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An Institutional Perspective

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European Labor Share Dynamics: An Institutional Perspective¹

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Abstract

This paper studies the evolution of the labour share in the EU countries and the US for the period 1960 to 1998. Counter-cyclical movements of the labour share predicted by a dynamic labour demand model with dismissal costs characterise the data. Moreover, there is evidence suggesting that the tighter employment protection legislation in a given country, the higher the variation in the labour share for similar fluctuations in business conditions. An equilibrium relationship between the labour share and a measure of business cycle fluctuations seems to hold during the first two decades of the period studied. In most countries under study, however, we find downward shifts of the equilibrium schedule occurring primarily in the first part of the 1980s. In our interpretation, these shifts probably reflect the sharp reduction in union power that is documented for most European countries during this period.

1 Introduction

The present paper studies the determinants of labour demand in a comprehensive framework. The focus is on the analysis of the evolution of the labour share in the EU countries during the last forty years. This approach is motivated by the fact that the labour share provides a compact way of looking at labour demand which directly controls for the role of factors such as wages, labour-embodied technological progress, and capital (or, alternatively, real interest rates). Recently, Blanchard (1997, 1998, 2000), Caballero and Hammour (1998), Batini et al. (2000) and Bentolila and Saint-Paul (2001) have also studied the behaviour of the labour share, examining its relationship to unemployment, income distribution, and inflation.

In details, the paper analyses the evolution of the labour share during the last four decades in the EU countries and the U.S., taking the latter as a benchmark for comparison. We first examine the evidence provided by the data we use (section 2), and then focus on the role of labour market institutions which are commonplace in Europe, such as employment protection legislation and union bargaining, in explaining the short- and medium-run movements of the labour share (section 3). Finally, we interpret the observed evolution of the labour share in the context of our reference theoretical framework (section 4). Section 5 concludes. The main findings of the present study can be summarised as follows:

- There is evidence of important interactions between labour markets' institutional features, such as dismissal restrictions and union power, and the dynamics of the labour share. In particular, theory predicts that dismissal restrictions should imply counter-cyclical movements of the labour share in the short and medium run, and the data do display a negative relationship between the labour share and business fluctuations in most countries. This relationship appears quite stable during the 1960s and 1970s, and more pronounced in countries with more stringent dismissal costs.
- In continental Europe, the previously stable relationship between labour share and cyclical conditions appears to break down in the first half of the 1980s. In the following years, a similar relationship reappears, but the labour share fluctuates around a lower level. This downward shift may be a consequence of reforms in labour market institutions, leading to a reduction in the bargaining power of workers in the late 1970s and early 1980s. We support this interpretation by documenting the evolution of the relevant institutions in selected countries.

2 The Labour Share: An Empirical Perspective

2.1 The Dynamics of the Labour Share in European Countries

Theoretically, the labour share in the product of a sector is defined as the total compensation received by workers and self-employed working in the sector divided by the total product of the sector. Due to a lack of reliable data regarding the compensation of the self-employed, we have assumed throughout this paper that this group's average wage equals the average wage of the employees.³ Thus, our labour share measure in sector i is:

$$LS_i = \frac{W_i + \left(\frac{W_i}{L_i} * N_i \right)}{Y_i}$$

where LS_i is the labour share in sector i , L_i and N_i denote the total number of employees and self-employed respectively, W_i is the total compensation of dependent employees, and Y_i denotes nominal value added in sector i .

³ For a discussion of measurement issues see Gianmarioli et al. (2001)

We would like to initiate our discussion of the evolution of productivity, employment and real wages by taking a careful look at the time dynamics of the labour share and of its components. Standard growth theory predicts that real wages and productivity grow at the same rate and that the growth rate of output is given by the sum of employment growth, which is itself determined by the growth rate of the population, and the growth rate of productivity. Under these conditions the labour share is constant over time and this implication is actually regarded as one the “stylised facts” of economic growth. This is the first aspect that we investigate in the next table, taking as a reference the average labour share in the main EU economies.

The Evolution of the Labour Share in European Countries ⁽¹⁾

		1960s	1970s	1980s	1990s
Agriculture	Mean	86.08	75.21	79.37	79.37
	Coef. of Variation	47.05	28.94	29.51	25.15
Industry	Mean	61.58	65.30	60.57	58.01
	Coef. of Variation	6.39	10.23	13.17	15.44
Construction	Mean	68.32	77.55	78.65	75.74
	Coef. of Variation	5.52	13.63	12.72	14.17
Tradable Services	Mean	57.83	56.91	56.12	53.61
	Coef. of Variation	13.64	11.17	12.81	9.95
Government	Mean	95.92	95.26	93.76	92.69
	Coef. of Variation	1.16	3.30	4.13	6.11
Business Sector	Mean	65.24	64.90	62.53	58.60
	Coef. of Variation	5.85	5.29	6.16	4.57
Total Economy	Mean	69.64	69.70	67.58	63.96
	Coef. of Variation	6.07	6.63	6.53	4.35

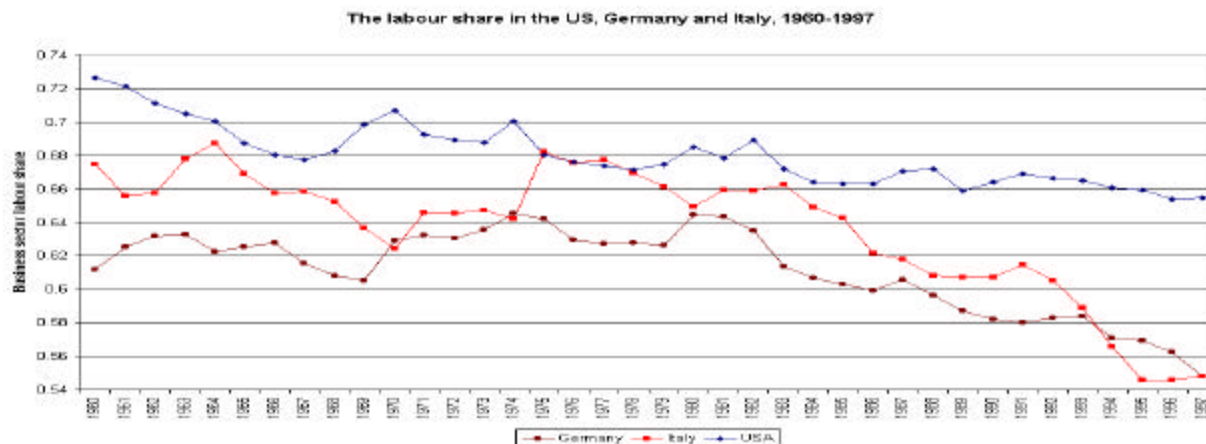
⁽¹⁾ The averages include all countries for which the complete series of the labour share was available: Belgium, Germany, Denmark, Spain, France, United Kingdom, Ireland, Italy, Luxembourg, Netherlands and Portugal.

The first aspect that can be highlighted from the evolution of the labour share in the last four decades for the main EU countries is that the constancy of this measure, which is predicted by standard growth theory, does not seem to hold. Instead, from an aggregate point of view, the dynamics of the labour share are characterised by a continuous fall in the last two decades, after twenty years of relative constancy. This fall is especially pronounced in the 1990s. While in the 1960s, the share of income attributed to labour represented almost 70 per cent of total output, in the 1990s it had fell to a 64 per cent, although two thirds of this reduction were materialised only in the last few years. The reduction in the coefficient of variation points to a slow process of convergence in the levels of the labour share across EU countries. Moreover, since the fall in the income share of labour was generalised across countries, this process of convergence indicates that this reduction was more pronounced in those countries which initially had a level of income attributed to labour above the mean.

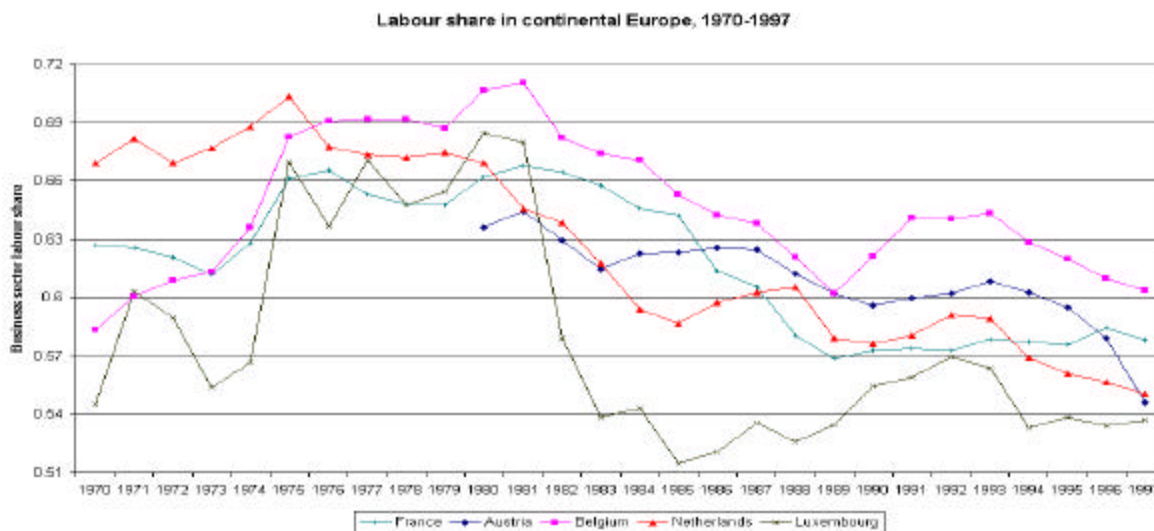
Concerning the evolution of the labour share at the sectoral level in the EU economies, important differences can be highlighted. The government sector is characterised by a labour share close to one. This is well known, since output in this sector is basically measured through inputs use. Similarly high is the level of the share in agriculture, once the series have been corrected for the compensation of self-employed. Finally, the industrial sector is characterised by a labour share below that of the economy, but above the tradable services. This probably reflects the fact that average wages are higher in industry than in services, due to institutional aspects

such as higher unionisation. With respect to the evolution over time, a hump-shaped pattern is clearly observed in the industrial sector of the main European economies, with a peak in the 1970s. This is not the case however in the service sector, where the labour share falls steadily throughout the period. The relative size of this sector, accounting for about two thirds of total employment, explains the reduction of the labour share at the aggregate level outlined above. Finally, we observe that the convergence highlighted at the aggregate level hides important disparities across sectors. Indeed, a process of divergence in the levels of the labour share across countries during the last decade can be observed in all sectors except agriculture (where the coefficient of variation declines continuously) and tradable services. This highlights the importance of incorporating a sectoral perspective when studying the dynamics of the labour share across countries.

Once the evolution of the labour share in the EU area for the total economy and its main sectors has been sketched, we start our analysis by describing the evolution of the labour share in each of the countries that are object of study. The graph below plots the time path of the business sector labour share⁴ for the United States, Germany and Italy.

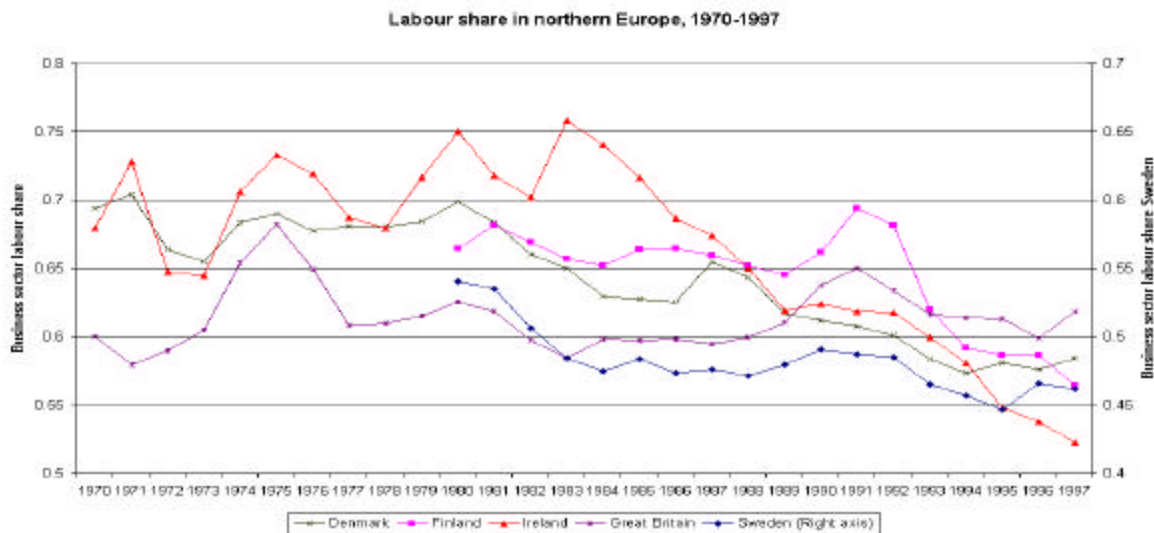


It is obvious from the picture that the labour share behaves differently in the US than in the two European economies and this impression is confirmed when one looks at other countries in Europe. While almost constant with a slightly negative but flattening trend for the United States, the labour share in Italy and Germany rises to its highest levels around 1975 and 1980 respectively, and then reverses direction, embarking on a sharply negative trend that continues until 1997. Some cyclical fluctuations can be observed in all three countries, but focusing on the long-run trends it clearly seems that one of the stylised facts of economic growth - the constancy of the labour share - is not valid for the European economies.



Grouping the various EU-countries by geographical position we observe similar developments in almost all EU-countries: we firstly examine continental Europe, then northern Europe and finally southern Europe.

Again in France, the Netherlands, Belgium and Luxembourg the labour share reaches its peak in the period from 1975 to 1980 and trends downwards from then on. Austrian data is not available for the pre 1980-period, but -the fall in the labour share from the 1980's onward is confirmed also for this country.



Apart from Great Britain, whose labour share fluctuates considerably around a stationary level, the downward trend of the labour share since the beginning of the 1980's after two decades of relative constancy or mild increase, is confirmed also for the northern countries. This development is especially pronounced in Ireland, which has seen a fall in the labour share of almost 25 percentage points since its peak in 1981. It should be noted that the Swedish labour share is measured as being especially low in the business sector as opposed to the government sector, where the measure lies even above 1, indicating large transfers from labour in the private sector to labour in the government sector.



⁴ In this section we focus on the dynamics of the business sector labour share, which excludes the government sector and agriculture. As discussed above, the labour share in the government sector is roughly stable and close to one throughout the period.

Also in southern Europe the stylised image of a labour share that is rising initially, but then reaches a peak and trends downward since 1980 can be found. Portugal has seen especially sharp changes in the labour share well documented and discussed in Blanchard and Portugal (2001). Italy's labour share peaks early around 1975 and has since then witnessed a decline in the labour share of about 10 percentage points. A similar decline happened in Spain from 1980 to 1984, although the labour share has been stable since then. Major changes of statistical definitions in Greek data only allow us to have a comparable series from 1991 onwards.

As discussed above, the labour share measure reported here only takes into account the private sector of the economy. Including the government sector does not change the main insights to be gained from the graphs.

The graphs above have shown that for the total business sector most European economies share a common pattern of development of the labour share, which is different from the one observed in the US and Great Britain. In order to obtain some more insights into the cause of these discrepancies, it will be necessary to look at the various components of the total economy labour share. In an extended report, Giammarioli et al. (2001) constructed a sectoral decomposition of the labour share and a decomposition of this variable in its main components. In particular, the sectoral decomposition provides some information on the development of sectoral labour shares in isolation, while the componentwise decomposition of the labour share gives a new perspective on which component of the labour share (real wages or productivity) has contributed most to its dynamics. Further, the sectoral decomposition is conducted only with respect to the two largest sectors of the economy, industry and services, which together account for roughly 60%-80% of employment and 70%-85% of output in each of the countries respectively.

3 Explaining Movements in the Labour Share

3.1 Neoclassical Interpretations: The Role of Technology

One way of explaining movements in factors shares in general and labour share in particular, both across countries and over time, is considering the interactions between relative prices and capital-labour ratio implied by existing technologies, which are summarised by the capital-labour elasticity of substitution.

In the standard neoclassical growth model the technology is expressed using a Cobb-Douglas production function. Therefore the implied elasticity of substitution is equal to one and the factor shares are constant regardless movements in capital-labour ratio and/or technological progress. In what follows we depart from the unitary elasticity assumption considering the more general CES production function and we study the interactions between different values assumed by the elasticity of substitution, the capital-labour ratio as well as the technological progress, underlying the effects of such interactions on labour share movements.

A general specification of a CES production function is given by the following expression:

$$(1) \quad Y = \left[\mathbf{a}A(t)L^{-r} + (1-\mathbf{a})B(t)K^{-r} \right]^{\frac{1}{r}}$$

where the variables have the usual meaning and $A(t)$ and $B(t)$ represent labour and capital-augmenting technological progress respectively. Unfortunately, as demonstrated by Diamond et al. (1979), it is empirically impossible to identify a non-unitary elasticity of substitution and a biased technological progress. In order to proceed giving meaningful insights it is necessary to impose some restriction on expression (1) above. The most common a priori restrictions are neutral technological progress ($A(t)=B(t)$) or labour-augmenting technological progress ($B(t)=0$). In what follows we concentrate on the second restriction because is compatible with balance growth and seems to be supported by the empirical evidence on technological progress in the industrialised countries over the last decades.

The links we are interested in can be better understood looking at the Taylor approximation of (1) with the labour-augmenting technological progress assumption as developed by Kmenta (1967):

$$(2) \quad \log Y_t = a \log(A_t L_t) + (1-a) \log K_t - \frac{1}{2} \mathbf{ra}(1-a) \left[\log \left(\frac{K_t}{A_t L_t} \right) \right]^2$$

where the elasticity of substitution between capital and labour can be derived as $s=(1/1+?)$.

Under constant returns to scale and the assumption that wages equalise the marginal product of labour, the expression for the labour share can be written as:

$$(3) \quad LS_t = \frac{wL_t}{Y_t} = \frac{\partial Y_t}{\partial L_t} \frac{L_t}{Y_t} = \frac{\partial \log Y_t}{\partial \log L_t} = a + \mathbf{ra}(1-a) \log \left(\frac{K_t}{A_t L_t} \right)$$

From expression (3) it is easy to derive the evolution through time of the labour share:

$$(4) \quad \dot{LS}_t = \mathbf{ra}(1-a) \left[\dot{K}_t - \left(\dot{A}_t + \dot{L}_t \right) \right]$$

where the dots denote variable growth rates.

From (4) the interaction between the capital-labour ratio (in efficiency units) and the elasticity of substitution in determining labour share movements is clear. In detail, with an elasticity of substitution greater than one ($? < 0$) the labour share increases over time if capital grows slower than labour in efficiency units and decreases if capital grows faster than efficient labour. On the other hand, with an elasticity lower than one ($? > 0$) the labour share moves up if the capital-labour ratio is increasing and moves down in the opposite case (labour in efficiency unit grows faster than capital).

The discussion above implies two alternative explanations for the decreasing level of labour share in the past 15 years in continental Europe: one relying on an elasticity of substitution greater than one and the other with an elasticity lower than one. With an elasticity of substitution between capital and labour greater than one, the downward pattern of the labour share is explained by the adjustment of the capital-labour ratio with a shift from labour to capital. This shift is due to the increasing gap between real wages and labour productivity as a consequence of a decreasing rate of technological progress. The alternative explanation assumes an elasticity of substitution lower than one (in accordance with the estimates of Cellini et al., 2001) and an increasing user cost of capital. This increase in the cost of capital would have determined a switch from capital to labour with a reduction in the capital-labour ratio (in efficiency units). Blanchard (2000), using a simple neoclassical model, has simulated both hypotheses. The first scenario (with elasticity equal to 4) is able to explain just 10% of labour share decline while the second one (with elasticity equal to 0.25) is able to explain about 40% of it. Hence, even in the best case, more than 60% of labour share movements remain unexplained.

Related to this, it is worth pointing out that the technical relationship between the elasticity of substitution and the capital-labour ratio not only gives an incomplete explanation of the labour share decline in continental Europe in the last 15 years but is also unable to clarify the hump-shaped pattern of the labour share over the past 30-40 years. Given a constant elasticity of substitution over the period, only a declining trend in the capital-labour ratio could account for the dynamics of the labour share. This evolution does not seem to be confirmed by the evidence.

To sum up, using technological explanations alone cannot reproduce the labour share dynamics of continental European countries: this suggests that other factors may be relevant and may interact with the technological features of the economies. According to this conclusion, in the following sections we will report a detailed analysis of the role of institutions (especially labour market regulations) in the explanation of the labour share movements in Europe.

3.2 The Role of Institutions: The Short Run

3.2.1 Adjustment Costs

We saw above that in the European countries the labour share has fluctuated considerably over time, contrary to the Kaldor facts. In what follows, we propose a theoretical explanation for these movements, based on the role of adjustment costs. In general, in the absence of frictions in the labour market, workers are paid according to their marginal productivity. However, in the presence of institutions in the labour market aiming to protect workers' jobs, this is no longer the case. Firing restrictions such as redundancy payments and legal restrictions to dismiss redundant workers are important institutions in European labour markets. Their effects on the dynamics of labour demand as well as on the labour share are reviewed next.

Adjustment Costs and Labour Demand

Describing the rationale for and detailed structure of employment protection legislation in the different economies under study is beyond the scope of this paper⁵. The important aspect of these institutions for our purposes is that their relative stringency differs considerably across EU countries, and contrasts sharply with the relatively unregulated US labour market. Therefore, understanding the key mechanisms through which these institutions will alter the adjustment of labour demand might be crucial to understand the differences across countries in the evolution of variables such as average productivity and the labour share. This chapter will rely heavily on Bertola (1999).

First note that once hiring and/or firing is costly for the firms, the maximisation of profits will take into account the effects of firing (or hiring) today not only on today's profits, but instead on the whole stream of future profits the firm is likely to obtain. Therefore, instead of evaluating the marginal contribution of a worker with his wage, the firm will take into account his marginal contribution to the expected present discounted profits. Thus, in general, in the presence of adjustment costs the wage will not only reflect current marginal productivity.

The effects of dismissal costs on labour demand will depend on the nature of business fluctuations. This has been modelled in several frameworks, each of which specifically designed to tackle different aspects of the relevant institutions in reality⁶. Here, we try to illustrate the main message of these models without attempting to be precise in their mathematical structure. Consider a representative firm with a revenue function characterised by $R(Z_t, L_t)$, where L_t denotes labour employed in period t and Z_t is an indicator of exogenous demand fluctuations which reflects the state of business conditions. For simplicity, assume that Z_t can take two values: Z_g in good times and Z_b in bad times, such that $R(Z_g, L_g) > R(Z_b, L_b)$. We consider that wages are fixed. This assumption could be justified by a perfectly elastic labour supply, or assuming that wages are negotiated once the shock (change in the state of business conditions) is realised⁷. Moreover, it can be justified empirically on the grounds of the acyclical wages reported by Abrahams and Haltiwanger (1995). In the absence of firing or hiring restrictions optimal labour demand is achieved through the well-known condition that equates the marginal revenue of labour with the wage:

⁵ For a discussion of the political economy of employment protection legislation see e.g. Saint-Paul (1997). Scarpetta (1996) and Grubb and Wells (1993) contain a description of the relevant institutional aspects for a panel of OECD countries.

⁶ For instance, Bentolila and Bertola (1990) assume that demand fluctuations follow a Brownian motion in continuous time, while Bertola (1990) describes the main insights of this model when time is discrete and the driving force of business fluctuations is summarised by a Markov chain.

⁷ Any model where workers and entrepreneurs bargain over wages will deliver this outcome as long as it is assumed that the shocks are realised after the negotiation. Alternatively, staggered wage mechanisms (e.g. Taylor, 1980) could justify this assumption.

$$(5) \quad M(Z_t, L_t) \equiv \frac{\partial R(Z_t, L_t)}{\partial L_t} = W$$

where the subscript t denotes time, which can take the values b and g depending on the phase of the business cycle. Assume now that the firm has to pay a firing cost (F) per worker laid off, which we consider fixed but which could in principle depend on the size of the adjustment of the workforce. For simplicity, we abstract from labour attrition for the moment, but we will discuss its effects on the reasoning later. In this situation, the firm will take into account this cost, and will avoid “some” firing even if business conditions are bad. Therefore, the firm will hoard some workers even if the wage to be paid is above their marginal productivity. In other words, the firing costs will introduce a wedge between the marginal revenue product of labour and the wage, such that the new equilibrium condition can be expressed as

$$M(Z_b, L_b) = W - \mathbf{w}_b$$

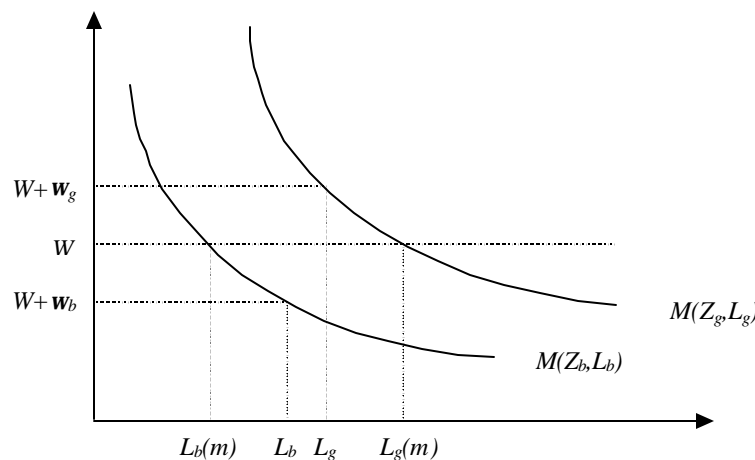
where \mathbf{w}_b denotes the wedge when business conditions are bad. On the other hand, during an expansion the firm will be more reluctant to hire new workers due to the presence of firing costs. The rationale behind this result is that the firm will take into account the fact that more hiring today might mean more necessity to fire tomorrow if demand turns weak. Thus, the firm will equate the marginal productivity of the worker not to his wage, but to the wage plus a wedge (\mathbf{w}_g) that reflects the expected discounted value of the firing cost:

$$M(Z_g, L_g) = W + \mathbf{w}_g$$

The size of the wedges will not necessarily coincide, depending on the nature of the business cycle, the discount rate and the relative size of firing costs.

The figure below shows the marginal revenue product of labour the firm faces when business conditions are favourable, $M(Z_g, L_g)$, and when demand is weak, $M(Z_b, L_b)$. In the absence of firing costs, given that the wage is fixed at the level (W), the firm’s labour demand will be $L_g(m)$ and $L_b(m)$ respectively, where the m term in brackets denotes the market (absence of adjustment costs) equilibrium. However, in the presence of firing costs, labour hoarding when business conditions are less favourable will take employment to the point L_b . Of course, the more costly for the firm to layoff workers and the higher the expectations of a change in business conditions, the more important will be this labour hoarding effect. On the other hand, during a boom the firm will be more reluctant to hire new workers in the presence of firing costs, such that labour demand will stay at L_g .

Labour Demand in the Presence of Adjustment Costs



In conclusion, the presence of firing costs would induce less hiring when demand is strong, but also less firing when business conditions are less favourable. The same argument holds, but reversed, when considering hiring instead of firing restrictions. In consequence, in the absence of further description regarding the relative

size of firing and hiring costs, the size and nature of business fluctuations, and the functional form of the demand functions, the net effect of these two forces on average labour demand will be ambiguous. Indeed, Bentolila and Bertola (1990) and Bertola (1990, 1992) find that in the absence of other institutional features in the labour market, the presence of firing costs will have small (and ambiguous) effects on average labour demand in the long run.

However, there is a clear prediction of these models, which constitutes the main interest for our purposes. In the presence of adjustment costs like firing or hiring restrictions, the fluctuations of labour demand will be less pronounced than in the labour markets where these institutional aspects are absent, since wages will not reflect in general the marginal cost of a worker. Thus far, we have achieved two important conclusions. First, labour demand fluctuations will be dampened in the presence of firing and hiring restrictions. Second, these institutions introduce a wedge between the marginal revenue product of labour and the wage, such that the latter is not a good measure of labour costs any more. We will review the consequences for the dynamics of the labour share in the section below.

Firing Costs and the Labour Share

In this subsection we consider the effects of adjustment costs on the dynamics of the labour share. For the time being, we keep the assumption of constant wages along the business cycle. In this framework, Kessing (2001) shows that the labour share will be upward (downward) biased in recessions (expansions) in the presence of adjustment costs. The intuition is straightforward. Define the labour share as follows:

$$(6) \quad LS_t = \frac{W_t L_t}{R_t}$$

Then, if the revenue function is an increasing and concave function of employment (as depicted by the marginal revenue functions in the figure above) and wages and business conditions are fixed, the labour share will be positively correlated with the dynamics of employment:

$$\frac{dLS_t}{dL_t} = \frac{W(R_t - M_t L_t)}{R_t^2} > 0$$

Now, remember that adjustment costs increase (decrease) labour demand in bad (good) times with respect to the no-adjustment cost case. Therefore, it must be the case that the labour share will be higher in bad times in countries with tighter firing restrictions, while the opposite will hold in periods of favourable business conditions.

How would be the dynamics of the labour share within a country across the different states of business conditions if dismissal restrictions are present? In contrast with the frictionless economy described in section 3.1, even in the unitary elasticity framework (Cobb-Douglas technology) the labour share will fluctuate along the business cycle once adjustment costs are considered. This can be illustrated in the following simple case. Consider a competitive firm, with the following production technology:

$$Y_t = K_t^a L_t^{1-a}$$

where K_t^a denotes the capital stock at time t and a is the elasticity of output with respect to capital. Then, labour demand will result from the usual relationship between the marginal revenue product of labour and the marginal cost

$$L_t = (1-a) \frac{R_t}{M_t}$$

which, taking into account the expressions found before for the marginal revenue product of labour in good and bad periods and substituting into (2), becomes

$$(7) \quad LS_g = (1-a) \frac{W}{W + w_g}$$

$$(8) \quad LS_b = (1-a) \frac{W}{W - w_b}$$

which obviously implies that the labour share is high when business conditions are bad, and reduced when business conditions are more favourable. Again, labour hoarding during recessions entails that the fall in business conditions is not fully reflected in labour demand, implying that the fall in the wage bill (numerator in the labour share) is not as large as the fall in income (denominator in the labour share). Similarly, employees cannot fully benefit of the expansions since firms are more reluctant to hire in the presence of adjustment costs, and therefore the increase in the wage bill is lower than the nominal output growth, resulting in a fall of the labour share. Therefore, if production is characterised by a Cobb-Douglas technology, in the presence of adjustment costs the labour share will move counter-cyclically⁸.

Up to now, we have made two simplifying assumptions that are worth reconsidering: perfect competition in the good markets and constant wages across the different states of business conditions.

Perfect competition in product markets might be a restrictive assumption in this framework. Although it is a very useful benchmark, “real” product markets are characterised by numerous imperfections, either due to some aspect inherent to the nature of the market in consideration or due to legal restrictions such as legal barriers to entrepreneurial activity or administrative burdens to business start-ups. Consider for instance the simple model of monopolistic competition proposed by Dixit and Stiglitz (1977) in which firms have some degree of market power due to product differentiation. If labour markets are competitive, prices are simply set as a mark-up over marginal costs, such that the marginal revenue can be expressed as a simple mark-up of wages. However, we have seen that in the presence of adjustment costs the relevant labour cost for the firm is the wage plus the wedge. Thus, in the presence of imperfect competition in product markets, the marginal revenue has to satisfy the following expression:

$$M_t(Z_t, L_t) = (1 + m)(W + wedge)$$

where μ denotes for the mark-up. To illustrate the effect of market power on the dynamics of the labour share, let us return to the Cobb-Douglas case. After some manipulation, using the new condition for the marginal revenue product of labour, equations (7) and (8) become:

$$(7') \quad LS_g = (1-a) \frac{W}{(1+m)(W + w_g)}$$

$$(8') \quad LS_b = (1-a) \frac{W}{(1+m)(W - w_b)}$$

In the simple Dixit and Stiglitz framework, the mark-up is fixed across the different states of business conditions, and therefore will not affect our main results regarding fluctuations in the labour share in the presence of adjustment costs. However, there are both theoretical and empirical reasons to conceive counter-cyclical mark-ups⁹. If this is the case, movements in the mark-up will tend to counterbalance the fluctuations in the labour share outlined above.

Secondly, we have considered the price of factors as fixed across the different states of business activity. This assumption is probably a good simplification when a short-term perspective is taken. Moreover, allowing for movements in the factor prices will probably not alter our main conclusions if, as suggested by Cellini et al.

⁸ It can be shown that in a more general framework, i.e. a CES production function, if the price of capital is fixed across business fluctuations, the labour share will fluctuate counter-cyclically for any sensible value of the elasticity of capital-labour substitution. Therefore, the results found above can be interpreted as fairly general.

⁹ For a thorough review of the topic see Rotemberg and Woodford (1999).

(2001), the elasticity of substitution between productive factors is relatively low. However, relaxing this assumption will enrich the model outlined above and might help explain long-term movements of the labour share.

In this section we considered the consequences of the presence of labour market institutions such as firing and hiring costs in terms of the dynamics of labour demand and labour share. The framework we adopted was one in which wages were exogenously given. However, considering endogenously determined wages and equilibrium wage and employment levels in the presence of unions as in Giammarioli et al. (2001), as well as the interaction between union wage-setting practices and turnover costs as in Bertola (1990) can enrich the analysis.

3.3 The Role of Institutions: The Medium Run

With respect to the neo-classical interpretations we considered above (Section 3.1), an alternative way to look at the labour share evolution in continental Europe in the last thirty years is to focus on the interactions between the effects of changes in labour market institutions and the features of the technology. This is the main argument of Caballero and Hammour (1998), who concentrate on the relationship between the transformations experienced by European capital-labour relations during the last three decades with the presence of two technology's characteristics: putty-clay investment and factor substitutability.

Their argument is the following. The increase in the labour share is the result of an appropriation push of existing labour in the short run, when the irreversibility of investment and technology choice allows for very limited possibilities to substitute labour away. In practice, the wage push (arising from the substantial institutional reforms in favour of labour) found a putty-clay aggregate production function with, effectively, a very low elasticity of substitution between capital and labour (much less than unity) in the short run. In the long run, however, as capital is substituted and new technologies can be selected, the effective elasticity of substitution rises (much above unity), and firms substitute away from labour. In the long run, hence, the labour share declines, just because the high long-run elasticity of substitution between capital and labour leads to a change in the factor intensities in production.

To sum up, the main point of Caballero and Hammour is that the observed evolution of the labour share in European economies in the last thirty years constitutes the macroeconomic response to appropriability at different frequencies. This also means that the observed decline in the labour share that characterised the last fifteen years could have occurred even in the absence of any reversal in labour market institutions. There are two problems with this approach. Firstly, the authors do not consider at all the fundamental role of the deep reforms in labour market institutions that occurred in most of the European countries in the 1980s (see also the evidence reported in the next sections). Secondly, their argument is based on the existence of a high long-run elasticity of substitution between capital and labour, which seems in contrast to most of the available empirical evidence.

Another institutional interpretation of the labour share evolution of European countries in the last thirty years is that offered by Blanchard (2000). Apart from movements due to the dynamic effects of factor prices, which according to the author are not able to explain completely the labour share dynamics in Europe, increases in the labour share are primarily due to product market deregulation. On the other hand decreases in the labour share are mainly the consequence of labour market deregulation. In the author's framework, while product market regulation controls the degree of competition among existing firms and the cost of entry for new firms, labour market regulation controls the bargaining power of workers relative to firms.

Blanchard shows that an increase in the degree in competition among the existing firms leads in the short run to an increase in the labour share but has no effects on it in the long run. On the contrary, a decrease in entry costs induces no effects on the labour share in the short run, but leads to an increase of it in the long run. A decrease in the bargaining power of workers, instead, induces a decrease in the labour share in the short run, but in the long run the labour share returns back to its initial level.

On the basis of this framework, Blanchard claims that the common increase in the labour share that European economies experienced between the late 1960s and the early 1980s is due to the fact that the effects of product market deregulation dominated the effects of labour market deregulation. Similarly, the common decline in

the labour share that has characterised continental Europe since the mid 1980s is explained by the fact that the effects of labour market deregulation have so far dominated the effects of product market deregulation.

As the author admits, however, there is not much evidence to support the above propositions. Most of what is known about product and labour market regulations in European countries comes from the work by the OECD. According to Boeri et al. (2000), there is evidence of deregulation both in goods and labour markets in Europe only since the mid 1980s. The authors also point out that while product market deregulation has so far been large, labour market reforms have been more marginal. However, there is widespread evidence of a weakening of unions throughout Europe over the last fifteen years (see also the evidence reported in the next sections).

In our view, the role of institutional reforms in the labour market have a prominent role in explaining labour share movements in the medium run. In particular, changes in the institutional framework lead to a shift in the equilibrium level, along with the labour share fluctuates. Such a thesis must be confirmed by an empirical analysis, which will be the main argument of the next section.

4 Reconciling the Evidence: An Institutional Perspective

4.1 Interpreting the Short-Run and Medium-Run Movements in the Labour Share

In this section, we look at the dynamics of the labour share in the light of the proposed explanation outlined above. According to this framework, similar shocks across countries will have different effects depending on the institutional framework. In the short run (when institutions remain unaltered), the labour share is expected to fluctuate counter-cyclically along the business cycle due to the existence of labour adjustment costs, such as firing and hiring restrictions. The more stringent these costs, the larger these fluctuations will be for similar shocks. On the other hand, in the medium run institutional reform in labour and/or product markets will result in different levels of the labour share for the same phase of the business cycle. Applying these ideas to the data we can attempt to identify two sources of movements in the labour share: those related to fluctuations in output or employment growth and those related to changes in the institutional set-up affecting labour market relations. While the first source will lead to fluctuations of the labour share around some fixed level, the second source will induce shifts in the level around which the labour share fluctuates.

One of the main implications of the theory is that the level of the labour share should have a negative relationship with business cycle fluctuations, which could be shifted by changes in the institutional setting of the labour market. In order to test this prediction, the movements in the labour share will be contrasted with the growth rate of value added. Changes over time in the institutional framework affecting labour markets at the country level, such as variations in the relative stringency of adjustment costs, could explain differences in the results obtained for each of these measures¹⁰.

Below we show the cross-plots of the labour share and the growth rate of output¹¹. Again, we focus on the developments in the major European economies and the US.

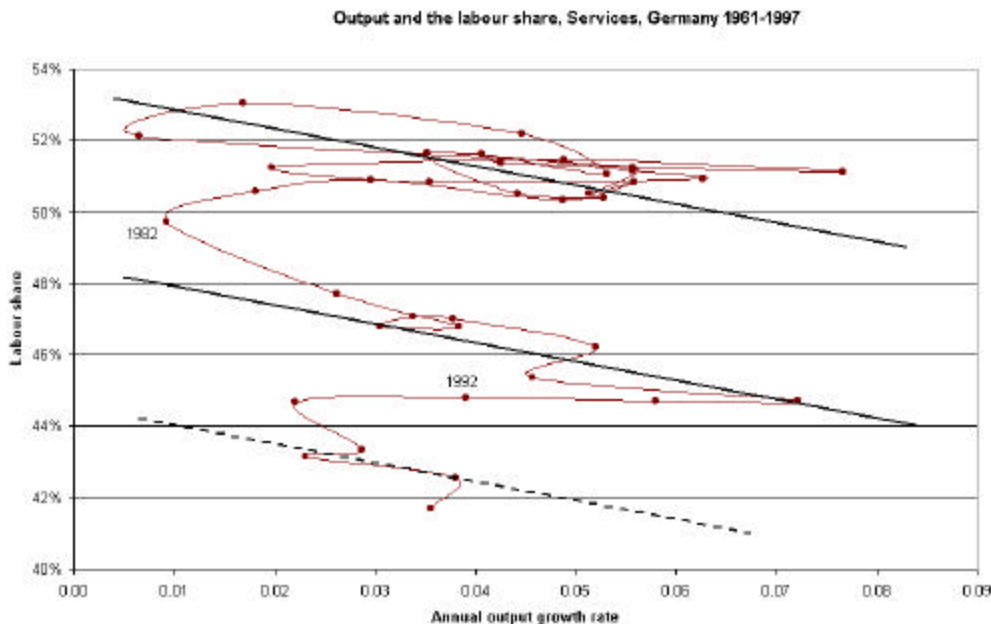
4.1.1 *Continental Europe*

The graph below contains the empirical results of our analysis for the German service sector. A negative relationship between the level of the labour share and the growth rate of output emerges. This confirms both the theory outlined above and our results - which showed that the labour share of the total German economy mainly follows the path of the services labour share. Although in all graphs the negative relationship is clearly visible, we can also identify -two shifts in the relationship. These shifts occur at about 1982 and 1992 and

¹⁰ The literature on the stability of the so-called Okun's coefficients is large. For a review at the European level, see Döpke (2001).

¹¹ In Giammarioli et al. (2001) both the growth rate of output and employment are considered.

must be related to institutional changes, if our theoretical model was right. For instance, the downward shift in 1992 could be the result of a weakening of union power as a consequence of the process of German unification.

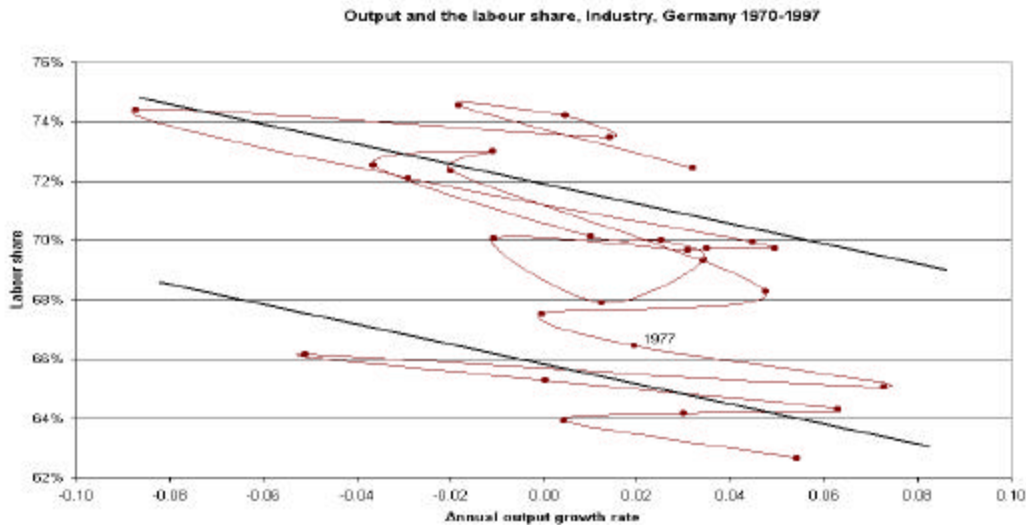


The downward shift of the schedule at the beginning of the 1980s could be related to the decline in German union membership that followed the change in political leadership in 1982. Indeed, while during the previous era of social-democratic/liberal coalitions the German trade union movement was able to count on a certain degree of support from the government, when the government turned to the right in 1982 the unions were no longer able to count on the same type of government support. The new conservative/liberal coalition introduced a radical change in emphasis towards profits and the beginning of a policy of deregulation.

The second downward shift of the schedule occurred at the beginning of the 1990s: in this case, the decline in union membership, which followed the German unification, could be considered one of its major determinants. After a sharp but short-lived boost in 1991, union membership in the East dropped considerably: 50% between 1991 and 1997 (Ebbinghaus et al., 2000). In that period membership also declined in the West, although at a less rapid rate than in the East. The combined effect of the dramatic loss in union membership in the East and the gradual decline in the West, due to structural changes and unemployment, led to a decline in gross union density from 38% in 1991 to below 30% in 1998 (Ebbinghaus et al., 2000).

We also constructed a German industry graph and from the time path of the labour share we already know that this sector did not behave according to the general pattern of the European labour share. The labour share in this sector has followed an increasing trend and it is therefore interesting to see whether our theoretical implications still hold in these data.

Clearly, the negative relationship emerges again. However, there is only one shift in the bargaining environment that can be isolated and this shift occurred rather early on at about 1977 and the shift was upward rather than downward. Since then the relationship is rather stable, allowing the labour share to fluctuate with employment and output. Interestingly, the data seem to convey that at least in industry the bargaining environment has not become more challenging for German unions after 1980.



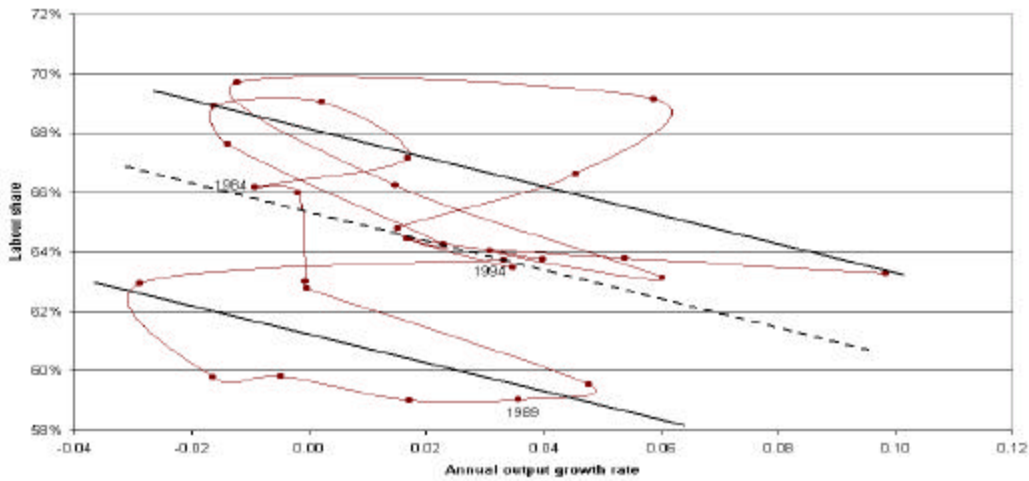
An explanation for the upward shift of the industry schedule could be offered by the rising union strength in the German industrial sectors during the 1980s. A partial evidence for this phenomenon includes the result of the 1984 campaign for shorter working hours. At that time the employers wished to retain the 40-hour working week, while *IG Metall* (the largest industry union in Germany) demanded a 35-hour week without loss of pay. The result of this conflict, which was one of the largest conflicts in post-war German industrial relations, was a strike which eventually forced employers to agree to a 38-hour working week (Visser and Ruyssveldt, 1996). Even German unification has not altered much the influence of German industry unions, not only because the process of de-industrialisation of the 1990s did not hit Germany as hard as other countries in Europe, but also because workers in German industry experienced a sharp rise in wages during the post-unification boom.¹²

Also in French data the negative relationship consistently appears, just as is the case for the other European countries. The labour share in French industry has after 1989 followed the German industrial labour share upward. In the graphs this is documented by the emergence of a new (dashed) relationship at around 1994.

The initial stable relationship was shifted downward in 1984. The downward shift of the schedule could be explained by the decline in union membership that France experienced during the 1980s: official figures show a decline from around 20 per cent in the mid 1970s to 15 per cent between 1975 and 1985 and to 9 per cent in the late 1980s (Goetchy and Rozenblatt, 2000). This drastic drop seems in some sense a paradox in the history of French industrial relations: in fact, it occurred just when the political environment provided by the socialist governments of the 1980s was apparently most favourable.

¹² In the former East Germany, in particular, the rises in industry wages were not in proportion to rises in productivity, and this was a consequence of the equalisation policy pursued by the Western social partners after unification (Hoffman, 2000).

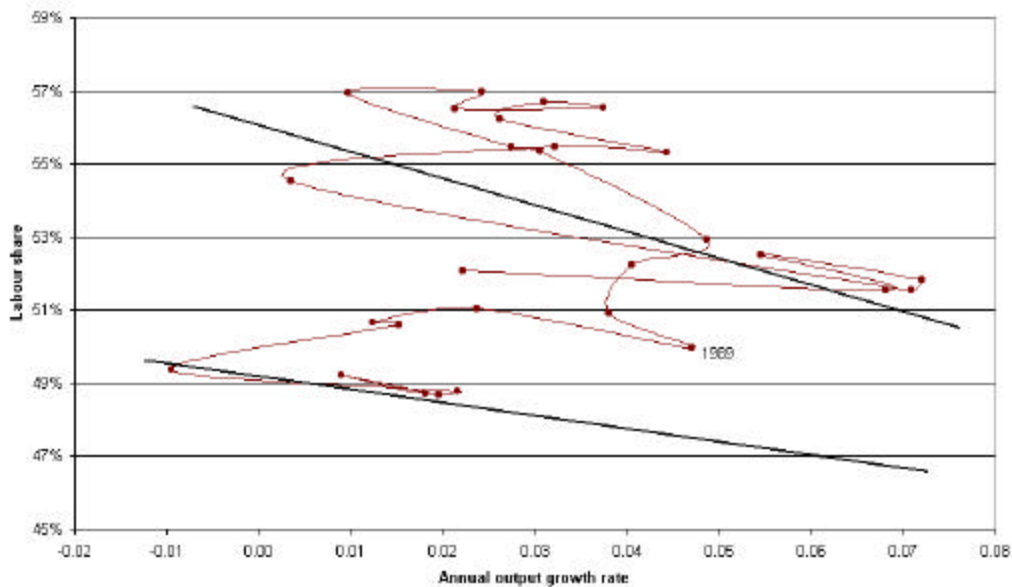
Output and the labour share, Industry, France 1970-1997



The weakness of unions reflects, first, the impact of major changes in the French economy during the 1980s: industrial restructuring away from traditionally well-organised industrial sectors (e.g. coal, steel, engineering, shipbuilding) to new sectors such as electronics and the shift of jobs from industry to the service sector. Secondly, in that period there were also important reforms in the French labour legislation towards more employment flexibility, leading to an increase in part-time and fixed-contract workers, groups which are difficult to unionise. Moreover, union fragmentation was exacerbated during the 1980s by increasing animosity between the major unions. Finally, in that period there were also major changes in the labour market: French unemployment rose from 6.4 per cent (of the active population) in 1980 to 10.4 per cent in 1988. All these changes meant a loss of union members and a gradual decline in union influence during the 1990s.

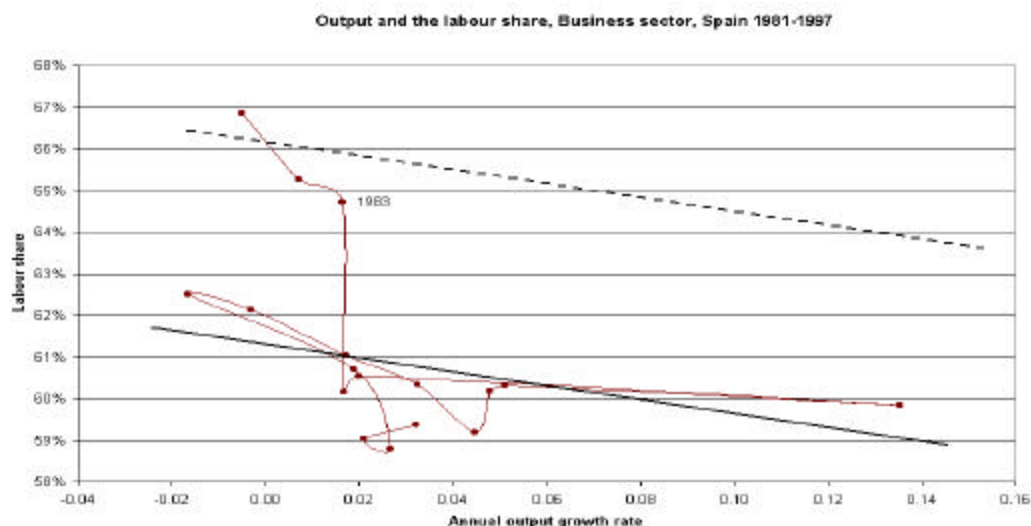
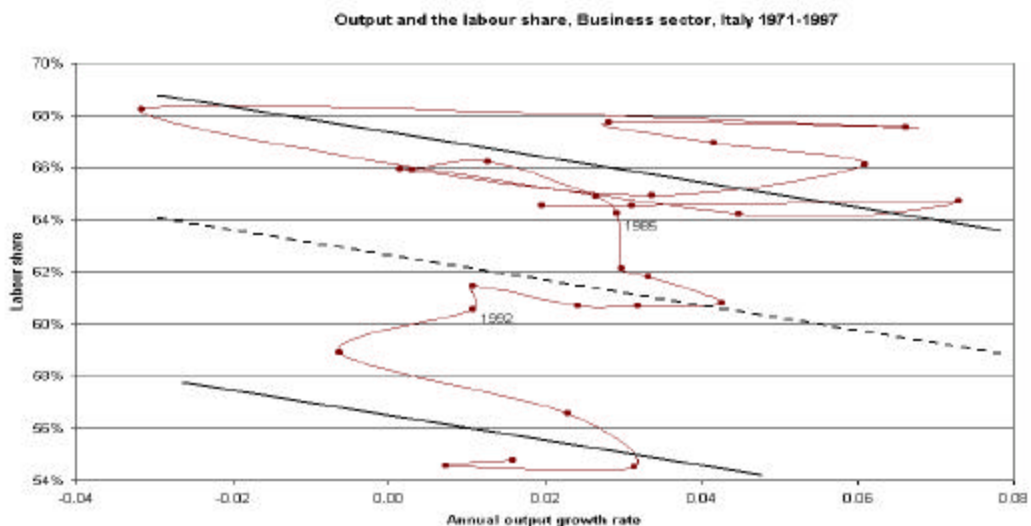
The French service sector labour share moves along a roughly stable relationship until 1989. After 1989 this relationship is shifted downward and rotated slightly such that the new relationship is flatter than the previous one. The combined effect of the shifts in the industrial and the service sector relationships is to shift downward the business sector relationship in the second half of the 1980's and to make it flatter.

Output and the labour share, Services, France, 1970-1997



For the remaining European economies we have seen from the graphs above on the labour share evolution that the labour shares in the individual sectors track each other relatively closely and we will therefore confine ourselves with an analysis of the business sector labour share, lumping together the data from both sectors.

Both the Italian and Spanish data also display the negative relationship the theory predicts. In the case of Italy, two shifts in the relationship are identifiable with the first occurring at around 1985 and the second one occurring at around 1993. It is still premature to identify a lasting equilibrium relationship for the last 4 periods of the sample, but in absence of any contradicting evidence we have done so. In Spain, there is just one shift in the equilibrium relationship of the labour share observable and it occurs around 1983. Spain was preparing for the accession to EU at that time, so it is likely that the labour market reforms accompanying Spain's entry into the European Union have caused the shift in the relationship.



In the case of Italy, the first downward shift of the schedule could reflect the fall in wage bargaining power that followed the second half of the 1980s. While trade unions in Italy enjoyed a phase of relatively high

bargaining power from the late 1960s to the mid 1980s, in the second half of the 1980s the Italian confederal trade unionism appeared weaker than it had been in the previous decades.

A first signal of this weakness was the decline in membership in the three confederal trade unions (CGIL, CISL and UIL), which involved a reduction in the unionisation rate from 48.5 per cent in 1975 to 39.9 per cent in 1987 (Regini e Regalia, 2000). This decline, however, seems to have been for the most part the result of the structural changes in the economy of that period than of the worker disagreement with trade union strategies. Also negative were the effects of the division and competition among trade union organisations that followed the breakdown of the *Federazione Unitaria* (the pact between the three confederal unions) in 1984, which made the decision-making process more difficult. Last but not least, in 1986 there was an important reform of the *scala mobile* mechanism, which involved a radical change in the wage automatic adjustments to inflation.¹³ Because of the great symbolic significance of the *scala mobile* for the unions (due to the fact that it was the outcome of the previous waves of collective mobilisation and the main indicator of their ability to keep bargaining power with respect to employers), a clear consequences of this reform was the gradual decline in union membership and influence.

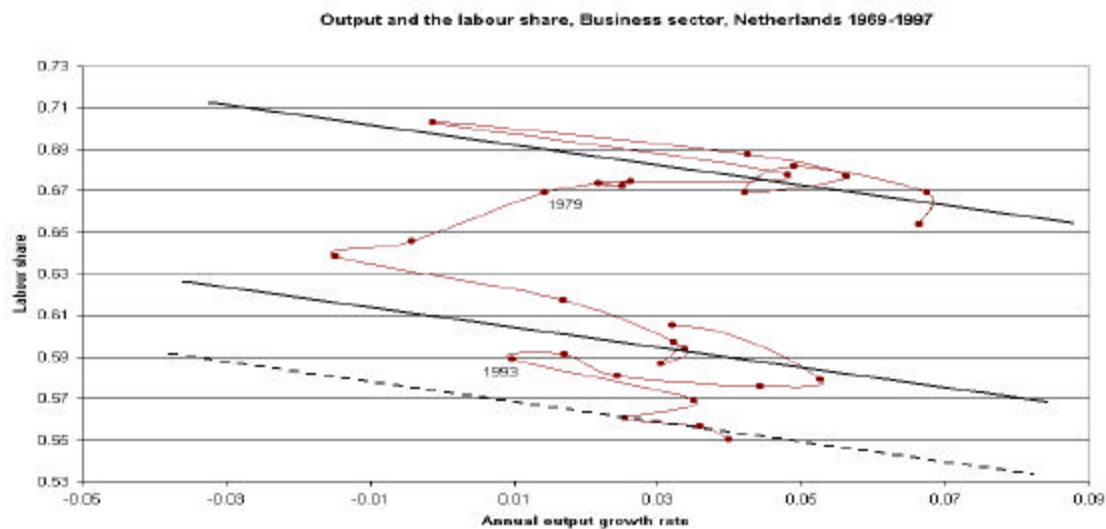
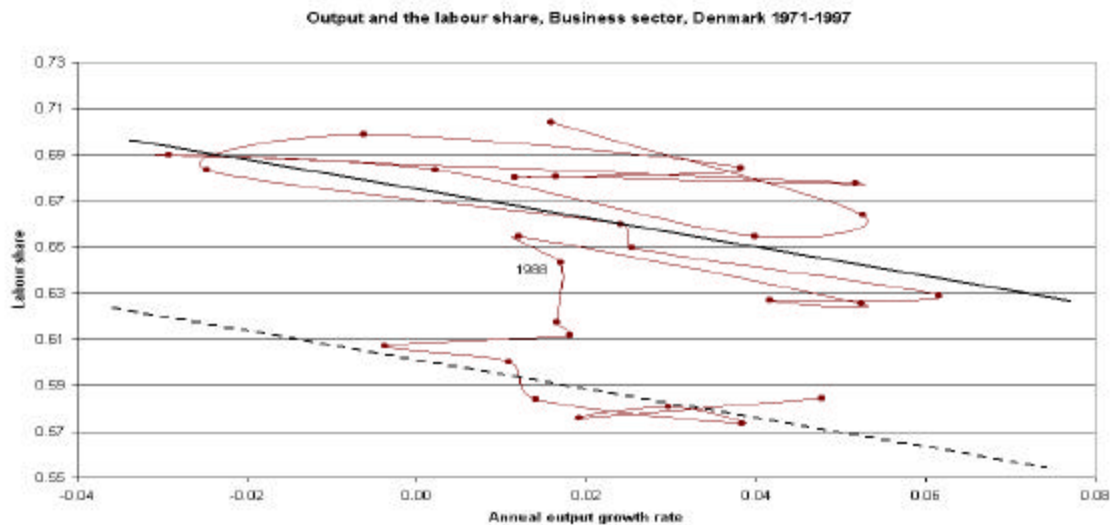
Toward the mid-1990s, finally, the Italian trade union movement crossed another phase, which could be associated with the further downward shift of the schedule connecting the labour share and the growth rates of output and employment. One of the major signs of the recent growing weakness of confederal unions was the definite abolition of the *scala mobile* mechanism in 1992. Two additional factors are the deterioration in the confederal unions' relationship with their rank and file (as symbolised by the growth of independent unions called *Cobas*), and the key role that decentralised bargaining have attained after the 1993 tripartite agreement between government, unions and employers' confederations (*Protocollo di Luglio 1993*).

In the case of Spain, instead, the single downward shift of the schedule could be connected with the fall in union density and influence that Spain experienced since the beginning of the 1980s. The unions' figures suggest that in the industrial sector density reached 40-45 per cent in the period of mass mobilisation of the late 1970s. Thereafter, unionisation fell sharply: by 1982, it was around 20 per cent, and it is currently believed to be below 15 per cent (Martínez Lucio, 2000).

The reasons for this fall in unionisation are complex. The main ones could be identified with the mass unemployment of the beginning of the 1980s, the decline in heavily unionised sectors (engineering, textiles and construction) and the rise in precarious forms of employment which was associated with the reform of the Spanish labour legislation which occurred during the 1980s. As far as the rise in "atypical" contracts is concerned, the Workers' Statute of 1980 and its subsequent reform in 1984 opened the way for a range of more flexible contracts. The consequence was that by 1990 30 per cent of the labour force were on fixed-term contracts, up from 16 per cent in 1987 (Martínez Lucio, 2000). In addition, even if the 1981 tripartite National Agreement on Employment (involving government, employers and the major unions) offered employment creation and a range of other measures in return for wage moderation, unemployment continued to rise, and few new jobs were created. Hence, more often than not, union hopes were disappointed, and this could be considered another cause of the decline in union membership beginning in the 1980s.

Two other countries whose labour market experience has been studied widely, although they are not among the major European economies are Denmark and the Netherlands. In both countries significant changes to the institutional set-up of the labour market have been enacted during the period under study.

¹³ The *scala mobile* mechanism was introduced immediately after the war and provided for each unit increase in the price index an equal wage increase to workers in all sectors and *inquadramento* levels. (i.e. categories of workers with similar skills and education levels). In 1986 this system was abandoned in favor of a system in which the average overall degree of indexation was approximately 50% for the blue-collar workers and 40% for the white-collar workers. Then, in 1992 the *scala mobile* was definitely suspended. See e.g. Erikson and Ichino (1995).



In Denmark, these changes occurred prior to the 1990's, we have dated them at around 1988-1989 according to the pattern we observe. For this country, the profound changes to labour law have led to a long transition phase, which may have not only shifted the labour share-employment relationship, but also could have affected the nature of this relationship. Unfortunately, the data are still not clear in this respect. It is not yet possible to identify a new equilibrium relationship, although it seems that the relationship should be much flatter than the pre-1990 one. Further data will make it possible to answer this question. There is no doubt however, that following the institutional change the labour share has declined significantly.

In the case of Denmark, therefore, the downward shift of the schedule could be explained by the strategic phase of rebuilding in the Danish system of industrial relations that occurred in the late 1980's and 1990's. At that time Danish employers launched an offensive aiming to simplify and rationalise their organisation and the system of collective bargaining. There was a massive wave of mergers among employers' organisations, which led to a reduction in the number of member organisations in the Danish Employers' Confederation from 150 to 51 (Nieminem, 1997). The centralisation of employer organisations forced the unions to merge as well: this is because by building corresponding organisational structures unions could become equipped to negotiate with employers in a more balanced way.

This centralisation of both industrial relations parties was closely connected with the decentralisation of collective bargaining within the private sector, which in turn was associated to the introduction of the “wage regulation mechanism”, limiting the number of times local pay bargaining could take place. Traditionally, local negotiations took place several times a year: this system allowed for substantial pay increases outside the central bargaining system. In contrast, the wage regulation mechanism introduced at the end of the 1980s permitted for the first time to set a ceiling on local productivity-related pay increases. This change led to important reductions in the extent of wage drift, and so to a reduction in the union influence in pay determination. At the end of the 1980s, in addition, Danish unions experienced for the first time a drop in density. While in the period from 1973 to the beginning of the 1980s there was substantial increase both in the number of union members and in union density, since 1989 union density started to decline.

In the Netherlands¹⁴, three regimes can be identified with the first shift occurring at around 1979 and the second at about 1993-1994: in both cases the changes have led to a decrease in the labour share. The later changes to labour market institutions seem to have had only a slight impact on the new equilibrium relationship and it is not entirely clear whether we can identify a true shift in the long-run relationship. As further data becomes available this question will be answered.

Starting at the beginning of the 1980s, the Dutch system of industrial relations experienced a set of major changes, both in the structures and the strategies of its component organisations. The turning point came in 1982, the year of the Agreement of Wassenaar, which coupled rigid budgetary measures with wage restraint and major reforms in welfare institutions. After that agreement, nominal wage increases have been modest: in most years, the increase was less than 2 per cent and the wage share in market sector income dropped from 93 per cent in 1987 to 82 per cent in 1997. Indeed, Dutch real market wages had started to decline since the late 1970s, following the rapidly increasing unemployment that characterised that decade. Hence, the Wassenaar Agreement cannot be considered the beginning of the period of wage restraint (Hartog, 1999) and this could also be the reason why we observe a downward shift of the labour share schedule prior to the date of that agreement.

The Wassenaar Accord was then followed by an array of no less than 78 subsequent reports, guidelines, joint opinions, reports of advice, recommendations and agreements covering the most diverse labour market issues. Among these, a major role has had the reduction of the adult legal minimum wage, which has declined by 20 per cent in less than 20 years in real terms (Hartog, 1999). All these reforms marked the beginning of a continuous process of bi- and tripartite-bargaining whose most recent product was the New Direction Accord concluded in December 1993. In this accord, worker and employer organisations “renewed their pledge to continue a policy of wage moderation, in favour of investment, job creation, working-time reduction and extra measures for training”.

4.1.2 Anglo-Saxon Countries

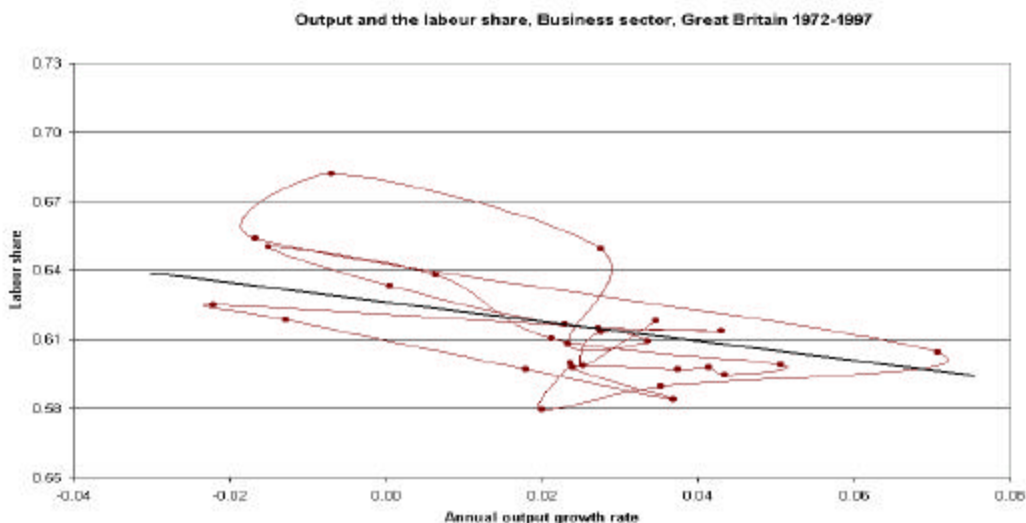
In order to provide a consistency check of the empirical predictions of the theory we put forward in this report, we have also plotted the labour share-employment relationship for countries that are known to have a very flexible labour market regime. As predicted, both Great Britain¹⁵ and the US¹⁶ are characterised by much flatter negative relationships between the labour share and the employment or output growth rate than other European countries. Clearly, adjustment costs of employment exist in all developed economies, but they are much lower in the Anglo-Saxon countries than the others. The labour share in Great Britain fluctuates more than the one in the US, but these fluctuations are not related to changes in employment. As documented in the time plots before, the US labour share is relatively stable around a level of 0.68. Unfortunately, our data for

¹⁴ In the Netherlands, the data for employment in the non-market service sector have a break in 1986. We therefore exclude the growth rate from 1986 to 1987 from our graphs. Both, the periods before and after the break have consistent definitions of employment in this sector.

¹⁵ The output graph uses OECD total economy real GDP growth numbers instead of the more appropriate Eurostat business sector number, which were missing.

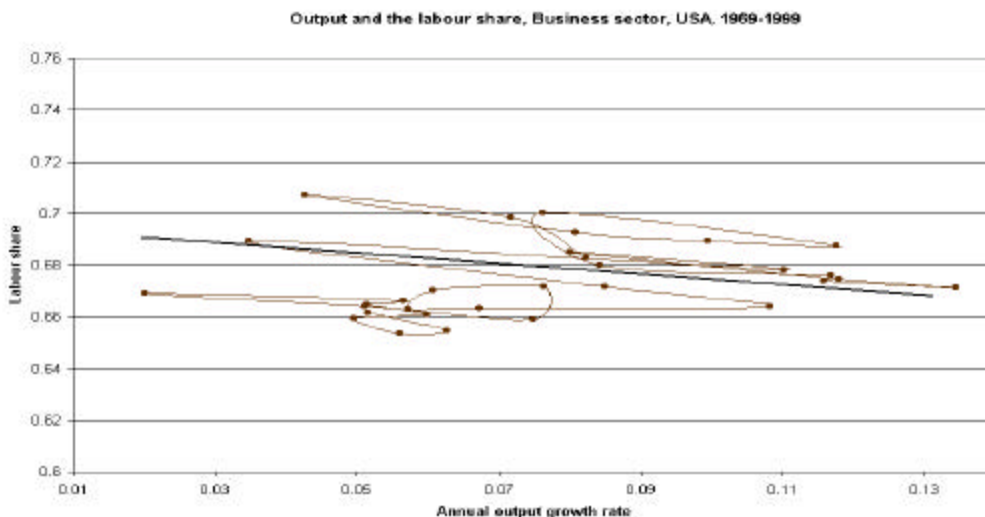
¹⁶ The graph is constructed using nominal business sector GDP growth, rather than the real numbers.

the UK does not cover the period before 1972, but throughout the sample period there does not seem to be a movement in the equilibrium schedule within which the labor share fluctuates. This observation is somewhat puzzling following our line of reasoning, taking into account the considerable loss of bargaining power experienced by UK unions throughout the eighties.



Overall, the graphical analysis presented here clearly does not contradict the empirical implications of the theoretical perspective we would like to take in this report. On the contrary, the data match the predictions of the reference theoretical framework quite accurately. We observe counter-cyclical movements of the labour share along the business cycle for all countries in continental Europe, which in the line of the theory explained before is consistent with the role of adjustment costs in highly regulated labour markets. Moreover, we have uncovered downward shifts in these equilibrium relationships in the first half of the 1980s in most countries. We have documented in each of the cases institutional reforms that indicate a reduction in the bargaining power of workers coinciding in the time of events with the downward shift of this equilibrium relationship as a potential explanatory factor.

An important limitation of our graphical analysis is clearly that no information on the statistical significance of the negative relationships found so far can be obtained. In order to provide some more robust statistical information to our empirical results we report cross-correlations between the labour share and output growth in the section below.



4.2 Testing the Correlation Between Labour Share and Business Cycle Fluctuations

In order to investigate further the significance of the negative correlation between the labour share and business cycle fluctuations, we first needed to produce a series of the former free of the trend. Several de-trending techniques were adopted, and the results of course varied according to each procedure¹⁷. In this paper, we report the results obtained using a standard Hodrick-Prescott filter¹⁸. The limitations of this technique, such as the arbitrariness in the choice of the smoothing parameter, are well known. However, in the case under consideration, using this technique the series produced the most sensible results. Moreover, robustness checks varying the smoothing parameter were carried out, obtaining similar results to those presented below.

A first glance at the results can be extracted from the figures below. They cross-plot the cyclical component of the labour share against value added fluctuations for the aggregate economy in each of the countries under study. Notice that in the exposition that follows, we concentrate on the results for the total economy and not for the business sector, although we have discussed above the more appropriate character of the latter for the study of the effects on labour market performance of institutions such as employment legislation protection (EPL). The reason should be found in the limitations imposed by the data at hand. Business sector data was not available for all countries¹⁹ and, more importantly, the time span covered in this data was shorter than in the aggregate series in most cases. Therefore, since using shorter series reduces the accuracy of the estimation of the trend with the Hodrick-Prescott technique, we believe the results obtained for the aggregate series to be more reliable. Moreover, it is also true that the results for the business sector (reported later) do not differ much from the ones obtained for the total economy. Turning to the graphs, they clearly show the expected negative correlation between the labour share and business cycle fluctuations. Moreover, in all countries reported the regression lines are highly significant. Thus, in years of expansion the labour share is relatively low, while in recessions the workers are able to appropriate a higher portion of the rents.

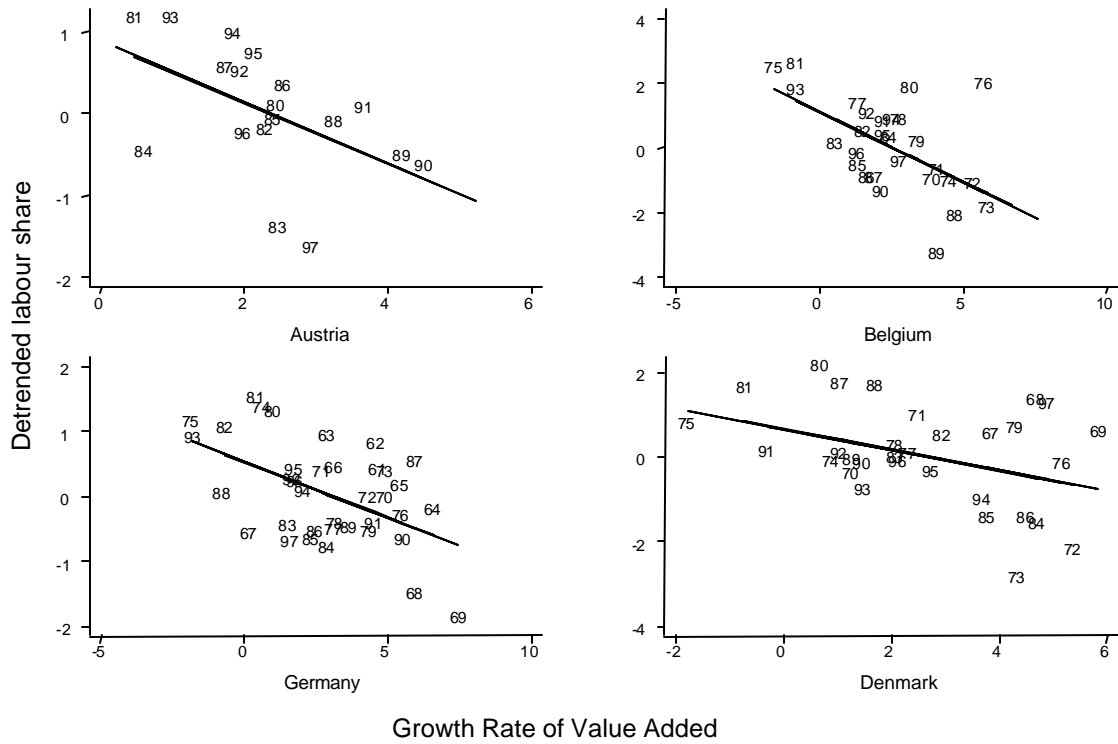
Although these graphs are highly informative, they hide important differences across countries, which should be highlighted. In the next figure, we set the same scale for all countries in a single picture. Then, it is immediate to notice that there are important differences across countries in the responses of the labour share to similar fluctuations in output. It is especially interesting to note that in the case of the United States, a country characterised by a relatively flexible labour market, the structure in the fluctuations of the labour share is more compressed than in any other country. Thus, much wider output variations are required for smoother fluctuations in the labour share. These results are consistent with the theoretical model outlined above (see section 3.2). Even in a global economy characterised by a common Cobb-Douglas technology that is hit by similar shocks, we would expect the labour share to fluctuate counter-cyclically but in different scales across countries, depending on the relative stringency of the dismissal costs in each economy. Thus, in countries such as Italy or France where these costs are relatively high, the fluctuations in the labour share for similar shocks will be larger than in countries like the US, whose labour market is characterised by lower barriers to employment adjustment. This aspect will be investigated further below.

¹⁷ Linear regression, moving average trends with different lags and the Hodrick-Prescott filter were used in estimating alternative measures of the trend.

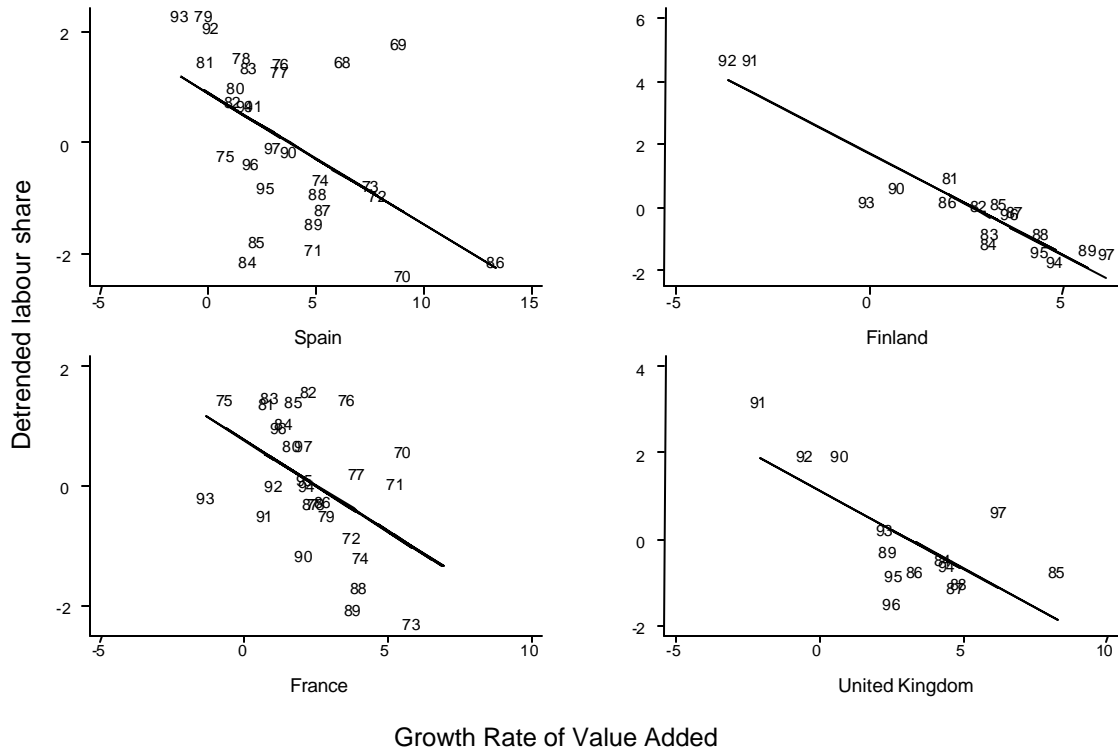
¹⁸ The parameter lambda was set to 1200, the standard value for annual data.

¹⁹ No data was available for Ireland.

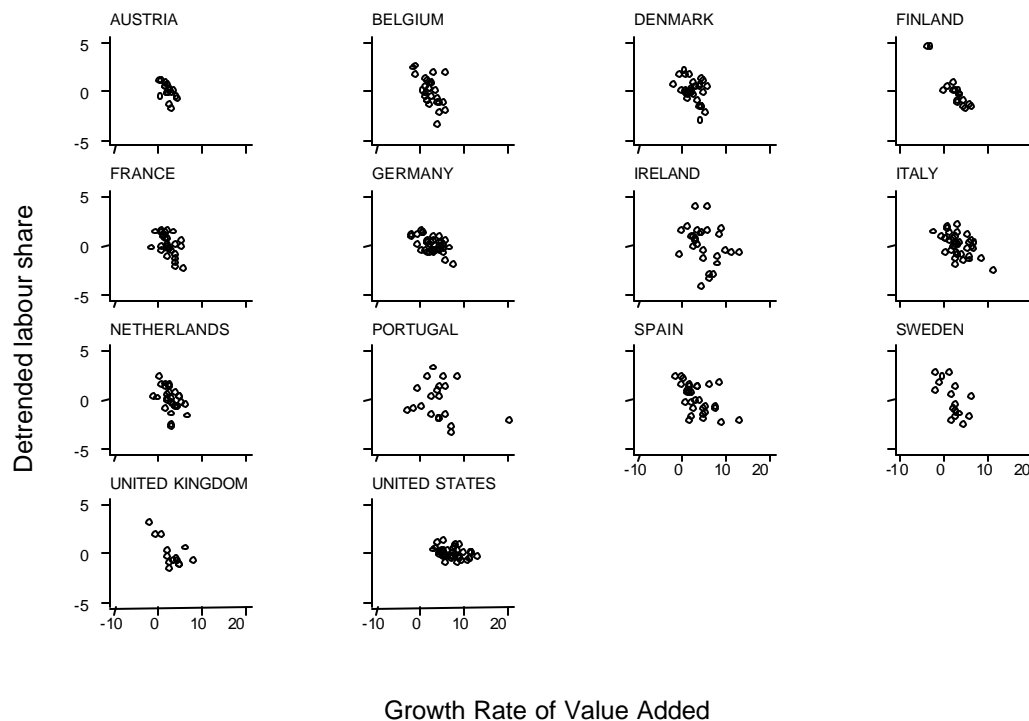
**Labour Share Fluctuations and Output Growth in Selected Countries
Total Economy. Different Years.**



**Labour Share Fluctuations and Output Growth in Selected Countries
Total Economy. Different Years. (Cont.)**



Labour Share Fluctuations and Output Growth. Total Economy



The corresponding correlations between the cyclical component of the labour share and value added fluctuations at different levels of disaggregation are presented in the next tables. Column 1 reports the series for the aggregate economy. In 14 out of the 15 countries considered the correlation is negative and significant at least at the 10 per cent level, being Portugal the only exception with a negative but insignificant correlation. This correlation is surprisingly high in two countries that are commonly considered as having relatively flexible labour markets: Finland and the United Kingdom. However, in both cases the sample size is relatively low with respect to the other countries studied which, as was previously mentioned, sheds some doubt on the accuracy of the trend obtained using the Hodrick-Prescott technique. Moreover, in both cases the correlations reported seem to be very sensitive to the inclusion of a period of severe recession: 1991-1992 in the case of Finland, and 1990-1992 in the case of the United Kingdom (see Figures above). In the case of Finland, this could point out to the fact that in periods of severe structural change the limitations imposed on firing by other sources apart from EPL (temporary limitations to layoffs, or subsidies to employment creation) could result in similar responses of the labour share as those observed in highly regulated economies. In the UK however, the three observations mentioned above can well be interpreted as outliers, since suppressing them the slope of the regression would become essentially flat.

Correlations of the Cyclical Component of the Labour Share with the Growth Rate of Real Value Added. Selected Countries. Different Years.

	<i>Total Economy</i>	<i>Business Sector⁽¹⁾</i>	<i>Mkt. Services⁽²⁾</i>	<i>Industry</i>
Austria	-.51*	-.71***	-.52**	-.74***
Belgium	-.56***	-.56***	-.38**	-.57***
Denmark	-.40**	-.48***	-.48***	-.53***
Finland	-.93***	-.92***	-.67***	-.86***
France	-.48**	-.52***	-.58***	-.29
Germany	-.52***	-.50***	-.53***	-.57***
Greece				
Ireland	-.29*			
Italy	-.53***	-.50***	-.41***	-.40**
Luxembourg	-.30	-.23	.09	-.43**
Netherlands	-.45**	-.48***	-.35	-.34
Portugal	-.22	-.20	.19	-.27
Spain	-.53***	-.60***	.29	-.73***
Sweden	-.64***	-.78***	-.03	-.82***
United Kingdom	-.70***	-.64**	-.47	.03
United States	-.35**	-.36**		

*** Significant at a 1 per cent level, ** Significant at a 5 per cent level, * Significant at a 10 per cent level

⁽¹⁾ For the Netherlands, the series contains a break in 1987. The correlation reported excludes the growth rate from 1986 to 1987.

⁽²⁾ In Germany, the series contain a break in 1964-1965. The correlation reported excludes the growth rates from 1963 to 1964 and from 1964 to 1965.

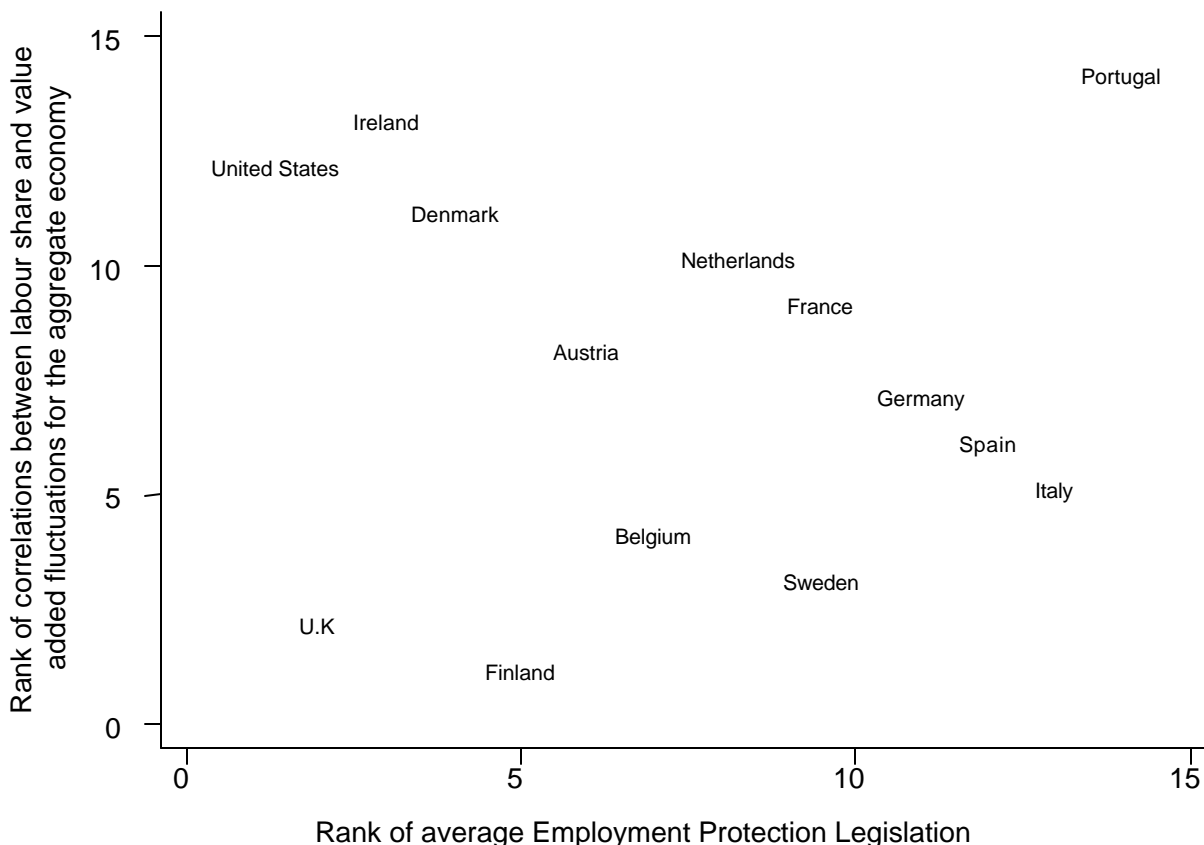
The results for the aggregate economy are supported by those regarding the business sector. As was previously mentioned, the public sector has a very high and relatively stable labour share. Therefore, it is not surprising that the previous results still hold once this sector has been omitted from the series. It is interesting to note however, the different response of the labour share to business fluctuations at the sectoral level. In all countries except France, labour hoarding seems to be more important in industry than in services. This is especially noticeable in the cases of Sweden and Spain, where the results for the aggregate economy seem to be driven by this last sector. Two interpretations could be given to this observation. On the one hand, the service sector is characterised by a higher use of part time and fixed term contracts. In those contracts, dismissal costs are generally lower than in the case of permanent jobs, and therefore the expected labour hoarding in this sector will be lower. If this is the case, the correlations at the sectoral level will be giving further support to our theoretical results. On the other hand, most self-employed are concentrated in service sub sectors. Since dismissal costs are only relevant for the employees, the inclusion of the self employed in the calculation of the labour share series could be introducing some noise which will become more apparent in the case of the service sector.

Finally, we have constructed a ranking of the countries under study according to the relative tightness of their employment protection legislation (EPL)²⁰. In our ranking, the US appears as the economy with lower EPL

²⁰ The index is from Nicoletti et al. (1999). It contains a summary indicator of relative stringency of EPL across OECD countries for the late 1980s and 1990s. Our index has been obtained averaging out the two after which a ranking was constructed.

(lower score in the ranking) and Portugal as the one with more stringent laws. Similarly, we have constructed a ranking for the correlations obtained for the whole economy labour share and value added fluctuations (Column 1 in the table above), Finland appears at the top of the ranking (higher correlation) while Portugal reports the lower correlation. Our next figure contains the cross-plot of the two rankings. According to the theory discussed so far, a negative correlation between the two rankings would be expected, indicating that the higher is the relative stringency of EPL, the higher should be the correlation obtained between fluctuations in the labour share and output variations. The results obtained support partially this prediction. A clear negative correlation stands out between the two rankings, once three observations are dropped from the sample: UK, Finland and Portugal. We have already documented that in the first two cases (especially in the UK) there are reasons that shed some doubt on the correlations obtained. In the case of Portugal, we obtain a very low correlation between labour share and business fluctuations, while in the ranking of EPL appears as an economy with the most stringent layoff restrictions. However, this is a common case in studies using this type of indices: Bover et al. (2000) already point out that dismissal restrictions are relatively modest in Portugal although their high score in OECD rankings.

Employment Protection Legislation and the Labour Share. Total Economy

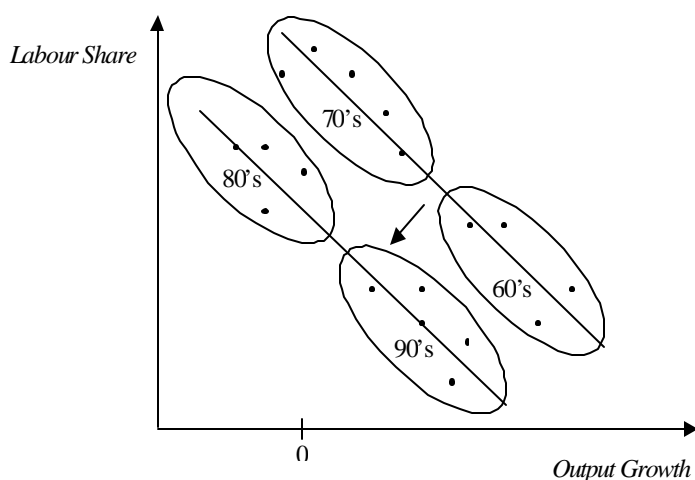


Taking into account these caveats, and bearing in mind that limitations in the data, this last graph partially supports the predictions of the theoretical model outlined above. However, in reality things are more complex than in the simplified models we have sketched in this paper. This explains why the results obtained, only partially and not fully support the theoretical predictions. One important simplifying assumption in our model is the constancy of wages along the business cycle. If wages moved pro-cyclically, the labour hoarding induced by EPL will be partially counterbalanced by wages, resulting in lower fluctuations in the labour share for similar business fluctuations. Further efforts should be done into this line of research, which are likely to deliver interesting insights that might complete the picture.

5 Conclusion

The labour share in continental Europe has followed a hump shape in the last forty years: it increased mildly during the 1960s and 1970s and fell steadily from the 1980s onwards, to reach levels in the early 1990s which are even below those observed at the beginning of the period. This contrasts sharply with the evolution of this variable in the Anglo-Saxon countries, where the labour share fluctuated throughout the period along a constant trend.

We have discussed in this paper the role played by institutions such as employment protection legislation and union power in the linkages between business fluctuations and the labour share in this period. The counter-cyclical movements of the labour share expected in the presence of dismissal costs are supported by the data. Moreover, there is some evidence suggesting that the tighter EPL in a given country, the higher the swings in the labour share (the higher the labour hoarding effect) for similar fluctuations in business conditions. Therefore, we have uncovered an equilibrium relationship between the labour share and business fluctuations that becomes flatter the less stringent dismissal costs are. This curve is drawn in the figure below.



This equilibrium relationship seemed to hold during the first two decades of the period studied, in which increases of the labour share coincided with employment and output stagnancy and falls of this measure occurred as a result of favourable business conditions. However, in the 1980s there was a progressive fall in union power in most European countries, which reduced wage demands with respect to the previous periods. We have documented relevant institutional reforms in some of the countries under study, which seem to be at the root of the process of de-unionisation. In our scheme, the fall in union power in each country translated into a downward shift of the equilibrium schedule. Therefore, in our view European economies have entered in a new equilibrium after the 1980s, where the presence of dismissal costs in the labour market still imply that in periods of recession the rents appropriated by labour are higher, but never reaching levels as those of the 1970s.

Following Blanchard (2000), if the downward move in the equilibrium schedule reflects a fall in union bargaining power, in the long run the reduction of wage demands by the workers should translate into employment growth. This process should initiate a recovery of the labour share which, according to our theory, will result in a new move (this time to the right) of the equilibrium schedule.

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