-aias.net/lower.asp?id=194>

1. **John Schmitt**, Estimating Household Consumption Expenditures in the United States using the Interview and Diary Portions of the 1980, 1990, and 1997 Consumer Expenditure Surveys
2. **Laura Blow**, Household Expenditures Patterns in the UK
3. **Adriaan Kalwij & Wiemer Salverda**, Changing Household Demand Patterns in the Netherlands: Some Explanations
4. **Javier Ruiz-Castillo & María José Luengo-Prado**, Demand Patterns in Spain
5. **Marijke van Deelen & Ronald Schettkat**, Household Demand Patterns in West Germany: 1978-1993*
6. **Francois Gardes & Christophe Starzec**, Household Demand Patterns in France 1980-1995
7. **Francois Gardes & Christophe Starzec**, Income Effects on Services Expenditures
8. **Adriaan Kalwij & Steve Machin**, Changes in Household Demand Patterns: A Cross-Country Comparison
9. **Laura Blow, Adriaan Kalwij & Javier Ruiz-Castillo**, Methodological issues on the analysis of consumer demand patterns over time and across countries
10. **Mary Gregory & Giovanni Russo**, The Employment Impact of Differences in Demand and Production Structures
11. **Ronald Schettkat (Research Assistance: Joep Damen)** Demand Patterns and Employment Structures, An Aggregate Analysis
12. **Andrew Glyn, Wiemer Salverda, Joachim Möller, John Schmitt, Michel Sollogoub** Employment differences in services the role of wages, productivity and demand
13. **Ronald Schettkat & Wiemer Salverda**, Demand Patterns and Employment Growth Consumption and Services in France, Germany, the Netherlands, the United Kingdom and the United States Concluding Summary