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Prices and Productivity: A France-Germany Comparison

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PRICES AND PRODUCTIVITY: A FRANCE-GERMANY COMPARISON

Laurence NAYMAN

HIGHLIGHTS

- In 2007, German and French V.A. prices calculated through the output price parities method from the Prodcom production survey data, are quite identical in the manufacturing sector as a whole, but strong differences arise across sectors.
- National accounts over the 1991-2010 period show a fall in French manufacturing V.A. prices and a rise in V.A. prices in services.
- From 1991 to 2005, the decrease in the French manufacturing V.A. prices relative to Germany is explained by the relative fall in unit labour costs; from 2005 to 2007, by the relative fall in gross margins. Over this last period, the swelling German gross margins have only been partly allocated to investment.
- In services, the rise in part-time in Germany has reduced hours worked and thus boosted hourly labour productivity and stemmed the rise in unit labour costs over 2005-2008.

ABSTRACT

This study compares French and German manufacturing price levels in 2007 and investigates in both countries over the 1991-2010 period value added price growth rates in manufacturing and services. Using the ICOP methodology and the data from the Eurostat production surveys, we calculate production price levels in the French and German manufacturing sector. Results show they are quite close to each other. As to growth rates, using national accounts data, while German manufacturing value added prices have been relatively stable between 1995 and 2010, French manufacturing prices have been falling. This relative decrease could be attributed to the relative fall in the French gross margins over the last years. This gap is not replicated in the aggregate value added prices. The latter have been rising more steeply in France than in Germany, and this is due to price fluctuations in services. The increase in the French compensation rate in services has been significantly larger than the hourly labour productivity. In Germany, with falling unit labour costs over the 2005-2007 years in the manufacturing sector, German firms could hoard substantial gross margins that, however, have only been partly allocated to investment.

JEL Classification: E31, J24, J30, L60, O47, O57.

Key Words: France, Germany, relative price level, hourly labour productivity, unit labour costs, gross margins, investment

PRIX ET PRODUCTIVITÉ : UNE COMPARAISON FRANCE-ALLEMAGNE

Laurence NAYMAN

POINTS CLEFS

- Les prix de la valeur ajoutée (V.A.) allemande et française calculés sur données d'enquête par la méthode des parités de production, sont quasiment identiques dans l'ensemble du secteur manufacturier en 2007 mais de fortes disparités sectorielles persistent.
- En évolution de 1991 à 2010, sur données de comptabilité nationale, on constate une baisse des prix de la V.A. manufacturière française mais une hausse des prix de la V.A. des services.
- De 1991 à 2005, la baisse relative des prix de la V.A. manufacturière de la France par rapport à l'Allemagne est expliquée par la baisse relative des coûts salariaux unitaires ; de 2005 à 2007, par la baisse relative des taux de marge. Sur cette dernière période, l'accumulation des marges allemandes n'a été que partiellement redirigée vers l'investissement.
- Dans les services, la hausse du temps partiel a réduit en Allemagne le temps de travail et par conséquent dopé la productivité horaire et contenu la hausse des coûts salariaux unitaires sur la période 2005-2008.

RÉSUMÉ

Cette étude compare les niveaux des prix manufacturiers français et allemands en 2007 et analyse dans les deux pays, sur la période 1991-2010, l'évolution des prix de la valeur ajoutée dans le secteur manufacturier et dans les services. Utilisant la méthode ICOP et les données de production d'Eurostat nous calculons les niveaux de prix de production des secteurs manufacturiers français et allemand en 2007 et montrons qu'ils sont très proches. En évolution, sur données de comptabilité nationale, alors que les prix allemands sont stables jusqu'en 2010, on observe globalement une décrue des prix manufacturiers français. Cette baisse relative s'explique dans un premier temps par un déclin relatif des coûts salariaux unitaires puis, dans un second temps, par une diminution relative des marges. Cet écart dans l'évolution des prix manufacturiers des deux pays ne se retrouve pas au niveau de la valeur ajoutée totale. Les prix des services augmentent en effet plus fortement en France qu'en Allemagne. En France, la hausse des coûts salariaux horaires dans les services a été sensiblement plus forte que celle de la productivité. En Allemagne, avec des coûts unitaires en baisse dans le secteur manufacturier sur les années 2005-2007, les entreprises allemandes ont pu accumuler des marges substantielles, qui n'ont été dirigées que partiellement vers les investissements.

Classification JEL : E31, J24, J30, L60, O47, O57.

Mots-clefs : France, Allemagne, niveau de prix relatif, productivité horaire du travail, coûts unitaires du travail, taux de marge, investissement

PRICES AND PRODUCTIVITY: A FRANCE-GERMANY COMPARISON

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INTRODUCTION

The widening competitiveness gap between France and Germany has been the subject of heated debates recently. The frequent focus on labour costs, gross margins, and the quality range of products (see Artus, 2012, Rexecode, 2011, Gallois, 2012, for example), raises questions regarding the respective levels of prices and costs in both countries, and their changes over time. To shed light on these issues, this study proposes a detailed Franco-German comparison of the prices and costs of the manufacturing and service sectors over the last two decades. Hourly labour productivity, unit labour costs and gross margins are scrutinised over the 1991-2010 years.

Following the methodology used in numerous similar exercises for the manufacturing sector, the comparisons rely upon value added prices. As we intend to compare labour productivity based on value added, we need to get value added prices at a detailed product level. Since these data are not available, we calculate production unit values at the product level for both countries and aggregate them by applying the value added structure. Compared value added prices reflect then the relative valuation of production factor services in the economy.

The paper follows a fourfold strategy to explore the divergence of value added prices between France and Germany: the price of services in France compared to Germany, the price of imported intermediate products and export prices, drifting labour costs in services and the resulting different gross margins between the two countries.

Calculations are threefold: first, levels for the whole manufacturing sector except energy are computed for the year 2007 by comparing unit values of French and German products (output price parities) from the eight-digit Eurostat Prodcom production survey. Second, growth rates of real value added, employment, hours worked and compensation, coming from the national accounts, are applied to levels in order to get average levels for four periods of time: the nineties, the first half of the 2000s, the second half up to 2007/8 and the more recent years that are still estimated data. Third, growth rates from the national accounts are analysed, in order to be comparable relative to other studies based on national accounts for the same length of time. Further, manufacturing value added growth is compared to its equivalent in services.

Extending the analysis to services and exploring labour market practices and policies in both countries give insight on the differences in hourly labour productivity and unit labour cost levels and growth rates. As the demand for skilled workers sets a global challenge for the competitiveness of both countries, it must be addressed. In Germany, the downward demographic trend combined with significant exports of goods has contributed to tensions in the labour market for skilled workers, chiefly in the manufacturing sector.

The relative fall of gross margins in France in the manufacturing sector is another concern worth investigating. Maintaining export shares or facing a rough competition in the domestic market could exert a pressure on gross margins and then on value added prices. In turn, the way gross margins and their adjuvant, property income, are used can be indications of the dynamics of the two countries in terms of investment at home or abroad.

Section 1 develops the methodology employed for calculating output price parities, and also shows the results for sectors. Section 2 goes through the different rounds of price and productivity comparisons led at CEPII for the years 1987, 1997 and 2007, and recalls how relative prices have evolved in the context of the current governance at that time. In sections 3 to 5, we investigate the gap between France and Germany, in terms of value added prices in manufacturing and at the aggregate level in France and in Germany, by analysing four main explanations: prices of services, prices of imported intermediate goods, hourly labour productivity and unit labour costs with their underlying components, as well as gross margins. Section 6 concludes.

1. FRENCH AND GERMAN PRODUCTION PRICE LEVELS COMPARED IN 2007

1.1. Choice of the conversion rate

Nominal exchange rates usually exhibit large fluctuations and only take into account tradables, namely goods and services that are exchanged or financial assets. When GDP is priced with the nominal exchange rate, one implicitly attributes the same price to all categories of goods and services, including non tradable ones.

Another measure, the purchasing power parity, is widely used to compare GDP per capita across countries. Insofar as preferences are identical and homothetic, and so long as the law of one price holds, purchasing power parities provide a conversion rate that allow differences in prices to be eliminated. A common basket of products reflecting final demand (including imports) is priced in different countries in their own currency, and the relative price results in the conversion rate. The Penn World Tables that offer PPP GDP series are about to extend their dataset by offering, besides the purchasing power parities real GDP estimates, real GDP ones based on output (see Feenstra et al, 2012).

By contrast to the top-down method used by Feenstra et al. (2012) to get real output on the output side, the bottom-up method aims at valuing the supply of goods with output price parities, the same way purchasing power parities are used to get real GDP on the expenditure side. As output based on production includes value added and intermediate products, it is less fit for a comparison of output and productivity based on labour and capital inputs. The switch from an output (production) to a value added concept is motivated by two reasons. First, for a country, a larger gross output may point to a higher degree of specialisation implying a higher use of intermediates, and to a smaller value added. Second, as the production of a plant can be the input of another plant, double counting has to be avoided at the sector level. To move from output based on production to the net concept of value added, a double deflation method should be the most appropriate. As it is unfortunately very difficult to implement, the single deflator method is used (for more details, see Freudenberg & Unal, 1994).

The output price parities combined with the nominal exchange rate expresses a real exchange rate. It allows the effect of the price level in a bilateral comparison of productivity to be removed. As France and Germany share the same currency, the output price parities do not serve to convert currencies in that case but are only a spatial price deflator. The value added volume obtained by dividing the value by this deflator is quoted in euros.

The output price parities method has been developed in the International Comparisons of Output and Productivity Project (ICOP) framework carried out by the University of Groningen, Netherlands. Through the years, the comparisons of the OECD countries manufacturing sector with the United States as a benchmark were extended to some countries in Asia, Central Europe and Latin America. At that time, CEPII had carried out detailed comparisons between France and Germany for 1987 and then for the year 1997, that were linked to the ICOP project. But unfortunately, the last round dates back to 1997. This void called on new comparisons. CEPII has launched such a round for the year 2007, at a smaller scale for a start, involving comparisons of a set of European countries (Finland, France, Greece, Italy, Poland, Portugal, Spain, and the UK) with Germany as the benchmark country, on the basis of the Eurostat data. Sweden and the Netherlands were dropped out for lack of consistency of the data. This paper presents the French-German comparison.

1.2. Data

The 2007 comparison uses Eurostat *Prodcom* production surveys and *Structural Business Surveys* to match about 850 products for the manufacturing sector between France and Germany out of 3,900 products of the Eurostat *Prodcom* list. This common basket of products makes up 26% of the manufacturing sales of France and Germany on average. These products were summed up in the NACE rev.1 classification at a four, three and two digit level. Results were bundled in seven large sectors, for the sake of readability. The manufacturing sector includes sectors 15 to 36 of the NACE Rev.1 classification (from manufactured food to miscellaneous industries) but excludes Nace 23, which is the manufacture of coke, refined petroleum products and nuclear fuel.

The conversion rates are calculated from the ratio of values to sold quantities (unit values) of the products available in the production surveys (Prodcom) at an eight-digit level. They are available in the same currency (the euro) and in the same quantity unit (kg or unit in most cases). This can be seen as a big step forward relative to the previous comparisons for which such supply of data was not even labelled in the same units, and not even in the same currency before 2002.

Once calculated, the output price parities aggregated with value added weights are applied to value added, value added per employee and per hour for the year 2007. All these statistics including sales except for hours worked come from *the Structural business surveys* collected by Eurostat for the year 2007. When statistics were not available, national accounts figures or the World-Klems database were used.

The 2007 levels were then extrapolated backwards and forward with value added prices coming from national accounts (see appendix for more details).

Growth rates come from the national statistical institutes (Insee and Destatis). In a normal round with no changes in classifications or in the base year, figures before the last four years are normally definitive. Then, figures are so up to 2008. More recent ones may be subject to revision. Caution is particularly recommended from 2009 on as to the interpretation of results.

1.3. Method and industry results for the year 2007

The matching of individual products at an eight-digit level, for which production values and quantities exist in both countries for the year 2007, results in a basket of manufacturing products common to France and Germany. This basket size reaches on average 26% of the sales of both France and Germany, after cleaning the database of the outliers (see the appendix for more details).

Contrary to the other rounds of comparisons for 1987 and 1997, matched German and French production lines are quoted in the same currency. The relative unit values, i.e. the unit value ratios of each product obtained by dividing the German price into the French one, are aggregated through the superlative Fisher index, a geometric mean which combines a Laspeyres index with a Paasche index. The Laspeyres index is the unit value ratio (UVR) weighted with German quantities and the Paasche index is the UVR weighted with French quantities.

An important part of the national output is not matched on several accounts: the quantity and/or the value of the sold output are not always available in the statistics (partly for confidentiality reasons);[1] the units used for quantities can diverge across countries; some products are not produced in both countries, etc. Moreover, products for which the unit values show an implausibly wide gap between both countries have been removed from the matching.

The stepwise procedure consists in considering the UVRs of the reliable industries (the output of the industry must represent at least 25% of the sales) at the four, three and two digits and at the seven sector and manufacturing sector level, as relevant to price the final output of all industries. If an industry UVR is not consistent, the UVR of the higher level of aggregation is taken provided it is reliable. In the end, this procedure ensures the relative price level of France relative to Germany is reliable.

In the last stage, after affecting the prices to all industries according to their availability and reliability, the Fisher index indicates that French prices are 0.05% higher than German ones for the year 2007. A detailed review of the methodology is provided in the appendix.

2. A COMPARISON THROUGH THE THREE DIFFERENT ROUNDS LED AT CEPII

Two previous comparisons of productivity have been done at CEPII for the years 1987 and 1997. Even if the longitudinal dimension cannot be exploited across different comparisons implemented at different points of time, it is interesting to keep in mind what price levels were found then.

The main conclusions drawn from the production matches for 1987 pointed to price competitiveness and a multi factor productivity (MFP) increase in France relative to Germany. A substantial part of productivity gains in France were due to layoffs. Convergence of manufacturing prices and hourly labour productivity could be noticed. The UVR amounted to 3.06 FF per DM, the French price level was 92% of the German one (Freudenberg & Unal, 1994).

[1] The present coverage rate for the French German comparison for 2007 (26% of the aggregate output) undershoots the one found in the preceding comparison for 1997 (33%). In the preceding comparison, we were authorised by the French Ministry of Industry to use confidential data that are not reported in the Eurostat surveys. Data is classified as confidential when the cells gather less than three firms or when a firm make up more than 85% of the sold output.

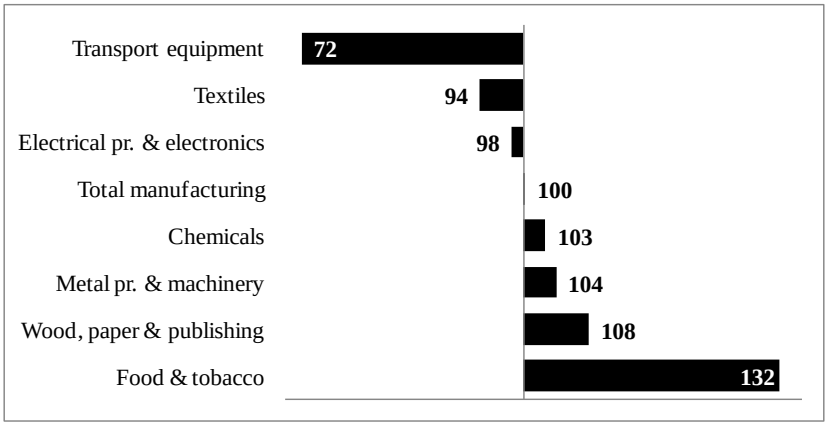
[2] According to the output price parities comparisons involving the other European countries with Germany that were

For 1997, the German unification together with the competitive disinflation policy in France brought about a UVR equal to 3.41 French francs to a Deutschemark, close to the exchange rate (3.37). Convergence was achieved with the French price level reaching 101% of the German one. MFP, hourly labour productivity and capital productivity levels were larger in Germany than in France. Manufacturing prices decreased dramatically from 1990 on, and converged towards GDP ones expressed in purchasing power parities. With smaller unit labour costs, France benefitted from a cost competitiveness edge over Germany. Its hourly labour productivity increased (Nayman & Unal, 2001).

In 2007, ten years later, the French price level relative to Germany in the manufacturing sector remains about the same. Figure 1 shows it is highest in the food sector (+32%) and lowest in transport equipment (-28%) or in the textile industry (-6%). Detailed UVR results by industry are displayed in table 1 in the appendix.

These sectoral price gaps hint at significant quality differences, which are, however, difficult to measure. In the food industry, German prices are also found to be relatively low when compared with other European countries.[2] One explanation could be that discounters in Germany have dramatically increased their market share over the last years, possibly pushing down producer prices by exerting pressures on producers. Relatively cheap unskilled labour may also be part of the explanation. As to the textile industry, some important manufacturers of textiles in Germany producing high quality acrylic fibres (technical textiles) have raised their prices in the face of higher raw materials prices. In the automobile industry, the difference in the manufacturing prices of cars can be linked to higher labour costs in this sector in Germany, by about 35% relative to France (see Table A.1 in the appendix), and of course to a perceived quality premium.

Figure 1: France-Germany relative price levels in manufacturing by industry grouping, 2007



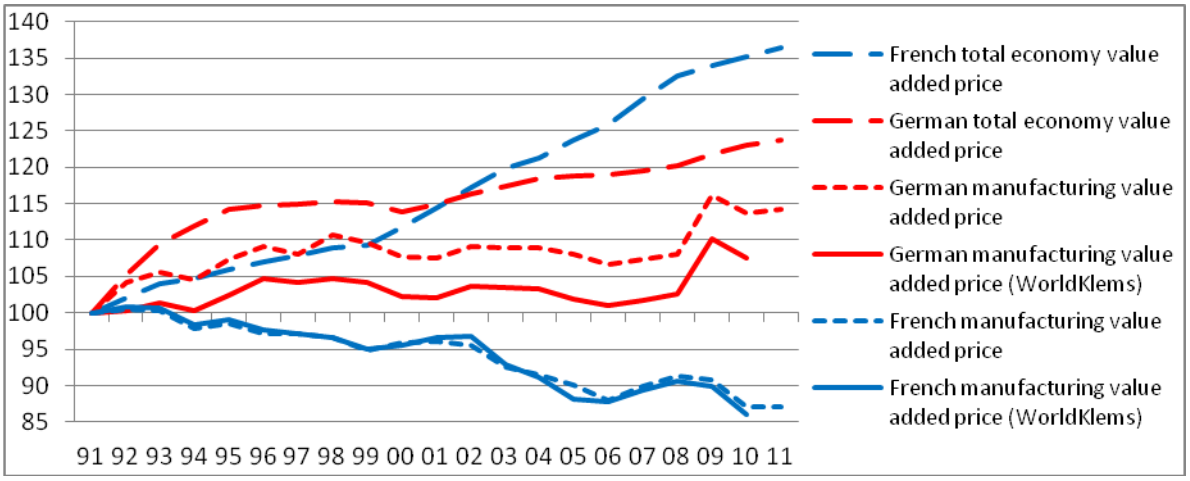
Source: CEPII's calculations from Eurostat: production surveys and structura business statistics, 2007.

[2] According to the output price parities comparisons involving the other European countries with Germany that were conducted at the Cepii for year 2007.

3. SERVICES VS. MANUFACTURING: CONTRASTING PRICE TRENDS

In the first step of our analysis, the output price level of France relative to Germany has been calculated on production for the year 2007, and then weighted by the value added structure. In the second step presented here, growth rates of value added prices are investigated, based on price series coming from national accounts (Insee for France, Destatis for Germany, and World-Klems for a comparison).These growth rates then will be applied to the 2007 relative price level in a third step to get average relative levels in section 4.3.

Figure 2: Value added deflator growth rates in France and Germany, 1991=100



Reading: Manufacturing includes here Nace Rev.2 19 (manufacture of coke and refined petroleum) &33 (repair and installation of machinery & equipment). This graph shows for manufacturing value added prices, two sources (national accounts with data as of 2012 and World-Klems with data as of 2011) in order to highlight the magnitude of the data revision by the national statistical institutes, if any.

Source: World-Klems, Insee, & Destatis; authors' calculations.

As shown in figure 2, the World-Klems manufacturing value added prices for France decrease steadily in the nineties. Its curve is closely related to the data produced by the Insee. In sharp contrast, French prices for the whole economy have been darting upwards by more than 35% since 1991. The difference between the evolution of manufacturing prices and the total economy is chiefly driven by prices in the service sector.

Germany displays an increasing trend in prices for both manufacturing and the total economy mainly in the first half of the nineties and in the first half of the 2000s. In 2009, the German GDP decreased by 5.1% and manufacturing prices increased by 7.5% over the preceding year according to Destatis, the German national statistical institute. For the manufacturing sector, the drop in the import prices (-5%) in 2009 relative to 2008 contributes significantly to increasing the GDP price.

The reason why France and Germany diverge so much in the 2000s in terms of value added prices is a kind of puzzle. Bearing in mind that production prices relate to intermediates and value added prices, it is interesting to see whether gross output prices and value added ones display the same trend.

Actually, the production price curve for the manufacturing sector follows closely the value added one, just lower by about one point of percentage over the years 2000 to 2007. So, the main discrepancies in terms of value added (or gross output) between the manufacturing sector and the whole economy on the one hand, and between both countries on the other hand deserve some investigation.

Four mechanisms can be put forth to explain the decrease in the manufacturing output prices relative to GDP deflators in France and also the decrease of French manufacturing value added prices relative to German ones:

- The increase in the price of services,
- The decrease in the price of imported intermediate products,
- The evolution of labour costs, employment and productivity,
- The mapping of gross margins in the manufacturing sector.

The increase in the price of services and the decrease in the price of imported intermediate products will be analysed first. Then, the evolution of unit labour costs and gross margins will be examined alternatively afterwards.

3.1. The increase in the price of services

The staggering gap in deflators shown in figure 2, can be ascribed to the rise in service prices: services accounted for about 80% of the value added in France in 2010 (60% for market services and 20% for non-market services). French service prices have risen faster than German ones in the 2000s by about 9% on average.

Comparing purchasing power parity prices in 2007 allows the role of services to be further investigated (table 1). It shows that French prices were 16% higher than German ones in services, while goods prices were 3% lower. The French-German difference is thus entirely explained by the gap observed in service prices.

This finding is consistent with the Insee results, according to which the price level of the final consumption expenditures of households in France is 14% higher than the 27 European countries average in 2009, while this price level in Germany is only 6% above the average (Romans, 2011). For France, the difference with respect to the average was 22% for service prices against 10% for total goods. In Germany, the respective figures were 6% and 11% in 2009.

For services, these purchasing power parities could be used more or less as a proxy for output price parities, as most services are not tradable. Among services, prices of all categories of services contribute to budging French prices up relative to Germany. In consumer services, communication (+21%), hotels and catering (+18%) as well as housing (+15%) stand out. Software (+23%) and civil engineering prices (+14%) are conspicuously different from the ones enforced in Germany with regard to GFCF prices.

The difference between purchasing power parities and unit value ratios calculated on output is also noteworthy for manufacturing. For example, the high relative level of output prices observed for food products can be compared to their lower level in terms of purchasing power parities. The difference between output price and purchasing power parities for food indicates the import price level of food products relative to output is much lower in France compared to Germany.

Table 1: Purchasing power parities 2007

	France/Germany
GDP	**1.08**
Total goods	**0.97**
Consumer goods of which:	*0.95*
Food and non alcoholic beverages	0.98
Alcoholic beverages	1.09
Tobacco	1.14
Wearing and shoes	0.88
Semi-durable goods	*0.93*
Durable goods	*1.02*
Total services	**1.16**
Consumer services of which:	*1.17*
Communication	1.21
Hotels & catering	1.18
Housing	1.15
Public administration services	*1.14*
Collective services	*1.18*
Individual services	*1.11*
Gross Fixed Capital Formation	1.00
Software	1.23
Metal pts & equipment	0.91
Machinery & equipment	0.97
Electrical & electronical equipment	1.02
Transport equipment	0.99
Civil engineering	1.14
Residential buildings	0.90
Non residential buildings	0.99
Construction	0.97

Reading: The Purchasing power parities reported here show the level of the French prices relative to the German ones on the expenditure side. A PPP of one means French prices equal German ones. For example, one unit of tobacco costs 14% more in France than in Germany.

Source: Eurostat and authors calculations.

3.2. The decrease in the price of imported intermediate products

The second explanation about the falling French manufacturing price relative to Germany lies in the price of foreign trade. The hint could be that French manufacturers face cheaper domestic and imported inputs than Germany – assuming that France manufactures less expensive products - and/or have weaker export prices.

Intermediate products imported by France make up 38% (44% in Germany) of the domestic production alone.[3] Miroudot (2009) shows that the share of intermediate goods in total goods trade has hardly changed for OECD countries over the 1995-2007 period.

Further, Bricongne et al. (2011) show that French intermediates import prices show a similar trend than the German ones and the difference in prices is not that important.

The explanation may then lie in export prices, since the share of exports in domestic production amounted to 52% in France in 2007, and to 54% in Germany.[4] Bricongne et al. (2011), as shown in Table 2, find that French export prices relative to German ones have grown at the same rate over the 2000-2008 period for the intra-EU trade and by 0.6% in France for the extra-EU trade against only 0.1% in Germany. Intra-EU export prices have increased more in Germany than in France across the 1991-1999 period. Conversely, the German price growth has decelerated as far as the extra-EU trade is concerned.

Table 2: French and German export prices growth rates, in %

	Intra-EU		Extra-EU	
	Germany	France	Germany	France
1991-99	+2.4	+2.9	+0.8	+1.1
2000-08	+3.4	+3.4	+0.1	+0.6

Source: Bricongne, Fontagné & Gaulier (2011), Comext database.

If neither prices of imported intermediates nor export prices are good candidates to explain why French manufacturing value added prices declined while the German ones rose, then it must be that domestic value added prices of goods in the domestic market have decreased in France and increased in Germany over the last twenty years.

4. THE EVOLUTION OF LABOUR COSTS, EMPLOYMENT AND PRODUCTIVITY

As reported by the BLS (2011) in its chartbook, competitiveness in the manufacturing sector is captured by three indicators linked to value added produced domestically: hourly compensation costs, labour productivity, and unit labour costs. All three components must be closely scrutinised. How have France and Germany fared so far in these matters?

[3] The ratio of imported intermediate products to domestic production has been computed with the input output tables available in Stan for the mid-2000s.

[4] Source: Insee for France and Stan for Germany.

4.1. Labour costs

Labour costs differences could explain the above-mentioned price divergence between both countries and sectors inside each country. Their level is difficult to define on account of the underlying sources and methods used.[5]

In Germany, labour costs per hour worked (i.e. the compensation rate) have increased sharply by 38% over the 1991-2000 period, compared to 28% in France. The German unification in 1990, the very negative current account balance throughout the nineties up to 2001, and the ensuing sluggish growth of the beginning of the 2000s urged the need to regain competitiveness. The Hartz reforms I to IV were then introduced as of January 2003 till 2005, with the consent of trade unions. Mini- and Midi-jobs with progressive taxes were put into effect; temporary work, firing costs and fixed-term contracts were deregulated as well. All in all, from 2001 to 2008, hourly labour costs have gone up by 9%, against 24% in France (see box 1 on the low-cost jobs and box 2 on temporary work in appendix B, and hours worked in appendix C).

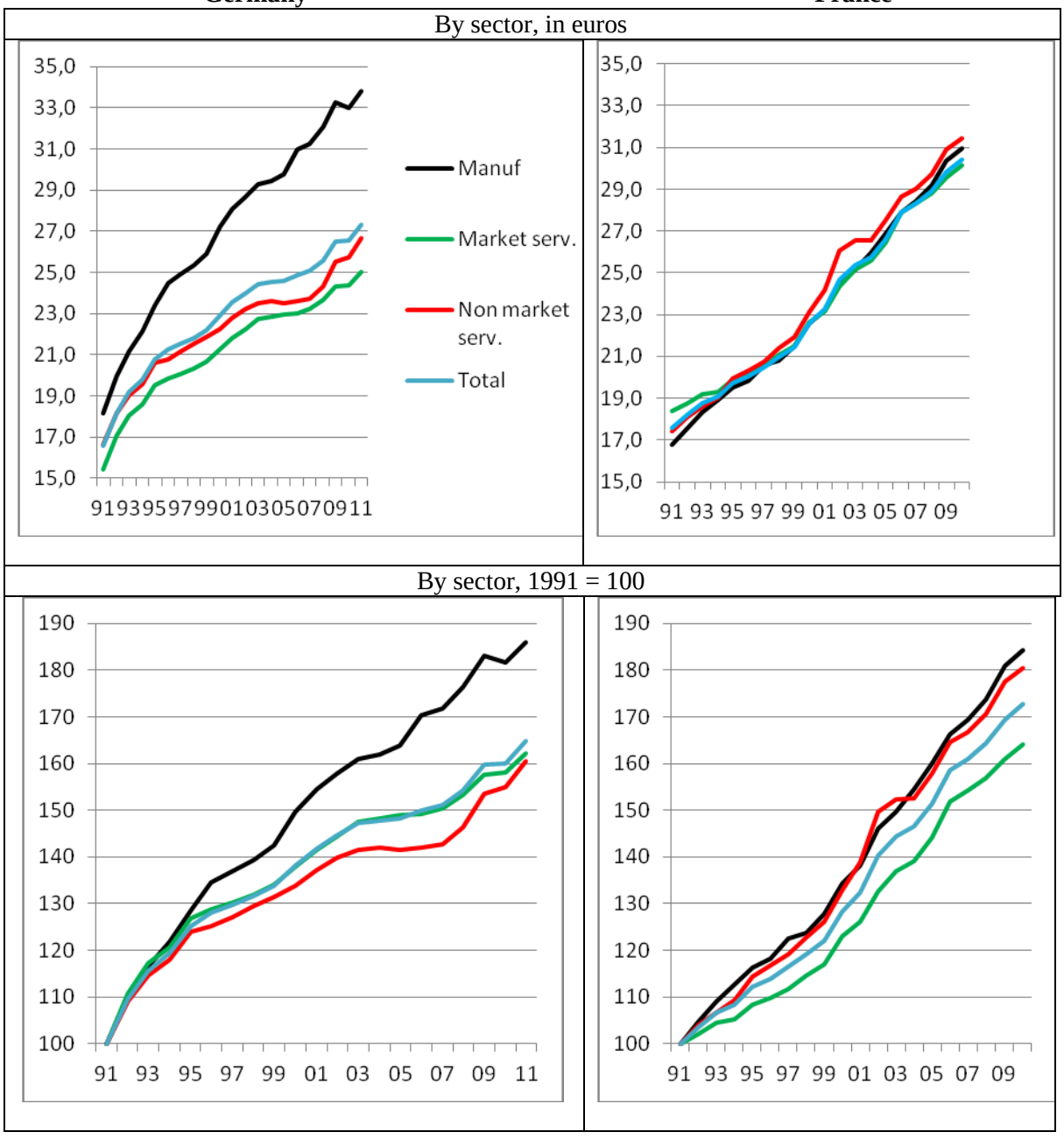
While average labour cost per hour hardly differs across sectors in France, it is markedly lower in services than in the manufacturing sector in Germany, and the difference has been widening over the period, especially since the mid-90s (Figure 3). This may be linked to the fact that market services, in particular retail trade, catering and hotels, health and social services, soak up a great part of the mini- and midi-jobs created in Germany by the Hartz reforms, even though the trend clearly pre-dated these reforms (see also Box 1 in the appendix).

In the German manufacturing sector, labour costs are high at about 33 euros per hour in 2010 and they have increased at a fast pace since 1991. This could be a sign of tensions in the labour market regarding skilled labour. For example, car makers in Germany are vying for engineers, often considered to be in shortage in this sector.[6] In France, in contrast, the lowest average wages are found in the manufacturing sector. Nonetheless, labour costs per hour worked in the manufacturing sector display the highest growth rates.

[5] Let's consider some discrepancies between the French NSI and Eurostat. First, as to sources, the French national statistical institute leans chiefly on an employer-employee administrative source to compute labour costs (Déclarations Annuelles de Données Sociales). By contrast, Eurostat compiles surveys conducted on labour costs of firms with 10 employees and more in European countries every four years since 1984. Second, the contents too can be different. For example, Insee considers unregistered (concealed) work to be the production of self-employed and so the unregistered paid wages and contributions are attributed to mixed income (see Beaujour, 2013). Taking account of the increasing share of employees in the economy, it was decided in the EUKlems database, and we assume the same strategy, to compensate self-employed the same way as employees (compensation per employee times the number of self-employed). Total compensation (labour costs) includes then compensation of employees and of self-employed. Unregistered compensation assessed by the NSI impacts then labour cost levels but not the compensation rate as it is the compensation rate of employees. For a review of sources and methods for labour costs in the manufacturing sector in France and Germany, see Askenazy, 2011.

[6] A consequence of that lack of human capital is that German auto-makers (BMW, for example) tend to outsource production in the US where labour is skilled and less expensive than in Germany. BLS (Hourly compensation costs in manufacturing, 2011 database) shows the total compensation costs per employee in manufacturing is 33 € in Germany, about 31€ in France and 26€ in the US in 2010.

Figure 3: Labour costs per hour worked in Germany and France



Field: the manufacturing sector includes the manufacturing of energy (Nace Rev.1 23). Labour costs are total compensation for employees (salariés / Arbeitnehmer) in Germany and in France.

Source: Insee and Destatis; authors'calculations.

Inequalities in terms of labour costs arise not only between the manufacturing sector and services in each country but also within each sector, and across employees. Employees' employment status can drive the way wages are formed in the labour market. The segmentation of the labour market must be then scrutinised to understand the conflicting tensions arising on labour costs: the intensity of skills in the economy shaping the 'insider' labour market, less hours worked paying lower wages in the precarious ('outsider') labour market.

4.2. Skills and education

Skills are an important building block of the formal labour market. The concentration of skills in the working population of each country combined with demographic changes is an indicator of tensions related to skilled labour. The negative trend of population in Germany is illustrated by the rate of natural increase (-0.2% in 2010) and the overall population growth including migrations (-0.06% in 2010). In France, these rates are respectively 0.4% and 0.6% in 2010 according to the Eurostat database. In Germany, with no migration entries, the working age population is likely to decline from about 50 million people to a bracket around 35 to 39 millions in 2050.[7]

Calculated with the WorldKlems database upon employees and self-employed persons, for the year 2008, the share of the German manufacturing sector in hours worked by high skilled persons (19%) is higher than in France (12%). This proportion amounts to 73% for services in Germany against 87% in France in 2008.

However, the share of hours worked in France by low and high skilled persons is higher than the one in Germany by 65% and 17% respectively in 2008. By contrast, German employed persons are relatively more medium skilled than French ones by 24%.[8] The relative shares show a bias in favour of skilled labour over time since 2002 in France against Germany. Also, the Eurostat labour figures corroborate these facts (table 3), namely for employees, the share of employees with tertiary education being higher in France than in Germany. This evidence is reversed for self-employed people.

To sum up, the proportion of high skilled workers is higher in services in France and in manufacturing in Germany. Tensions are noticeable in the German labour market due to demographic reasons and linked to the dual education system. They could explain why German labour costs levels in the manufacturing sector prevail over the labour costs ones in services.

[7] The active population amounts currently to about 40 million people in 2010 (Destatis). According to the Federal employment Agency in Germany (see Fuchs et al., 2010) , it will start decreasing from 2015 on. The potential shortfall could be alleviated by the lift as of 1 May 2011 on restrictions related to the mobility of workers from the Central Eastern States which joined the EU in 2004. They will be allowed to come and work in Germany provided their level of education and language skills.

[8] The intensity in a sector is measured as the share of French high (low or medium) skilled hours in total hours relative to Germany.

Table 3: Shares of 15-64 year-old workers per education level, 2005-2010

	Germany		France	
	Employees	Self-employed	Employees	Self-employed
Numbers in 000s	33,083	3,918	22,595	2,577
up to primary school (0-2 level), %	15.5	7.5	24.9	20.6
secondary school (3-4 levels), %	60.6	46.9	44.5	45.9
Tertiary education (5-6 levels), %	24.0	45.6	30.6	33.5

Source: Eurostat, ISCED97 classification. Authors'calculations.

4.3. Labour productivity and unit labour costs

Unit labour costs, compensation of total employed persons per unit of real value added, result from the comparison of what an employee costs (gross wages plus employers' social contributions) and what she produces in terms of her productivity per hour. The increase in labour costs does not matter if hourly labour productivity grows even more. In the same way, as unit labour costs are impacted by the cost of labour and productivity, they are also affected by the price of value added. Indeed, unit labour costs are equivalent to the price of value added multiplied by the share of compensation in value added.

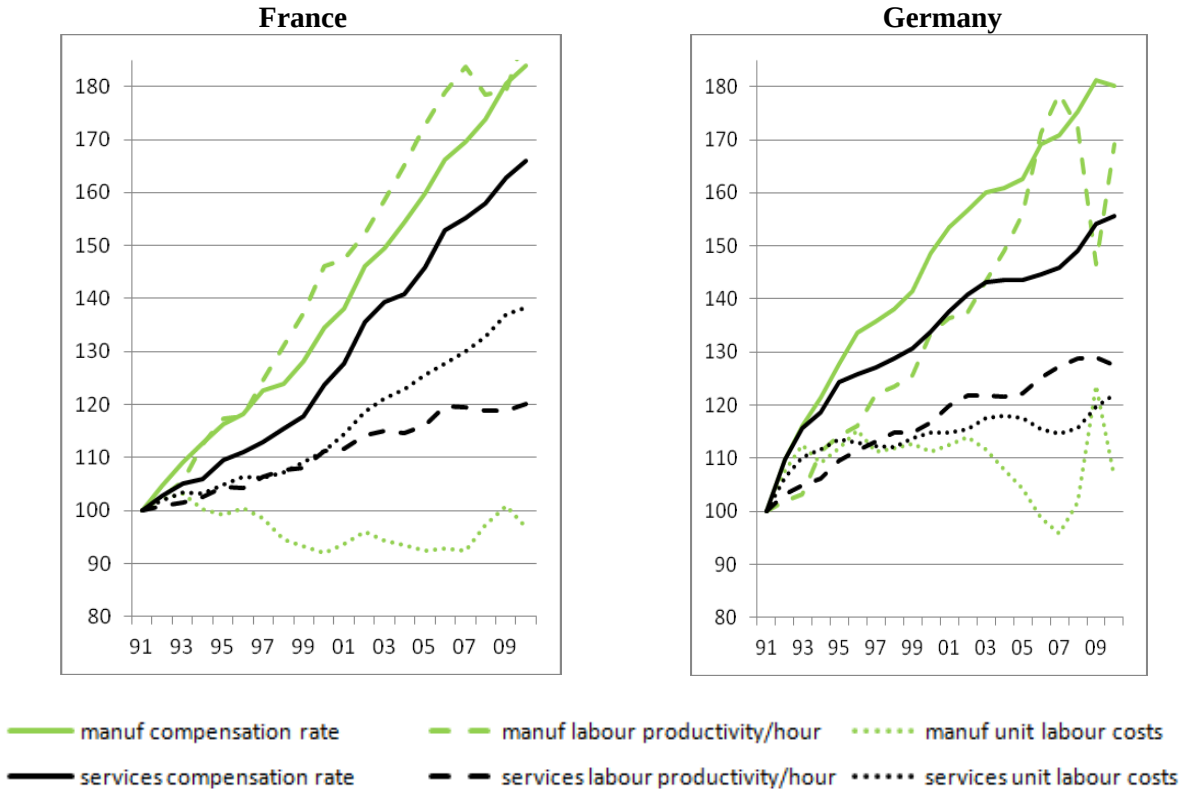
Value added at chained prices in the French manufacturing sector tends to grow faster than in Germany, reflecting the reverse trend in prices, already mentioned in the previous sections: value added has grown quicker in France than in Germany until 1999, at the same pace till 2005 and then less than in Germany over the 2005-2008 period in the manufacturing sector. Indeed, French prices have been increasing more than in Germany over 2005-2008, also reflecting the wage policy that was enforced in Germany at that time. From 2008 on, wages have increased faster in Germany.

Figure 4 delineates unit labour costs in the manufacturing sector and in services in both countries. In the French manufacturing sector, the unit labour costs have decreased due to a rise in hourly labour productivity well above the one in the hourly compensation from 1997 to 2007. In Germany, the dramatic fall in unit labour costs was substantially due to the steep rise in hourly labour productivity from 2003 to 2007.

Further, in services, in France, the significant growth of the unit labour costs relative to Germany is due to a rise of the compensation rate of almost the same magnitude as in manufacturing, without getting an equivalent rise in productivity. In both countries (but mainly in France), hourly labour productivity growth remains well below the compensation rate one.

Moreover, the relative position of the hourly compensation rate curves of both sectors (the plain green and the plain black in figure 4) is also noteworthy. In Germany, the rise of inequalities can be measured by the difference between the two curves: in services, where the midi and mini-jobs are concentrated, the hourly labour compensation rate contrasts with the one in the manufacturing sector where the demand for skilled labour has pulled wages up. In turn, employing more skilled people in the manufacturing sector induces a higher productivity level.

Figure 4: Unit labour costs decomposition, 1991=100



Reading: Self-employed are assumed to get the same compensation rate as employees. Volumes computed by German & French statistical offices are obtained by deflating values by a chained price index to the year 2005 for Germany and France. Weights in France and Germany are those of the previous year. The value added Laspeyres indices have been rebased in 2007 with chained prices, and indexed to 1991 for presentation purposes.

Source: Insee and Destatis, National Accounts.

Table D.1 in the appendix breaks down unit labour cost levels in their main components for both countries. Comparing the first half of the 2000s with the subsequent period is of interest. In the German manufacturing sector, wages remain high despite the wage restraint initiated in the mid-2000s. The rise in the hourly labour productivity level (+7 euros) across the two periods can be related both to a skill mix being more and more biased towards high skilled labour and to large export surpluses produced in that sector. As a matter of fact, value added increased by 15% while hours declined by 5%. In services, wage moderation has always been the rule, and the gap with the manufacturing sector even widens to 10 euros over 2009-2010. Although hourly labour productivity levels in services were higher than in manufacturing in the nineties, they displayed weak increases over time.

In France, in the manufacturing sector, labour costs levels remain below the German ones, and evolve at a slower pace across the two periods of the 2000s (+4 euros). French value added increased by 6% while German one grew by 15%. Hourly labour productivity levels increased, thanks chiefly to a decrease in the level of hours (-9%) more than to an increase in the level of value added (+6%). As a result, unit labour costs levels have remained stable throughout the 2000s. In services, the hourly

compensation rate level widens even more during the last period. Meanwhile, hourly labour productivity levels remain well above those of the manufacturing sector.

Table 4 displays the relative levels of unit labour costs, hourly labour productivity and hourly compensation rates across sectors. The price used to compute the relative variables in the manufacturing sector is the output price parity of 2007, extrapolated with value added price growth rates. Table 4 confirms that the high French-German unit labour costs level is to be traced back to the service sector with a widening of the compensation gap between France and Germany. [9] French manufacturing labour productivity, that was quite large, has decreased relative to Germany in the years 2005-2008, indicating an even higher level of labour productivity in Germany. In services, over the same period, with lower productivity levels than compensation rates, the unit labour costs are higher than in Germany by 8%. Nonetheless when taking into account the unit labour costs of the residual sectors (agriculture, mining, production and distribution of water, gas & electricity, and construction), French unit labour costs of the whole economy are about the same as the German ones over the same period. In other words, the high level of unit labour costs in services was balanced out by moderate levels in the manufacturing sector and the residual sectors together.

Changes in 2009 and 2010 are difficult to interpret on account of the crisis. Nonetheless, unit labour costs have increased in France in the total economy, on account of a rise in unit labour costs in services. The decrease in the relative unit labour costs in manufacturing by eight points can be explained by the increase in hourly labour productivity in France, mainly due to the fall of hours worked in this sector chiefly in 2010 (-4.9% per year between 2008 and 2010 vs. -0.6% in services). This fall by eight points in the relative unit labour costs is also due to the sagging value added at chained prices in the German manufacturing sector in 2009 (-22% compared to 2008).

Table 5 shows that in the manufacturing sector, the French value added price relative to Germany has continuously decreased from a high level in the nineties. Nonetheless, the result for 2009-2010 is rather due to a sharp rise in German value added prices due in large part to the drop in import prices. The share of compensation in value added sharply increases in the manufacturing sector after fifteen years of stability relative to Germany but still remains at the same level than in Germany over the 2005-2008 years. The increase in the share of compensation in value added could be the corollary of a decrease in the share of the gross operating surplus in value added at factor costs.

In services, the evolution of the value added price is the reverse with a steady increase through the years. The share of compensation in value added stays put at 7-9% above the German level in the same period.

[9] Had value added been deflated with an output price parity calculated on service products, hourly labour productivity would have been probably much lower than the one indicated in table 5.

Table 4: Levels of unit labour costs (ULC), France relative to Germany

		91-99	00-04	05-08	09-10
ULC	Manufacturing with UVR	96	90	100	92
	Services	92	98	108	110
	Total	83	88	100	103
VA/LH	Manufacturing with UVR	82	88	84	94
	Services	120	118	118	117
	Total	114	113	111	109
W/LH	Manufacturing	79	79	84	86
	Services	110	116	127	129
	Total	94	100	110	112

Source: Insee & Destatis for growth rates and EUROSTAT, SBS for levels; Authors' calculations.

Table 5: ULC levels and value added price, France relative to Germany

	1991-99	2000-04	2005-08	2009-10
		Manufacturing		
Value added price	111	104	100	91
W/VA	86	86	100	101
Unit labour costs	96	90	100	92
		Services		
Value added price	84	92	99	103
W/VA	109	107	109	107
Unit labour costs	92	98	108	110
		Total		
Value added price	88	93	99	102
W/VA	94	95	100	102
Unit labour costs	83	88	100	103

Reading: W/VA: share of compensation in value added. Unit labour costs (ULC) in 2007 are deflated with output price parities.

Source: Insee & Destatis for growth rates and EUROSTAT, SBS for levels; Authors' calculations.

Further, the change in the value added price across two time periods results from the change in the compensation rate, in the hourly labour productivity and in the share of compensation in value added.

$$\Delta VAP = \Delta\frac{W}{LH} - \Delta\frac{VA}{LH} - \Delta\frac{W}{VA_{val}} \qquad (2)$$

With VAP the price of value added, W/LH the compensation rate, VA/LH, the hourly labour productivity (computed with the output price parity for the manufacturing sector) and W/VA the share of compensation in value added (in value). $\Delta\frac{W}{LH} - \Delta\frac{VA}{LH}$ is the change in unit labour costs.

This formula allows the main conclusions concerning the French price of value added relative to Germany to be summarised as follows:

- In the manufacturing sector, the decrease in the price of value added has unalike sources:
  - ✓ First half of the 2000s over the nineties (1): the decrease by 7 points in the relative price of value added is entirely due to the decrease in the relative unit labour costs thanks to an increase in the relative hourly labour productivity (+ 6 points).
  - ✓ Second half (2005-2008) over the first half of the 2000s (2): the decline by 4 points in the relative price of value added can be mainly attributed to a rise in the relative unit labour costs by 10 points and to the increase in the relative share of compensation in value added by 14 points (i.e. an equivalent fall in gross margins). This result is also consistent with the increase in labour productivity per hour in Germany over the 2005-2008 period.
- In services:
  - ✓ First half of the 2000s over the nineties (1): The increase in the value added price by 8 points is chiefly due to a rise in the compensation rate by 6 points.
  - ✓ Second half (2005-2008) over the first half of the 2000s (2): The increase in the value added price by 7 points stems mainly from a relative increase in the compensation rate by 11 points.

The fall in the price of French value added relative to Germany in the manufacturing sector is brought about by a steeper rise in the French compensation share in value added. This means then that the French gross operating surplus in the French manufacturing sector has been squeezed relative to Germany in the second half of the 2000s. In services, it should be less acute. The issue of gross margins is addressed in the next section.

5. THE MAPPING OF GROSS MARGINS AND CORPORATE FINANCING

This section analyses how gross margins by sector fit the pattern described above on unit labour costs.

5.1. Gross returns and prices

Table 6 replicates the methodology used by Sylvain (2001). Increases in gross returns are correlated with growth rates of gross margin ratios and capital productivity at current prices. Gross return is the ratio of gross operating surplus to capital services at current prices.[10] It is also one component of profitability.

Table 6: Gross return growth in France and Germany by sector

Points of %

	France				Germany			
	91-99	00-04	05-07	08-09	91-99	00-04	05-07	08-09
Gross return (1)=(2)+(3)								
Manufacturing	-0.3	-0.8	0.0	-5.3	-9.6	-0.5	-1.2	12.5
Market services	-0.5	0.4	1.6	-0.8	-8.1	-1.0	-1.7	5.2
Total	-0.7	0.0	0.8	-0.3	-9.4	-0.8	-1.5	4.6
Gross margin ratio (2)								
Manufacturing	0.2	-3.9	0.9	-15.5	-0.6	2.8	6.9	-24.7
Market services	-0.1	0.2	1.2	-2.4	0.1	0.9	1.0	-3.8
Total	0.0	-0.1	1.9	-4.2	0.5	1.3	2.5	-5.8
Capital productivity at current prices (3)=(4)-(5)								
Manufacturing	-0.6	3.0	-0.9	10.2	-9.0	-3.3	-8.2	37.2
Market services	-0.4	0.2	0.4	1.6	-8.2	-1.9	-2.7	8.9
Total	-0.7	0.1	-1.1	3.9	-9.9	-2.1	-4.0	10.3
Capital productivity at 2007 prices (4)								
Manufacturing	1.1	-0.1	1.2	-7.4	-2.0	0.1	5.9	-22.3
Market services	-0.6	-1.7	0.4	-4.6	-3.1	-2.1	0.2	-3.9
Total	-0.2	-0.9	0.2	-4.2	-2.7	-1.3	1.0	-6.4
Relative price of capital services (5)								
Manufacturing	1.7	-3.1	2.1	-17.6	7.0	3.5	14.1	-59.6
Market services	-0.2	-1.9	0.0	-6.2	5.1	-0.2	2.9	-12.9
Total	0.5	-1.0	1.3	-8.1	7.2	0.8	5.0	-16.7

Reading: gross return is gross operating surplus/capital services at current prices; the gross margin ratio is the share of gross operating surplus in VA; capital productivity is VA /capital services; the relative price of capital services is the price of capital services / price of VA. The field is restricted to market services. Growth rates and contributions are average rates per year.

Source: Insee, Destatis, EUKlems; authors' calculations.

[10] . Contrary to the stock of capital, capital services are flows of capital derived here from a translog function. They are aggregated by weighting the growth rate of each capital asset by the user price of capital. For a full description of the Jorgenson methodology, see Jorgenson et al. (1987). Capital services come from the EUKlems database.

Gross return increases in France at the aggregate level in the 2000s except in the crisis years thanks to growth in market services, in contrast to Germany. In the 2005-07 years, French gross margin ratios (gross operating surplus/value added) are up on the preceding period, but their annual average growth rate remains well below the German ones in the manufacturing sector.[11] Indeed, in Germany, the margin ratio displays higher growth rates, at even 6.9 points of percentage per year over the 2005-2007 years. The increase in gross margins is the corollary of the fall in the share of compensation in value added. Moreover, value added prices have followed an upwards trend in the manufacturing sector. In France, growth of capital productivity at current prices contributes to gross returns more favourably than in Germany up to 2007, be it in the manufacturing sector or in services.

In turn, changes in capital productivity at current prices can be broken down between capital productivity growth at 2007 prices and the relative price of capital services. A high price of capital services relative to the value added price cuts down gross return, and in turn, investment. In France, the relative price of capital services evolves more favourably than in Germany in the manufacturing sector in the 2000s. It may discourage investment in Germany where the price of capital services relative to the price of value added surges (+10.6 points of percentage per year in 2005-2007 over the preceding period in the manufacturing sector) and explains the slump in capital productivity at current prices. Capital productivity growth at 2007 prices has accelerated in France and even more in Germany in the manufacturing sector over the 2005-2007 years. The crisis years of 2008-2009 are marked by a fall in gross margins, and by an even steeper fall in the relative price of capital services, especially in Germany.

5.2. Funding investment

High capital prices in the late 2000s were not propitious to investment in Germany, as can be seen in table 7. German corporate investment in the whole economy was more flipped up in the late nineties than in France, before being caught up from 2005 on by France. In Germany, investment was buoyant in the years following unification.

Higher investment in the French economy can be sourced to investment in the corporate sector that catches up throughout the 2000s.[12] Moreover, in the late 2000s, households have invested more in France than in Germany on account of higher prices of French real estate. Government investment rate is also about twice as high in France as in Germany. This could change as Germany decided to upgrade its educational system, invest more in green technologies and in ageing.

[11] Markup rates keep decreasing in the 2000s in France. The cut-off points have been chosen in order to remain consistent with the analysis led on labour.

[12] For the non financial firms alone, according to the Eurostat data, the investment rate was higher in Germany in the 90s (unification effect) and up to 2003 and higher in France thereafter and more particularly from 208 on.

Table 7: Investment rates in France and Germany by institutional sector

% of GDP

	1995-2000	2001-2004	2005-2008	2009-2011
Total Economy				
France	17.7	18.5	20.4	19.7
Germany	21.4	18.4	18.1	17.6
Corporations (S11+S12)				
France	9.2	9.9	10.6	10.4
Germany	11.3	10.4	10.7	9.9
Households and self-employed				
France	5.5	5.7	6.6	6.1
Germany	8.1	6.3	5.9	5.8
Government				
France	3.0	3.0	3.2	3.3
Germany	2.0	1.7	1.5	1.7

Reading: S11 : non financial corporations ; S12 : financial corporations

Source: Eurostat; authors' calculations.

Investment is then probably slowed down by its prohibitive price in Germany. German companies do not invest as much as they should, given their growth performance in the second half of the 2000s, and pockets significant gross operating surpluses. Actually, Eurostat shows that German investment rates of non-financial corporations from 2000 to 2007 were well under investment rates of EU-15 and even more below those of France and remain below those of its own investment rates in 2000 (Leytienne, 2009).

Table 8 illustrates how investment is financed. Investment can be financed by self-financing or by lending. Self-financing is the ratio of gross saving and net capital transfers (investment subsidies and other capital transfers) to gross capital formation. This ratio was higher in France than in Germany from 1995 to 2000. Financing requirements increased in France when investment was stepped up in the 2000s. Conversely, large export earnings of German firms flow into savings as a result of lower investment in the 2000s, creating a surplus that swelled up to 2011. Nonetheless, these aggregate figures conceal the fact that besides well-to-do firms in Germany, some were not doing so well in and after the 2009 financial crisis. These firms did not go bankrupt, however, on account of the possibility for ailing firms to carry forward losses for fiscal purposes when they changed hands.[13]

[13] The reorganisation clause ("Sanierungsklausel") adopted in the corporate tax law in Germany in 2009 with a retroactive effect from January 1rst, 2008, was rebuked by the European Commission in 2010, which deemed this rule was State aid. The EU considered it distorted competition towards sound firms. Moreover, one negative side effect of this clause is to favour take-overs by firms for fiscal reasons.

Table 8: Corporate self-financing and lending/ borrowing in France and Germany

	1995-2000	2001-2004	2005-2008	2009-2011
Self-financing rate (gross saving + net capital transfers/ Gross capital formation)				
France	97	92	81	80
Germany	90	100	107	116
Financing capacity (+) **/ requirement** (-) in % of GDP				
France	-0.3	-0.7	-2.0	-2.0
Germany	-1.5	-0.1	0.8	1.3

Reading: The financing capacity/requirement is a gross concept (gross saving + net capital transfers) – (gross capital formation + net acquisition of non financial non produced assets). Corporate applies here to non financial corporations.

Source: Eurostat; authors'calculations.

5.3. Sources of corporate gross saving

Table 9 shows the shares of the different categories of property income in France and Germany. Corporate gross saving includes gross operating surplus along with net property income (interests, distributed income, reinvested earnings on foreign direct investment, property income attributed to insurance and rents).

From 1995 to 2011, on the resource side, property income relative to the gross operating surplus in Germany has steadily increased on average. From 11% in the second half of the nineties, the ratio of property income to the gross operating surplus jumped to 22% from 2005 to 2011 on average. By comparison, in France, this ratio is very high and has increased sharply since 1995; over the 2005-2011 years, it amounted to 78%. Strikingly, reinvested earnings of FDI, i.e. the gross saving of foreign affiliates of German firms (on the resources side) have boomed in the second half of the 2000s (19.3% in the 2005-07 years). Otherwise, the German corporate sector has raked in interest income more than French firms since 2005. In France, one of the main resources of property income has been distributed income over the same period.

As to uses, interest income paid by French firms average 33% of total uses (19% for Germany) and distributed income with 65% are well below the German levels (82%), bearing out the view that French companies are more indebted to fund their investments (physical and financial), and distributed less income than their German counterparts.

Table 9: Shares in property income in France and Germany

In %

		95-00	01-04	05-07	08-11	95-00	01-04	05-07	08-11
		France				**Germany**			
	Resources								
D4	Property income	100	100	100	100	100	100	100	100
D41	Interests	42.1	41.5	30.4	28.2	46.8	37.4	38.3	38.7
D42	Distributed income	53.6	58.4	61.8	67.2	45.9	62.6	40.7	47.7
D43	Reinvested earnings of FDI	3.9	-0.2	7.6	4.6	3.3	-2.5	19.4	12.3
D44	Property income attributed to insurance	0.4	0.3	0.2	0.1	3.9	2.4	1.6	1.2
D45	Rents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Uses								
D4	Property income	100.	100	100	100	100	100	100	100
D41	Interests	41.5	35.5	27.8	26.1	21.3	19.7	17.1	17.7
D42	Distributed income	56.8	64.0	68.2	71.8	80.1	82.9	82.8	82.9
D43	Reinvested earnings of FDI	0.8	-0.4	3.2	1.3	-1.7	-2.9	-0.2	-1.0
D44	Property income attributed to insurance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D45	Rents	0.9	0.9	0.8	0.9	0.3	0.3	0.3	0.5

Source: OECD National Accounts. table 14A; Authors' calculations.

The French share of the gross operating surplus in value added has thus decreased relatively to Germany over the second half of the 2000s in the manufacturing sector. This fall is to be paralleled with the increase in the relative share of compensation in value added, and hence explains the decrease in the relative price of manufacturing value added. In market services, relative gross margin ratios have risen over the 2000s, in line with the increase in the relative price of value added.

Tangible and intangible investment growth is one component of value added growth and competitiveness. Gross returns could be maintained in France thanks to a lesser cost of investment relative to Germany. In France, investment has increased more quickly than in Germany in the 2000s, with higher contributions of households and government to investment growth.

Basically, German firms fund their investment through self-financing while French ones do it through lending. German firms have also benefited from higher outwards investment that accrues to their gross saving in the late 2000s. Eventually, Germany has a positive net acquisition of financial assets, even in the 2009 crisis, while France has a negative one.

6. CONCLUDING REMARKS

This study has investigated over the 1991-2010 period why value added prices in the French manufacturing sector have fallen while they have sharply increased in the whole economy. By contrast, value added prices in Germany have risen over the same period. Starting with levels, the results for the year 2007 of the French-German comparison of output price parities calculated on manufacturing production and weighted by value added show that French manufacturing prices are almost identical to German ones. This level has been extrapolated backwards to 1991 and forward to

2010 with growth rates from the national accounts or from the EU-Klems database to compute unit labour costs and their components in the manufacturing sector. The analysis was extended to services, in order to get an integrated setting of the whole economy.

Four main explanations were put forth in order to explore the divergence of value added prices between France and Germany: (i) the price of services in France compared to Germany, (ii) the price of imported intermediate products and export prices, (iii) the relative unit labour costs in both sectors and (iv) the difference in gross margins in the two countries.

(I) The French-German value added purchasing power parities in services could be used more or less as a proxy for output price parities of services, as most services are not tradable. It indicates that services in France are priced 16% higher than in Germany on average for the year 2007.

(II) Neither imported intermediates prices nor the export prices are good candidates to explain the value added price divergence, since they varied quite similarly in both countries, and export prices even decreased in Germany compared to France over the 2000-2008 period for extra-EU trade.

(III) The explanation in terms of unit labour costs is more relevant. The second half of the 2000s was a particularly buoyant period for Germany in terms of exports and growth. The high relative French-German unit labour costs level is to be traced back to the service sector with a widening of the compensation gap between France and Germany. In German services, where the midi- and the mini-jobs were widely used, the pressure on wages was significant.

In the manufacturing sector, in France, though labour costs increased less than the hourly labour productivity, relative unit labour costs levels have increased by 10 points in the second half of the 2000s over the preceding period. French manufacturing labour productivity, which was a driving force for French competitiveness, decreased relative to Germany. The dramatic rise in German hourly labour productivity in the second half of the 2000s relative to the modest increase in the level of compensation per hour explains the decrease by 8 points of the German unit labour costs.

(IV) Germany has introduced flexibility in its labour market that pushed wages down. This policy is consistent with an export-oriented policy, as it shores up price competition in the foreign market. German firms could accumulate large gross operating surpluses that were for the main part redistributed to their stakeholders. Gross returns could be maintained in France thanks to a lesser cost of investment relative to Germany. In the latter country, investment has been less booming in the second half of the 2000s than could have been expected, given the growth performance of this country.

German firms mainly fund their investment through self-financing while French ones do it through lending. They have benefited from higher outwards investment that accrues to their gross saving in the late 2000s. Eventually, Germany has a positive net acquisition of financial assets due to a large trade surplus and to the ageing of the German population, even in the 2009 crisis, while France has a negative one.

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APPENDICES

APPENDIX A: FORMALISATION OF THE ICOP METHODOLOGY FOR BINARY MANUFACTURING COMPARISONS

by M. Timmer (GGDC) in cooperation with B. van Ark (GGDC), N. Mulder(CEPII), L. Nayman (CEPII) and D. Ünal (CEPII)[14]

Basic structure

A major task in the ICOP approach to manufacturing is to derive industry-specific conversion factors on the basis of relative product prices. As a first step, unit values (uv) are derived by dividing ex-factory output values (o) by produced quantities (q) for each product i in each country

$$(1) \qquad uv_i = \frac{o_i}{q_i}$$

The unit value can be considered as an average price, averaged throughout the year for all producers and across a group of nearly similar products. Subsequently, in a bilateral comparison, broadly defined products with similar characteristics are matched, for example ladies' shoes, cigarettes, cheese and car tyres. For each matched product, the ratio of the unit values in both countries is taken. This unit value ratio (UVR) is given by

$$(2) \qquad UVR_i^{xu} = \frac{uv_i^x}{uv_i^u}$$

with x and u the countries being compared, u being the base country. The product UVR indicates the relative producer price of the matched product in the two countries.

Product UVRs are used to derive an aggregate UVR for manufacturing branches and total manufacturing in a stepwise weighting procedure. Next figure shows the four levels which are being distinguished: products, industries, branches and total manufacturing. These levels correspond with the levels distinguished in the International Standard Industrial Classification (ISIC rev 3). ICOP industries include four-digit ISIC industries, and ICOP branches consist of two-digit divisions. The total manufacturing output is the sum of branch output, which is the sum of industries' output value. The output value of an industry is the sum of the value of output of its products. In a binary comparison some of these products can be matched, but not all of them. This is because of lack of value or quantity data, difficulties in finding corresponding products, the existence of country-unique products, etc.

[14] This methodological note was written at the time of the second round of UVR at the Cepii (for the year 1997). It has been adapted by the authors for the present comparison.

Two UVR are derived at each level. A Laspeyres UVR is calculated by using base country weights and a Paasche by using weights for the other country. The Laspeyres and Paasche indices are combined into a Fisher index when a single currency conversion factor is required. It is defined as the geometric average of the Laspeyres and the Paasche.

Aggregation Step One Industry Level UVR

The industry UVR (UVR_j) is given by the mean of the UVR of the sampled products. Product UVR are weighted by their output value as more important products should have a bigger weight in the industry UVR:

$$\mathbf{(3)} \qquad UVR_j = \sum_{i=1}^{I_j} w_{ij} UVR_{ij}$$

with i=1,.., I_j the matched products in industry j; $w_{ij} = o_{ij} / o_j^M$ the output share of the i^{th} commodity in industry j in total matched output; and $o_j^M = \sum_{i=1}^{I_j} o_{ij}$ the total matched value of output in industry j. In bilateral comparisons the weights of the base country (u) or the other country (x) can be used. The use of base country value weights leads to the Laspeyres index. Substituting base country weights in (3) gives:

$$\mathbf{(4)} \qquad UVR_j^{xu(u)} = \sum_{i=1}^{I_j} w_{ij}^{u(u)} \; UVR_{ij}$$

with $w_{ij}^{u(u)} = o_{ij}^{u(u)} / o_j^{M\,u(u)}$; $o_j^{M\,u(u)} = \sum_{i=1}^{I_j} o_{ij}^{u(u)}$; and $o_{ij}^{u(u)} = u v_{ij}^{u} q_{ij}^{u}$, the output value of matched product i in country u at own prices. Using (1), (4) can be rewritten as

$$\mathbf{(5)} \qquad UVR_j^{xu(u)} = \frac{\sum_{i=1}^{I_j} uv_{ij}^{x} q_{ij}^{u}}{\sum_{i=1}^{I_j} uv_{ij}^{u} q_{ij}^{u}}$$

with $UVR_j^{xu(u)}$ indicating the Laspeyres index which is the unit value ratio between country u and x weighted at base-country quantities indicated by the u between brackets. For the Paasche index, weights of the other country quantities valued at base country prices are used in formula (3). This gives

$$\mathbf{(6)} \qquad UVR_j^{xu(x)} = \sum_{i=1}^{I_j} w_{ij}^{u(x)} UVR_{ij}$$

with $w_{ij}^{u(x)} = o_{ij}^{u(x)} / o_j^{M\,u(x)}$; $o_j^{M\,u(x)} = \sum_{i=1}^{I\,j} o_{ij}^{u(x)}$; and $o_{ij}^{u(x)} = u v_{ij}^{u} q_{ij}^{x}$, the output value of matched product i in country x at u prices. Using (1), (6) can be rewritten as:

$$\mathbf{(7)} \qquad \mathrm{UVR}_{\mathrm{j}}^{xu(x)} = \frac{\sum_{\mathrm{i=1}}^{\mathrm{I_j}} \mathrm{u}v_{\mathrm{ij}}^{x} \mathrm{q}_{\mathrm{ij}}^{x}}{\sum_{\mathrm{i=1}}^{\mathrm{I_j}} \mathrm{u}v_{\mathrm{ij}}^{u} \mathrm{q}_{\mathrm{ij}}^{x}}$$

with $\mathrm{UVR}_{\mathrm{j}}^{\mathrm{xu(x)}}$ indicating the Paasche index which is the unit value ratio between country u and x weighted at the quantities of the other country (x).

Aggregation Step Two Branch Level UVR

Branch UVRs (UVR_k) are calculated as a weighted average of industry UVR. Use of weights from the base country and the industry UVR at base country weights, gives the Laspeyres index for branch k.

$$\mathbf{(8)} \qquad \mathrm{UVR}_{\mathrm{k}}^{xu(u)} = \sum_{\mathrm{j=1}}^{\mathrm{J_k}} w_{\mathrm{jk}}^{u(u)}\, \mathrm{UVR}_{\mathrm{jk}}^{xu(u)}$$

with j=1,.., J_k the number of industries in branch k in which a product match has been made and $w_{jk}^{u(u)}$ the industry weight. UVR of industries with bigger output should have a higher weight to reflect the structure of the economy. However, this weight should also depend on the reliability of the industry UVR, being lower the lower the reliability, as unreliable UVR should have a limited influence on the higher level result. Therefore the set of industries J_k is split into two, $J_k(a)$ and $J_k(b)$ depending on their reliability. UVR of industries belonging to the first set ($J_k(a)$) are weighted with the total industry output at own prices: $o_{jk}^{T\,u(u)}$. The UVR from the other industries (belonging to $J_k(b)$) are weighted only by the output value of the matched products in the industry: $o_{jk}^{M\,u(u)} = \sum_{\mathrm{i=1}}^{\mathrm{I_j}} \mathrm{u}v_{\mathrm{ij}}^{u} \mathrm{q}_{\mathrm{ij}}^{u}$. Hence the weights are given by

$$w_{jk}^{u(u)} = o_{jk}^{T\,u(u)} / o_k^{M\,u(u)} \qquad \forall j \in J_k(a)$$

$$w_{jk}^{u(u)} = o_{jk}^{M\,u(u)} / o_k^{M\,u(u)} = \sum_{\mathrm{i=1}}^{\mathrm{I_j}} \mathrm{u}v_{\mathrm{ij}}^{u}\, \mathrm{q}_{\mathrm{ij}}^{u} / o_k^{M\,u(u)} \qquad \forall j \in J_k(b)$$

with $o_k^{M\,u(u)} = \sum_{J_k(a)} o_{jk}^{T\,u(u)} + \sum_{J_k(b)} o_{jk}^{M\,u(u)}$

To get the Paasche index, the output weights of country x valued at base prices is substituted. This gives

$$\textbf{(9)} \qquad \mathrm{UVR}_{k}^{xu(x)} = \sum_{j=1}^{J_k} w_{jk}^{u(x)} \mathrm{UVR}_{jk}^{xu(x)}$$

With:

$$w_{jk}^{u(x)} = o_{jk}^{T\,u(x)} / o_{k}^{M\,u(x)} \qquad \forall j \in J_k(a)$$

$$w_{jk}^{u(x)} = o_{jk}^{M\,u(x)} / o_{k}^{M\,u(x)} \sum_{i=1}^{I_j} \mathrm{uv}_{ij}^{u} \mathrm{q}_{ij}^{x} / o_{k}^{M\,u(x)} \qquad \forall j \in J_k(b)$$

With:

$$o_{k}^{M\,u(x)} = \sum_{J_k(a)} o_{jk}^{T\,u(x)} + \sum_{J_k(a)} o_{jk}^{M\,u(x)}$$

The split in the industry set is based on an assessment of the reliability of the industry UVR. Given the homogeneous character of the products belonging to an industry, it is expected that product UVR in an industry do not differ much. Hence, if the variation of the product UVR is high, this is deemed as an indication of unreliability. Also, reliability increases the higher the percentage of industry output covered by matched products. Therefore the coverage ratio is also taken into account when assessing the industry UVR reliability by using the so-called finite population correction in calculating the variance. The following decision rule is used: when the coefficient of variation is less than 0.1, the industry is assigned to $J_k(a)$, otherwise to $J_k(b)$:[15]

$$\begin{aligned} &\textit{if} \quad cv\left[\mathrm{UVR}_j\right] < 0.1 \quad \textit{then} \quad j \in J_k(a) \\ &\textit{otherwise} \qquad\qquad\qquad\quad j \in J_k(b) \end{aligned}$$

The coefficient of variation of industry j (cv_j) is measured as follows:

$$cv\left[\mathrm{UVR}_j\right] = \frac{\sqrt{\mathrm{var}\left[\mathrm{UVR}_j\right]}}{\mathrm{UVR}_j}$$

The variance of the industry UVR is given by the mean of the weighted deviations of the product UVRs around the industry UVR (see also Selvanathan 1991):

$$\textbf{(10)} \qquad \mathrm{var}\left[\mathrm{UVR}_j\right] = (1 - f_j)\,\frac{1}{I_j - 1} \sum_{i=1}^{I_j} w_{ij}\,(\mathrm{UVR}_{ij} - \mathrm{UVR}_j)^2$$

[15] This just replaces the original 25%-rule.

with I_j the number of products matched in industry j and with f_j the share of industry output which is covered by the matched products within an industry (O^M_j / O^T_j). ($1- f_j$) is the finite population correction (fpc).[16] The fpc ensures that with an increasing coverage of products, the variance goes down. This formulae can be applied to either the Laspeyres or Paasche UVR using output value weights of the base country for the variance of the Laspeyres, and quantity weights of the other country valued at base prices for the variance of the Paasche. To allocate an industry to one of the two sets, a decision is made on the basis of the (geometric) average variance for the Paasche and Laspeyres.

Aggregation Step Three Total Manufacturing UVR

The total manufacturing UVR is a weighted average of the branch UVR. Use of weights from the base country and the branch UVR at base country weights, gives the Laspeyres index for total manufacturing ($UVR^{xu(u)}$)

$$\textbf{(11)} \qquad \mathrm{UVR}^{xu(u)} = \sum_{k=1}^{K} w_k^{u(u)} \mathrm{UVR}_k^{xu(u)}$$

with k=1,.., K the number of branches and $w_k^{u(u)}$ the branch weight. For branch weights the total branch output $o_k^{u(u)}$ is used irrespective their reliability, so $w_k^{u(u)} = o_k^{u(u)} / o^{u(u)}$ with: $o^{u(u)} = \sum_{k=1}^{K} o_k^{u(u)}$.

To get the Paasche index, the output weights of country x valued at base prices is substituted. This gives:

$$\textbf{(12)} \qquad \mathrm{UVR}^{xu(x)} = \sum_{k=1}^{K} w_k^{u(x)} \mathrm{UVR}_k^{xu(x)}$$

With: $w_k^{u(x)} = o_k^{u(x)} / o^{u(x)}$ with: $o^{u(x)} = \sum_{k=1}^{K} o_k^{u(x)}$.

To have an indication of the reliability of the branch and total manufacturing UVR, the coefficient of variation for these UVRs can be calculated as follows. The sample variance of the UVR for total manufacturing is given by the quadratic output weighted average of corresponding branch UVR variances.

$$\textbf{(13)} \qquad \mathrm{var}[\mathrm{UVR}] = \sum_{k=1}^{K} w_k^2 \mathrm{var}[UVR_k]$$

In a similar vein, the estimated variance of the UVR in branch k is given by:

[16] The fpc is normally stated as one minus the number of products sampled divided by the total number of products in the population. Here I use the output share of sampled products rather than the number of products to account for the difference in importance of products.

$$\textbf{(14)} \qquad \mathrm{var}\left[\mathrm{UVR}_k\right] = (1 - f_k) \sum_{j=1}^{J_k} w_{jk}^2 \, \mathrm{var}\left[UVR_{jk}\right]$$

with f_k the share of branch output which is covered by the matched products within a branch. Branch variance is thus defined as a weighted average of the estimated variances of the industry UVR, $\mathrm{var}[\mathrm{UVR}_{jk}]$, corrected by the finite population correction (fpc).[17]

The database used for the France-Germany comparison

In the nineties, big changes have prevailed in the working out of European statistics. In several fields, EU countries have adopted the same classifications (Nace Rev.1) and harmonised the various national definitions of economic aggregates.

The statistical work has been organised along three steps:

- First, we computed output price parities that allow national production schemes to be compared in a bilateral price system in 2007. Prices have been assessed by unit values in national currency. Their calculation is achieved from French and German values and quantities available in the Prodcom database published by Eurostat;
- Second, we assessed real levels (in production price parity) of value added, hourly labour productivity and unit labour costs for the year 2007. Data for value added, employees, total persons engaged and compensation come from the *Structural Business surveys* published by Eurostat; Compensation rates are adjusted for wages of total employment (compensation rates of the employees times numbers engaged). Data for hours worked per employee are drawn from the *the EUKlems* database for the year 2007. They are then adjusted to be consistent with the business surveys data.
- the last step has consisted in assessing the evolution of the different variables in the period 1991-2010. The 2007 levels have been extrapolated backwards and forward using the evolution indices stemming from the *National Accounts* statistics, or when not available, from series published by EU-Klems.

[17] Note that therefore, the industry variance used for calculating the branch variance is given in (10) but without the fpc as this cannot be applied twice.

Table A.1: Matched output, intermediate and final UVRs, France-Germany, 2007

Prodcom code	Industry	Number of matches (1)	Matched output UVRs Q(F) (2)	Q(D) (3)	Fisher (4)	Coverage ratio (%) Q(F) (5)	Q(D) (6)	Fisher (7)	Representative ? (8)	Intermediate UVRs Q(F) (9)	Q(D) (10)	Fisher (11)	Final (Value added) UVRs Q(F) (12)	Q(D) (13)	Fisher (14)	Relative price level Germ.=100 (15)
	Total manufacturing	**847**	**0.97**	**1.03**	**1.00**	**26**	**27**	**26**	**yes**				**0.97**	**1.03**	**1.00**	**100**
	Food & tobacco	**182**	**1.27**	**1.33**	**1.30**	**54**	**54**	**54**	**yes**				**1.26**	**1.39**	**1.32**	**132**
15	Food products	182	1.27	1.33	1.30	57	61	59	yes				1.26	1.39	1.32	132
16	Tobacco products	-	-	-	-	-	-	-	no	1.27	1.33	1.30	1.27	1.33	1.30	130
	Textiles	**82**	**0.81**	**0.98**	**0.89**	**15**	**25**	**19**	**no**				**0.89**	**1.01**	**0.94**	**94**
17	Spinning and weaving	48	0.81	0.99	0.90	28	39	33	yes				0.81	1.01	0.90	90
18	Wearing apparel	25	0.88	1.05	0.96	3	6	4	no	0.97	1.03	1.00	0.97	1.03	1.00	100
19	Leather products	9	0.76	0.80	0.78	18	20	19	no	0.97	1.03	1.00	0.90	0.92	0.91	91
	Wood, paper & publishing	**80**	**1.06**	**1.17**	**1.11**	**26**	**29**	**27**	**yes**				**1.02**	**1.13**	**1.07**	**107**
20	Wood & wood products	21	0.99	1.05	1.02	30	31	30	yes				0.99	1.03	1.01	101
21	Paper & paperboard	27	1.17	1.32	1.24	58	50	54	yes				1.16	1.32	1.24	124
22	Publishing	3	1.25	1.35	1.29	8	8	8	no	1.06	1.17	1.11	1.11	1.20	1.16	116
36	Miscellaneous industries	29	0.83	0.92	0.88	22	33	27	yes				0.86	0.91	0.88	88
	Chemicals	**201**	**1.11**	**1.17**	**1.14**	**23**	**25**	**24**	**no**				**0.99**	**1.07**	**1.03**	**103**
24	Chemicals	102	1.16	1.26	1.21	17	18	17	no	0.97	1.03	1.00	0.95	1.05	1.00	100
25	Rubber & plastic prod.	62	1.03	1.06	1.05	39	42	41	yes				1.05	1.06	1.06	106
26	Other non mineral pr.	37	1.15	1.21	1.18	23	24	23	no	0.97	1.03	1.00	1.03	1.12	1.08	108
	Metal pr. & machinery	**220**	**0.83**	**1.15**	**0.98**	**18**	**19**	**19**	**no**				**0.99**	**1.09**	**1.04**	**104**
27	Basic metals	63	1.17	1.27	1.22	39	37	38	yes				1.17	1.29	1.23	123
28	Metal products	101	1.03	1.17	1.10	16	22	19	no	0.97	1.03	1.00	0.98	1.11	1.04	104
29	Machinery	56	0.40	0.85	0.59	9	9	9	no	0.97	1.03	1.00	0.93	1.03	0.98	98
	Electrical pr. & electronics	**69**	**0.59**	**0.92**	**0.74**	**15**	**10**	**13**	**no**				**0.95**	**1.02**	**0.98**	**98**
30	Office mach., computers	-	-	-	-	-	-	-	no	0.97	1.03	1.00	0.97	1.03	1.00	100
31	Electric machinery	37	0.38	0.74	0.53	15	13	14	no	0.97	1.03	1.00	0.91	1.00	0.96	96
32	Radio, TV& com. Equip.	4	0.88	0.99	0.93	11	8	9	no	0.97	1.03	1.00	0.97	1.03	1.00	100
33	Med., precision & optic. inst.	28	1.02	1.34	1.17	21	10	15	no	0.97	1.03	1.00	0.97	1.03	1.00	100
	Transport equipment	**13**	**0.65**	**0.66**	**0.65**	**17**	**34**	**24**	**no**				**0.74**	**0.70**	**0.72**	**72**
34	Motor vehicles	10	0.65	0.66	0.65	23	37	29	yes				0.64	0.65	0.65	65
35	Other transport equipment	3	0.70	0.76	0.73	1	1	1	no	0.97	1.03	1.00	0.97	1.02	1.00	100

Source: Eurostat-Prodcom database; authors' calculations.

APPENDIX B: ATYPYCAL JOBS

Box 1: The low-cost jobs

In Germany, midi-jobs with a wage of 401 to 800 euros concerned 1,318,923 jobs (three quarters are women, and mainly in retail trade) in December 2010. In addition, the 7,384,140 people that have landed the so-called mini-jobs (under 400 euros), were under-employed, and were paid low wages (under 400 euros) in December 2010 (+1% on the preceding year).[18] They were more particularly concentrated in retail trade, hotels and catering industries, health and social services, and somewhat in the manufacturing sector (the food and metal industries). The machinery and chemical industries use them far less. All in all, Midi- and mini-jobs figures amount to 26% to 31% of the total registered employees.[19]

The reforms in the labour market spawned by an active policy in Germany were followed suit by France from 2005 on.[20] These contracts were meant for cutting down long-term unemployment and for integrating the people who were on welfare², and took the form of exemptions on employers' contributions. From 2007 on, France put the emphasis on the merging of the labour agencies, training of the unemployed, and introduced the "Revenu de solidarité active". The four types of atypical jobs absorbed 464,500 employees, and all forms of employment support concerned 1,923,000 people in 2007 (Dares, 2010; Dares, 2011a). According to the Dares (2011b), one fourth of the employed young people were hired on this type of jobs (emploi aidé).

France and Germany have nonetheless earmarked less spending on labour market policies from the end of the nineties to 2009 (see Table B.1). Large amounts were distributed to the new states in Germany to alleviate unemployment, but these numbers are decreasing. In France, 33% of spending in 2007 was dedicated to active policies, carried out for the purpose of boosting employment vs. 23% in Germany, where the income support was more important than in France (see Table B.2).

In addition to the active labour market policies, an extensive use of working time accounts, in which employees had stored overtime worked over the 2005-2008 growth period in Germany, supplemented by short time work schemes of the Federal Labour Agency, together with the firing of temp workers, have contributed to buffering the economic downturn in 2009.

[18] According to Jacobi and al. (2006), employment in mini-jobs and midi-jobs did not benefit the unemployed, so that the transfer of already employed people into this earnings segment cannot be ruled out.

[19] That is a kind of approximation since the mini jobs are not integrated in the registered employees.

[20] In France, the 2005 social cohesion law has enforced four new contracts: the employment initiative contract (contrat initiative emploi) and the minimum earned-income integration contract (contrat d'insertion-revenu minimum d'activité) in the market sector, as well as the employment assistance contract (contrat d'accompagnement dans l'emploi) and the contract for the future (contrat d'avenir) in the non market sector.

Table B.1: Spending on labour market policies, transfers to employers, in % of GDP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
France	2.39	2.56	2.78	2.86	2.85	2.46	2.14	1.99	1.83	1.58	1.37	1.73
Germany	3.08	3.20	3.39	3.52	3.60	3.06	2.73	2.34	2.07	1.48	1.29	1.81

Table B.2: Active labour market policy measures spending, in % of total spending (active + support)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
France	37	38	39	37	33	29	27	27	29	33	32	30
Germany	28	32	33	33	31	27	25	21	23	23	27	25

Reading: Active labour market policy (LMP) measures: vocational training, job rotation & job sharing, employment incentives, supported employment and rehabilitation, direct job creation, start-up incentives. Support: out-of-work income maintenance and support, early retirement. Total=Active LMP + support + services of the Public Employment Services.

Source: Eurostat database: GDP:Cepii, Chelem database. Authors' calculations.

Box 2: Temporary work

In countries like France and Germany, where social laws are stringent, some circuitous ways were contrived in order to mitigate firing costs: a cheaper incoming labour force with fixed-term contracts or atypical forms of work (as they are named in Germany), less hours worked, fewer permanent contract workers.

The way to gain wage compression in the manufacturing sector in Germany, where high wages are paid, consisted in hiring temporary workers on a large scale. In manufacturing, employment was rather more sustained than in France, and temporary workers provided by the staffing agencies played a central role in that trend.

Since 2004 in Germany, employers can borrow employees from the staffing agencies for as long as they want (it was limited to two years before). The argument to loosen the labour market regulations was to stop German companies from outsourcing more their production from abroad and restore their competitiveness.[21]

As Figure B.1 below shows, the number of temp workers has been multiplied by 2.5 in Germany from 2000 to 2010. They represented about 2.9% of the labour force in 2010. Retiring workers with permanent contracts tended to be replaced with temp workers in the 2000s, because they are supposed to cost less and are not always covered by the collective bargaining agreements.[22] Some firms even set up staffing agencies to rehire their permanent workers. The trade unions have then taken stock of the risk of creating a shadow labour market, and called for the extension of the collective agreements to these workers. Also, the introduction of a mandatory minimum wage could limit their precarious status.[23]

France is another main global market for temporary work (see Figure B.2).[24] Like Germany, it was quite high in 2007 and temp work represented 3% of employees in 2010. It is chiefly concentrated in the manufacturing sector, which employs a rather cheap, young male and somewhat unskilled labour throughout the 2000s. Like in Germany, the law of January 2005 (*loi de cohésion sociale*) extended the possibilities of placement by the staffing agencies of workers in need of training or of unemployed workers (receiving the minimum income for example). But unlike Germany, the resort to a temp worker remains strictly limited.[25]

In the end, temporary workers in both countries could provide a cheaper labour to the economy, but not necessary to the firm. Indeed, the firm pays the staffing agency a fee for its services, and the agency in turn compensates the employee at a lower rate. Temp work is only one means to have lower labour costs, besides the low-cost jobs.

[21] About half of the production is already carried out abroad according to the input output figures published by Destatis, the German statistical institute.

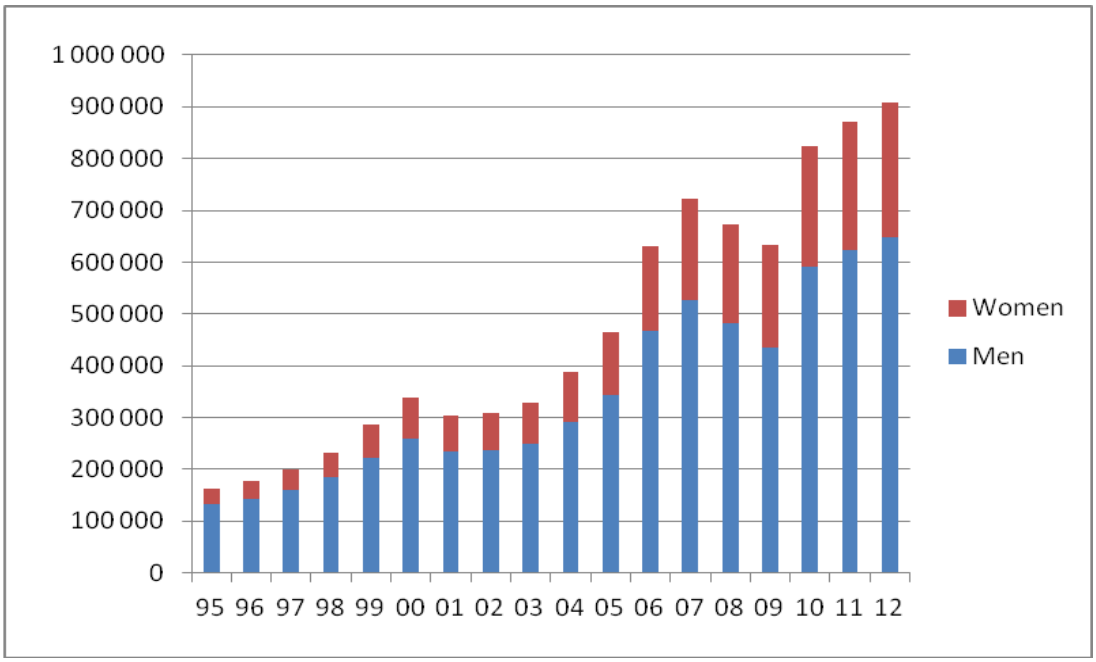
[22] As argued in Nielen et al. (2011a, 2011b), the fee paid to the staffing agency including overheads can be quite high, so that the cost of hiring a temp worker is about the same as the one for a permanent worker. It could be that personal costs are sometimes capped in big firms, so the recourse to temp work could loosen this constraint and it also brings a lot of flexibility, as the relationship with the worker can easily be put to an end. Moreover, the firm may depart from the equal pay and equal treatment principle, when the staffing agency hires a new worker or gets itself a collective agreement.

[23] Trade unions recommend to set the minimum wage at 7.80 euros per hour in West Germany and 6.90 euros in East Germany. Nonetheless, some trade unions stay cautious as a legal minimum wage could interfere with collective bargaining. Up to now, ten industries have minimum wages, negotiated in the framework of binding collective wage agreements (Spiegel.de. 11.11.2011. How Merkel warmed to a German minimum wage?).

[24] In France too, the use of temp workers was viewed as a fuse to the economic woes in the country. Hassan (2011) shows that 135,000 temporary work contracts were terminated in 2008, and again 97,000 ones were offered in 2010.

[25] It remains limited in continuous time to one and a half year, workers have the same rights as fixed contract workers, and they can't replace workers on strike; temporary work agencies also pay a higher tax for training than the other firms, etc.

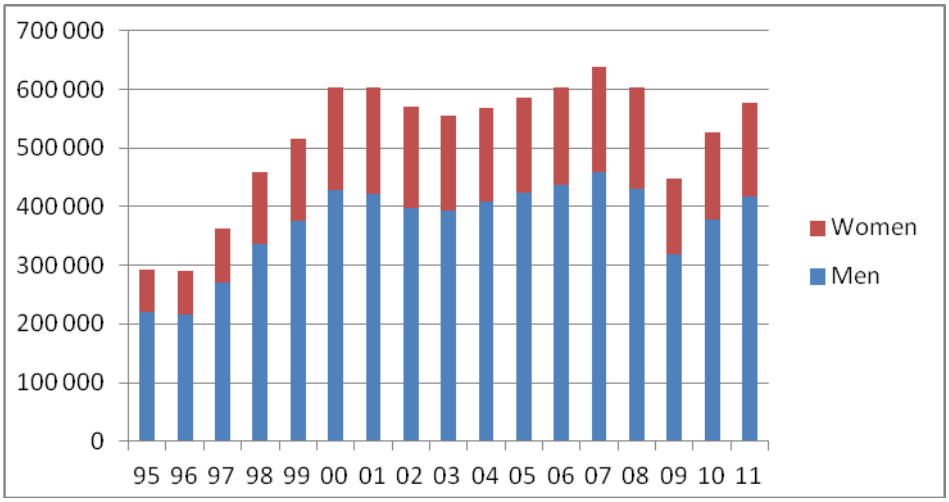
Figure B.1: Temporary workers in Germany



Reading: End-of-year stand; 2012: June.

Source: Statistik der Bundesagentur für Arbeit, Arbeitnehmerüberlassung published on January 21, 2012.

Figure B.2: Temporary workers in France, full time equivalent



Source: Dares (2011d)

APPENDIX C: HOURS WORKED

Average hours worked result from the legal working time and part time whatever the status of the job. Actual hours worked allow hourly labour productivity and unit labour costs to be calculated, and in turn, they are built in the explanation of the diverging prices between France and Germany. Again, some methodological issues arise as to the computation of hours worked.[26]

The part-time/full time employment ratio computed on OECD figures (2011)[27] has increased from 22% in 2000 to 29% in 2009 in Germany and displays a rather great stability throughout the 2000s at about 17% in France.

Part-time has become a common practise in Germany, but part-time encompasses all kinds of status, from apprenticeship and mini-jobs to typical contracts. German employment growth has built on part-time throughout the 2000s, even though working full-time is more the rule (94%) than working part-time (6%) in the German manufacturing sector (excluding temporary work). These shares reach 78% and 22% in services in Germany in 2010.

In France, part-time has also increased more quickly than full time work but full-time in France is more the rule for all age brackets.[28] In France, the proportion of those working full-time / part-time is the same as in Germany in both sectors of the economy. Part-time was favoured, as in Germany, by the development of services and the increasing participation of women in the labour market. Besides, active labour market policies as the rebates granted on the employers' contributions from 1992 on for part-time in France, have contributed to stoke up part-time work, namely in education, health services and trade (Dares, 2007).

Part-time work (again whatever the status of the contract), or part-time unemployment in time of economic crises (Kurzarbeit), have concurred to maintaining working hours low in Germany relative to France.

In Germany, short time work schemes were much resorted to in 2009 (1.143 million) the second highest level since 1991 (1.761 million), the year which stands for the reunification shock. In 2009, they resulted into a dramatic decrease in hours (see figure 8). It was said that scarce skilled labour could be held back thanks to these measures (ILO, 2011).

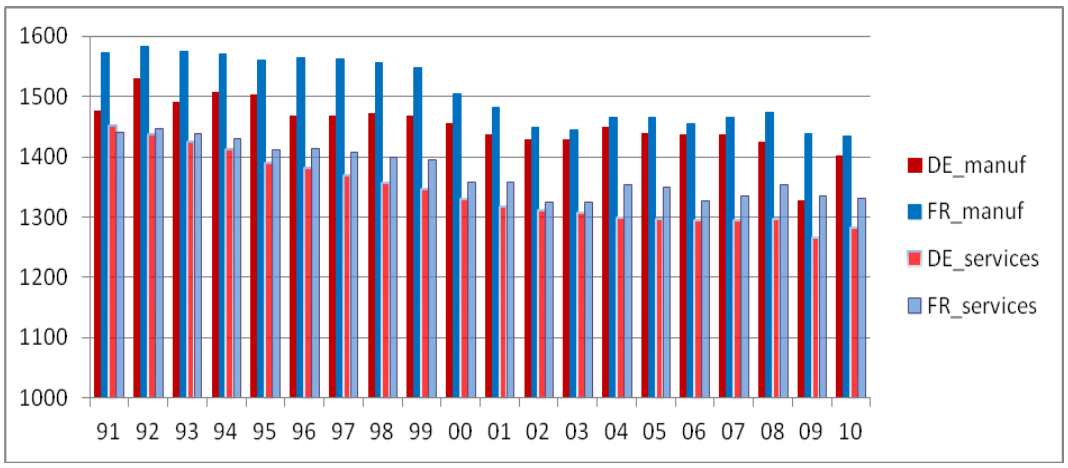
[26] Limiting the field to employees working only full time as it is done in the COE-Rexecode study, can introduce biases in international comparisons due to a different breakdown of hours between the actual working time of those working full-time, and part time (rate and actual hours worked) across countries. For example in France, the actual working time of full-time workers is weaker than in other European countries, the part-time rate is also weaker (fewer people work part-time) but part-time employees work longer (about 60% of the full-time hours). For a review of the differences of hours computation by the national accounts and the Labour Force Surveys collected by Eurostat, see Chagny (2012). On part-time work see box 2 in appendix.

[27] OECD website. These figures are partly published in the appendix of E*mployment Outlook*. The definition of part-time is hours worked less than thirty hours in the week.

[28] For more details, see the Eurostat database.

In France as well, the termination of temporary contracts and to a lesser extent part-time unemployment were also used by firms to face the crisis (see Appendix B). Another way to alleviate the rigidities in the labour market for French firms with more than 300 employees, is the use of the "strategic workforce planning" (*Gestion prévisionnelle de l'emploi et des compétences*, GPEC), which is negotiated with trade unions every three years. Firms resort to the GPEC in order to adapt the workforce to their prospects and strategic choices, through for example geographic and occupational mobility, and vocational training.[29]

Figure C.1: Actual working hours per employee in manufacturing and services[2]



Reading: DE_stands for Germany, FR for France, and manuf for manufacturing. Manufacturing includes here energy (Nace Rev.1 23). Actual working hours take into account the legal working time diminished by holidays, sick and maternity leave among others. They are computed by dividing the volume of hours worked by full-time equivalent employees.

Source: Insee and Destatis, National Accounts.

Both countries resort to overtime work. Eurostat labour force surveys show that full-time employees for all sectors of the economy work on average 41.7 hours a week in Germany against 41 hours in France in 2008, though collective bargaining agreements or law limit the working time in both countries.[30] In France, employees have resorted to overtime work in the manufacturing sector (Bessiere et al., 2009), even more since the law on overtime work related to purchasing power has been passed (Loi TEPA).[31] Overtime work has increased by 43% over the first three quarters of 2011

[29] Renault, the French car manufacturer also offered as of 2011 to fund 75% of the wages of its workers who will retire in the three next years in exchange of their staying at home (pré-retraite), in order to hire younger people and thus counter the effects of the ageing of its workers.

[30] 35 hours a week in France since 2000. In Germany, the *average collectively agreed weekly working time* in the metalworking industry was for example 35 hours in 2010 but 38.7 hours in the banking industry according to the European Industrial Relations Observatory On-Line.

[31] Since 2002, some measures have circumvented the law on the statutory working time (the 35 hour work-week) in France. More overtime hours have been allowed in the quotas, the Fillon law as of 2003 enabled collective agreements to turn round the 35 hour work-week, the Ollier-Novelli law from 2005 allowed the storage of the days compensating the working time reduction (RTT) on a time account, the Tepa law (work, employment and purchasing power) from 2007 devised the exemption of social security contributions and taxes on overtime work.

relative to 2007 on average (Dares, 2011c), and by 60% in market services over the same period (more particularly in catering & hotels, and transport).

Eventually, in terms of annual actual working hours per employee, French employees work more than Germans in both sectors of the economy throughout the period (Figure C.1). Nonetheless, over the whole period 1991-2010, hours worked per employee in Germany have decreased more in services than in France, due chiefly to a downsizing of staff in the Eastern Länder. Hours worked per employee have declined more in manufacturing in France than in Germany on average but over 2005-10 (Table C.1).

Table C.1: Actual working hours per employee annual growth, %

	DE_manuf	FR_manuf	DE_services	FR_services
1991-99	-0,07	-0,20	-0,94	-0,41
2000-05	-0,22	-0,52	-0,49	-0,13
2005-10	-0,52	-0,43	-0,22	-0,27
1991-2010	-0,27	-0,48	-0,65	-0,42

Source: Insee and Destatis, National Accounts; authors'calculations.

Lower hours worked, chiefly over the late 2000s in Germany, can be explained by practises related to temporary work and low cost jobs. Nonetheless, the shift to lower labour categories was combined with the shortfall in skilled labour in Germany.

APPENDIX D: UNIT LABOUR COSTS

Table D.1: Decomposition of unit labour costs in France and Germany

		Germany				France			
		1991-99	2000-04	2005-08	2009-10	1991-99	2000-04	2005-08	2009-10
					Manufacturing				
VA	€ Million	360,654	394,014	453,419	397,269	171792	202,217	213,640	199,303
LH	Million hours	13,198	11,570	10,987	10,319	7, 603	6,756	6,146	5,543
VA/LH	euros	28	34	41	38	23	30	35	36
W/LH	euros	23	28	31	33	18	22	26	28
ULC	euros	0.82	0.83	0.75	0.92	0.76	0.72	0.72	0.78
					Services				
VA	€ Million	1,177,715	1,373,380	1,468,771	1,520,292	1,011,010	1,181,998	1,289,426	1,307,218
LH	Million hours	37,067	39,056	39,913	40,577	26,500	28,444	29,667	29,849
VA/LH	euros	32	35	37	37	38	42	43	44
W/LH	euros	18	21	22	23	20	24	28	30
ULC	euros	0.57	0.60	0.60	0.62	0.52	0.59	0.64	0.69
					Total				
VA	€ Million	1,754,141	1,970,581	2,130,639	2,116,264	1,317,742	1,532,855	1,660,472	1,654,063
LH	Million hours	58,098	56,766	56,406	56,468	38,232	38,915	39,798	39,492
VA/LH	euros	30	35	38	39	34	39	42	42
W/LH	euros	19	22	24	25	18	22	26	28
ULC	euros	0.63	0.64	0.62	0.65	0.52	0.57	0.62	0.67

Reading: VA is value added at chained prices to 2007 (2007=Structural Business Survey), LH is total hours worked, VA/LH is hourly labour productivity, W/LH is the hourly compensation rate , ULC are unit labour costs.

Source: Insee and Destatis; authors' calculations.