



**COLLANA DEL
DIPARTIMENTO DI ECONOMIA**

**CHANGES IN FUNCTIONAL INCOME DISTRIBUTION IN ITALY AND EUROPE
SERVICE SECTOR PRICES, LABOUR MARKET CONDITIONS AND INSTITUTIONAL CHANGE**

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Changes in Functional Income Distribution in Italy and Europe.

Service Sector Prices, Labour Market Conditions and Institutional Change

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Abstract

The aim of this paper is to contribute to the interpretation of the factors that have led to the fall in the labour share in Europe from a non-orthodox perspective, drawing on Classical and Keynesian traditions. It focuses first on the Italian experience and then extends the analysis to other major countries in the Euro area: Germany, France and Spain.

The paper examines the role of relative price changes between business sector services and manufacturing in affecting the labour share and real wages in the two sectors. It then proceeds to historical and statistical analysis of the set of factors that have affected real wage growth in manufacturing and finds that institutional changes, unemployment, employment growth and changes in product per worker in terms of the consumer price index, taken together, explain very well real wage trends between 1962 and 2006 in Italy, Germany and Spain.

1. Introduction

In the industrial countries, the last few decades have witnessed a major shift in income distribution away from wages and towards non-labour incomes. Non orthodox economists (economists, that is, who draw on Classical, Marxian and Keynesian traditions) have seen in this phenomenon a potential source of trouble for these economies, owing to its adverse

* I wish to thank Dr Davide Zurlo for his help in testing the regression analysis reported in tables 1 and 2, footnotes 18 & 21 and the *Appendix*. An earlier version of this paper was presented at the conference *The Global Economic Crisis: New Perspectives on The Critique of Economic Theory and Policy* held in Siena in January 2010.

impact on aggregate demand. The latter impact was more than counterbalanced by the mounting indebtedness of the private sector ever since the 1980s, particularly in the US, which however contributed to the increasing financial fragility of the system right up to the current crisis (Foster and Magdoff, 2009; Barba and Pivetti, 2008, among others). The view that current income distribution represents a *structural* problem for advanced economies because of its effects on aggregate demand formation has been recently subscribed to also by influential mainstream economists¹. Though inconsistent with their theoretical views and academic production,² this attention to the macroeconomic effects of changes in income distribution is a welcome novelty. Despite its magnitude, the phenomenon had been largely ignored by academics and major institutions alike, and only in the last few years have reports on the matter been produced by the IMF (2007a, 2007b) and Oecd (2008).

This work expands on two earlier papers (Levrero and Stirati, 2005; 2006). The aim is to contribute to the interpretation of the factors that have led to changes in income shares in the European context, by focussing first on the Italian experience (which is believed to be representative, in some respects, of the situation of the ‘weaker’ economies in the European Union), and then extending the analysis to other major countries in the euro area.

The analysis of the Italian case shows that the decline in the wage share in the business sector as a whole³ results from rather different trends in its two major components: manufacturing and services. The decline has in fact been much more marked in the latter; in addition, the proportion between the consumer price index and the sector deflator moved in opposite directions, thus reinforcing the tendency towards the fall of the wage share in the service sector, while countervailing it in manufacturing (section 3). The paper thus proceeds by examining the possible causes i) of the changes in relative prices between manufacturing and services and ii) of the trends in real wages *vis-à-vis* productivity (sections 3 & 4). One of the points made is that the change in relative prices may be a factor affecting workers bargaining strength, since manufacturing is the leading sector in wage determination. It is then argued that one of the causes of relative price changes may have been the tendency towards a real appreciation of the exchange rate – a factor that may be common to other countries experiencing a nominal fixed exchange rate regime or monetary union together with higher inflation or lower productivity growth than major competing countries within the euro area. The evidence concerning other major European economies (Germany, France and Spain)

¹ Fitoussi and Stiglitz (2009), Fitoussi and Saraceno (2010)

² See Brancaccio (2011)

is consistent with the role of real exchange rates in influencing prices and margins over labour costs per unit of product in manufacturing *vis-à-vis* business sector services. Also, it is found that labour market variables tend to be important, albeit in different degrees, in explaining real wage trends in the countries examined (sections 4 and 5)

The approach taken here to the analysis of changes in income distribution differs from the one generally adopted in mainstream literature on the topic, and requires therefore some clarification before proceeding in the analysis, which is done in the following section.

2. Some Pointers to the Theoretical Background

Up to perhaps 20 or so years ago one could have opposed to the traditional neoclassical (marginalist) theory of distribution in terms of demand and supply functions another alternative explanation, rooted in the old classical economists and Marx, and based on the bargaining position of the parties (in turn susceptible to being influenced by a number of economic and socio-institutional factors),⁴ without fear of misunderstanding. Today however claiming to follow the second of these approaches would most likely give rise to some misapprehension. This is so because in the last few decades there has been a widespread acceptance of New Keynesian models which have supplemented the traditional analysis based on demand and supply functions with qualifications and additions that assign a seemingly significant role to the bargaining strength of the parties and a number of institutional factors in affecting income distribution. Although this has changed the language much more than the actual substance of the analyses carried out by means of these models *vis-à-vis* the traditional neoclassical approach, it creates an apparent likeness with the second of the two approaches mentioned above, which calls for some clarification.

For the purpose of the topic discussed here, it is particularly important to point out that New-Keynesian models retain the principle of factor substitutability that is at the core of the marginalist tradition, so that in these models a fall in the “bargaining power” of the workers would lead to a fall in the equilibrium real wage rate and, accordingly, to a rise in the labour to capital and labour to output ratios determined by optimization in consumption and production.⁵ This is particularly important in the context of the explanation of changes in

³ Business sector data are obtained, following the usual procedure, by subtracting *Public administration; Education; Health; Social, recreational and other personal services* from the data for the entire economy.

⁴ For an overview of this approach see Stirati, 1992 and 1999.

⁵ This is the case when, in the familiar model constituted by a price equation and a bargained wage equation, the former is decreasing in the real wage-employment space because it reflects a decreasing marginal product of

income shares, since if there is factor substitution, a fall in wages (or in the proportion between wage and product per worker), owing to the increase in the above-mentioned ratios, would probably give rise to small or nil (depending on the values of elasticity of substitution between labour and capital) changes in income shares. This, by itself, creates an underlying difficulty in all mainstream attempts at explaining the observed changes in income shares, which are usually overcome by attributing such changes to labour-saving technical innovation. These technical changes are however hard to identify empirically, and the methods adopted in applied works have been criticized, among other things, as often amounting to *assuming* that changes that cannot be otherwise explained according to the theory *must* be due to technical innovations of the appropriate type (Stockhammer, 2009: 19-22).

In addition, in New-Keynesian models, equilibrium unemployment (the *nairu*) and real wages (given productivity) must vary in the same direction - in contrast with empirical observation.⁶ In the long run, according to this approach, growth is led by supply factors along a path of equilibrium unemployment, so that statements such as that quoted at the beginning with respect to the *structural* problems that may be caused by lack of aggregate demand are inconsistent with the theory as expounded in textbooks and academic journals, whereby deviations of actual from potential output due to changes in aggregate demand are *transitory*, and do not affect the long term path of the economy.

Besides the role of labour-saving technical innovations, another, more appealing, explanation of changes in income distribution refers to the role of globalization in increasing unskilled labour supplies through various channels (immigration, off-shoring of intermediate production, imports of products from emerging economies). Again, however, when this is treated within mainstream economic models that retain the principle of factor substitution, the expected results are at variance with facts in some important respects. In particular, while according to mainstream trade theory, globalization should lead to a fall in relative unskilled labour incomes in advanced economies, it should also improve the wages of unskilled versus skilled workers in emerging ones, a phenomenon which is not generally observed (IMF, 2007a: 176).

labour. If labour marginal product is assumed constant, as is done in some textbook expositions, a change in the bargaining strength of the workers would shift the bargained wage equation, determining lower equilibrium unemployment, but no changes (given productivity) in the equilibrium wage. In this case therefore the model could not be used to explain changes in distribution.

⁶ See for example Stockhammer *et al.*, 2007; Lopez and Silva, 2009. See also the empirical estimates in the present paper (tables 1 and 2).

In contrast with mainstream literature, the Classical-Keynesian approach taken here implies that there is no necessary causal relation of the traditional type going from income distribution to the level of employment and unemployment, nor any notion of a tendency of the economic system towards potential output. While income distribution is regarded as the result of the bargaining strength of the parties, output and employment levels depend, even in the long run, on the principle of effective demand.⁷ Accordingly, the effects of changes in income distribution on employment mainly work through their influence on the propensity to consume and aggregate demand. Profound differences with the mainstream approach derive from this with regard to the themes discussed above.

In the first place, according to this approach, a change in the bargaining strength of workers is likely to affect real wages, and since there are no assumptions of the traditional type concerning factor substitution, the effects on income shares may be significant. Concerning the roles of technical innovation or globalization, their impact on income distribution in the present approach would have to be conceptualized in a different way. For example, one would expect that intense technical change would affect bargaining and income distribution to a large extent through workers' displacement and higher unemployment,⁸ and not, in contrast with mainstream theory, by changing the ratio between the wage rate and the rate of profits which is consistent with *potential output equilibrium*. Similar considerations apply with regard to globalization processes. Competition from emerging economies on product markets, off-shoring, immigration, can be expected to affect the bargaining position of workers in advanced countries by increasing job losses and unemployment, or by determining a threat that jobs will be lost as a consequence of higher wages, while at the same time not *necessarily* improving the relative position of unskilled workers in emerging economies, owing to large labour reserves and/or to general political and institutional conditions in those countries. In addition, one could argue that the impact of globalization works through other channels as well; of particular importance are the limitations on macroeconomic policies that are imposed by free capital mobility, which can then affect the formation of aggregate demand and employment growth. All in all, it thus would appear that many of the factors that are likely to affect income distribution, leaving aside institutional

⁷ The main analytical premise of these views is to be found in the criticism to the principle of factor substitution (Garegnani, 1970). In contemporary macro-models the tendency of the economy to potential output is generally attributed to the so called real balance effect and "Keynes effect". However the former cannot by itself be regarded as capable of ensuring that tendency, while the inverse relationship between aggregate investment and the interest rate (the Keynes effect) must in the end rely precisely on factor substitution (see Petri, 2004, chapt 7).

changes concerning labour market regulation or union organization, are likely to affect the bargaining position of workers to some extent through their impact on employment growth and unemployment. Finally, productivity growth, which in mainstream approaches is regarded as a *determinant* of wage growth, in the approach taken here may have the role of providing a *potential* space or constraint for a wage growth not affecting the rate of profit – but the space may not be filled or the constraint overridden, depending on the bargaining position of the workers.

The approach just described evidently has consequences for applied analysis since, while we can expect that certain variables will affect the bargaining position of the workers and income distribution, this is not expected necessarily to hold in all periods or in all countries – for example, the impact of the unemployment level on workers' bargaining position may vary according to institutional or social conditions - and the analysis of data *is not aimed*, as it is so often with mainstream works, *at finding results that fit a particular model*, but rather has the purpose of contributing to historical reconstruction and, if possible, forming taxonomies, which may then enhance our understanding of economic phenomena.

3. The Italian Case: Sector Income Shares and the Role of Relative Prices

3.1 Accounting breakdown of the changes in the wage share: manufacturing and services.

It is a well known fact that the aggregate wage share fell in most advanced countries since the late 1970s, early 1980s – a fall that was particularly marked in Italy (see below, section 5). In principle, from an accounting point of view, a change in income shares might be due to an increase in the ratio of the value of capital to the value of output (due for example to technical changes or changes in output composition), with a *given* rate of return on capital – that is, without any changes in distribution actually taking place.⁹ In Levrero and Stirati (2005: 408-

⁸ Of course technical change may also affect the bargaining position of the workers owing to the changes taking place in the organization of the labour process.

⁹ Of course much caution is needed in regarding the actual rate of return on capital found in the data as an indication of the trend in the profit rate for several reasons. Some have to do with the quality of the data, since it is well known that statistical series for capital stock and amortization quotas are very difficult to construct and may not be reliable and, for circulating capital, there are no data concerning the actual time span for which it is advanced. Other difficulties are conceptual. The actual return on capital depends on the degree of utilization and is calculated on the entire capital stock, while in economic theory the rate of profit is defined as the return on normally utilized capital and on best practice techniques. Non reported data show however that, as far as the degree of utilization is concerned, taking into account the data on the degree of utilization of capacity in manufacturing does not significantly alter the time profile of the rate of return on capital, though of course it affects its level (Levrero and Stirati, 2005, pp 411-413 and fn 14).

14), however, we show that the rate of return on capital has indeed increased in parallel with the fall in the wage share in the private sector of the economy as a whole and in most industries.¹⁰

In the following, the focus will be on the wage share trends in the two main macro-sectors of the economy: manufacturing and business sector services.¹¹ The differences between these two sectors can be highlighted through an exercise of accounting breakdown of the changes in the wage shares, and point to an interesting phenomenon, the sharp change in the relative prices between these two sectors. This, it will be argued, may have had a *causal* role in determining the observed changes in income distribution.

The wage share calculated here is the *adjusted* wage share, imputing to all employed workers the average income of employees in the same sector while the remaining incomes of self-employed workers are consequently imputed as part of the operating surplus.

From an accounting point of view the wage share can be thus broken down:

$$Q_{li} = W_i L_i / VA_i$$

$$L_i / VA_i = 1 / q_i P_i$$

$$w_i = W_i / P_w$$

$$Q_{li} = (w_i / q_i) P_w / P_i$$

Where Q_{li} is the wage share in sector i , L_i is employment, VA the value added, w_i and W_i are respectively real and nominal labour compensation (including all taxes and contributions paid by employees and employers), q is real value added per employee, P_w / P_i is the proportion between the cost of living index and the implicit deflator of sector i .

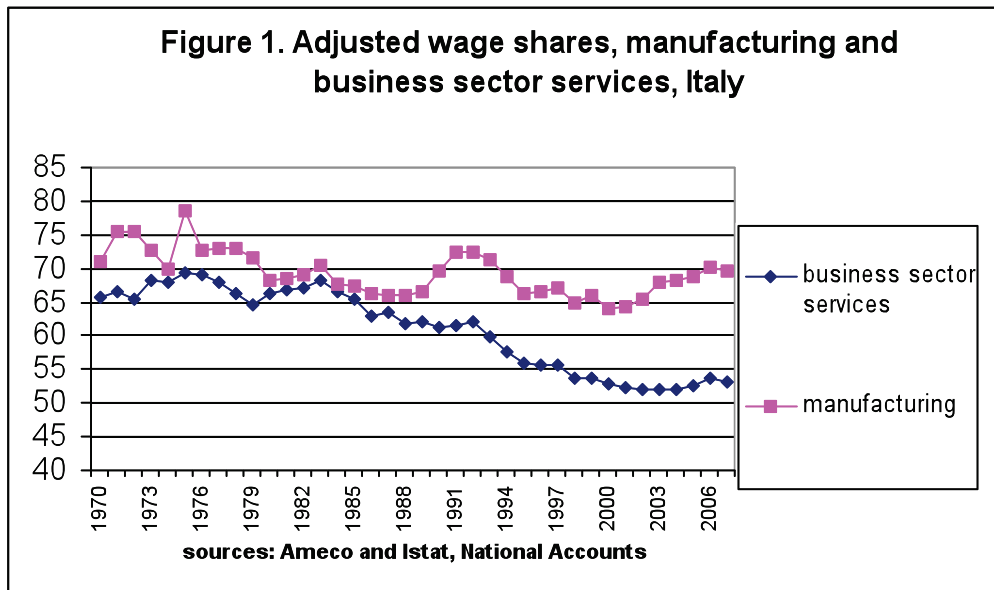
From the last of the identities above, the percentage changes in the wage share are given by the sum:

¹⁰ In the same work it was shown that the change in income share remains very significant even when we take out the real estate sector, where the income accruing as rents to house property has been increasing sharply. It was also shown that, from an accounting point of view, the change cannot be attributed to changes in output composition towards sectors exhibiting a lower wage share, nor to changes in the composition of the employed labour force between employees and self-employed.

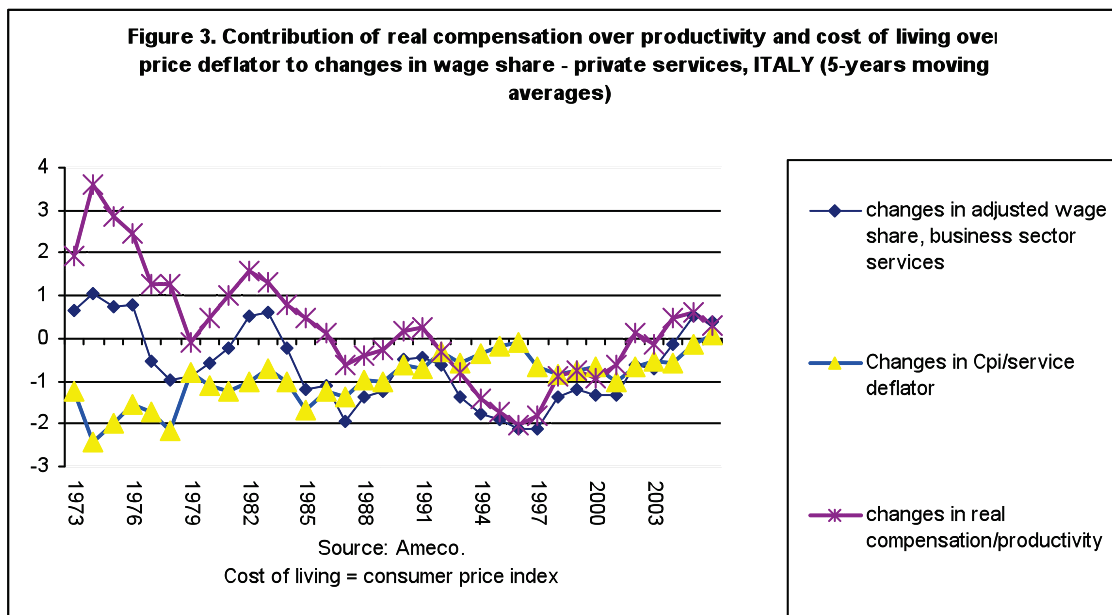
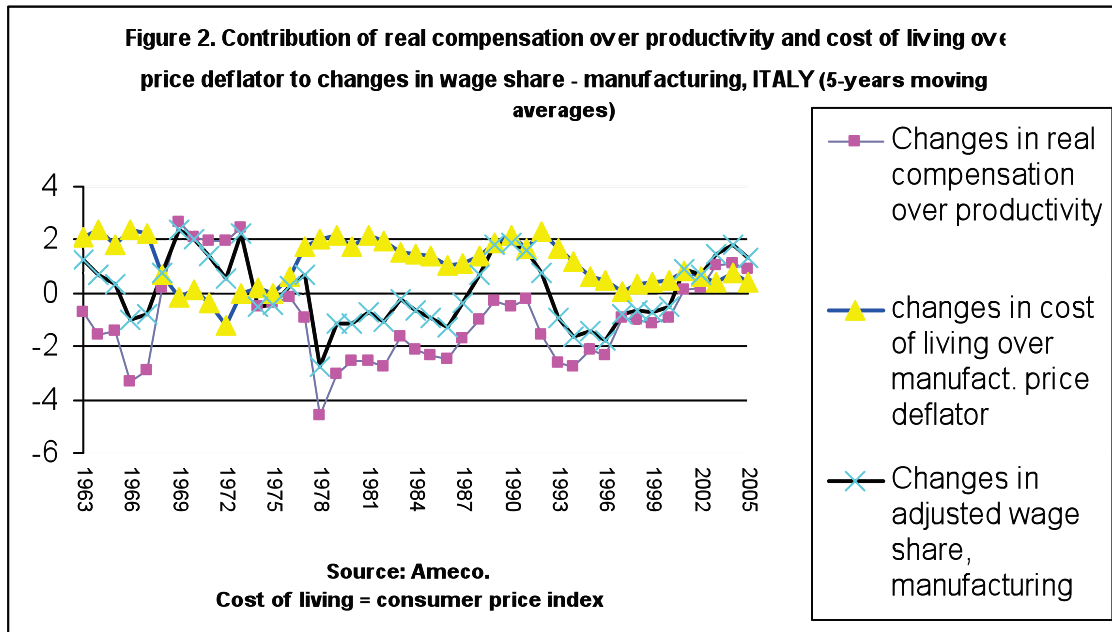
¹¹ See footnote 2 for definition.

$$\text{var \% } Q_{li} = \text{var \% } w_{ri}/q_i + \text{var \% } P_w/P_i + \text{“residual”}^{12}$$

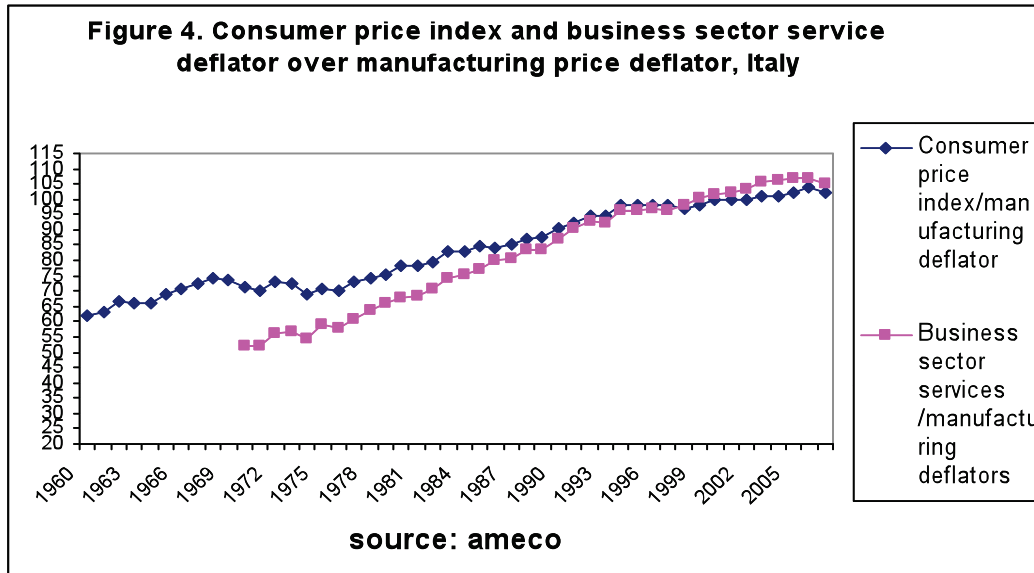
The negative trend of the wage share is much wider in the service sector (figure 1), and the results of this breakdown for manufacturing and business sector services are shown in figures 2 and 3. The trends in the two sectors result from a different combination of the two terms of the breakdown: while the proportion between real compensation and productivity has been declining in both, in manufacturing this has been counter-balanced by the marked increase in the second term, while in the service sector the latter tended to fall, reinforcing the first in determining the decline in the wage share.



¹² The “residual” is equal to the product of the two terms of the sum



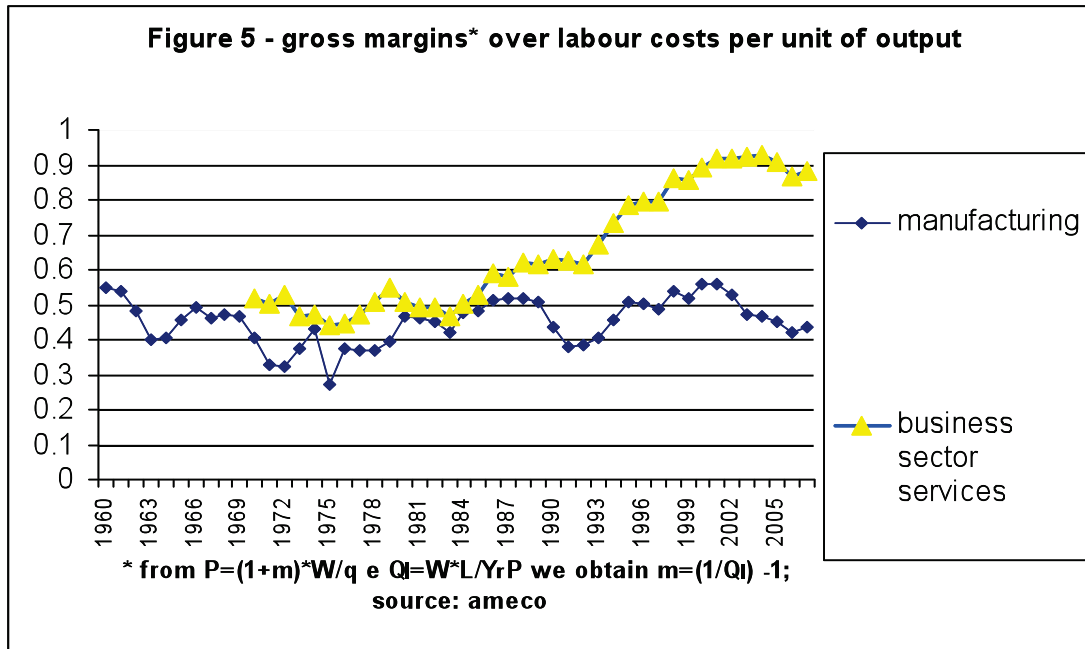
Since services have a significant weight – about 50% - in the consumption basket, the change in the ratio of cost of living and manufacturing deflator is, to a significant extent, due precisely to the change in the ratio between the deflator of services *vis-à-vis* manufacturing (figure 4).



Before considering the causes of this change in relative prices in the next paragraph, it may be observed that the increase in the cost of wage goods relative to manufacturing output, in a context in which wage-setting in the business sector as a whole substantially depends on wage bargaining in manufacturing (see note 13 below), may be a factor in affecting the outcomes of the bargaining: with rising costs of wage goods, keeping the wage constant in purchasing power would imply an increase in the product wage in manufacturing, and hence, *other things being equal*, a fall in the profit rate.

3.2 Interpretations of the change in relative prices.

The change in relative prices between services and manufacturing is suggestive of a “Baumol effect”: the tendency for productivity to rise faster in manufacturing than in service production would cause a significant long-term change in relative prices between the two sectors. This, however, appears to be only part of the story. The ratio of prices has changed more than can be accounted for by changes in relative productivity and unit costs. As is implicit in the different trends in wage shares, and shown in figure 5, the margin over labour costs per unit of product has increased much more in the service sector than in manufacturing since the mid 1980s, while also the returns on capital exhibit a similar relative increase (Levrero & Stirati, 2005: 408-14).



In the Italian literature, this phenomenon has been generally interpreted as the result of ‘monopoly rents’ in protected industries. While this can certainly be a factor in the explanation, it fails to explain why the described changes in relative prices and margins were not taking place during the 1970s and beginning of the 1980s, and were interrupted between 1992 and 1996, when major devaluations of the lira occurred. This timing draws attention to the role of the real appreciation of the exchange rate. On the other hand, since the early 1990s, privatizations had been carried out in some industries within the service sector (*Financial intermediation, Transports and communications*), which may also have affected relative price movements.

As far as appreciation of the real exchange rate is concerned, Italy has displayed a higher inflation rate than core European countries like France and Germany, so that the fixed exchange rate regime adopted with varying intensity and rigour since the beginning of the 1980s, and the introduction of the euro later on, may have led to strong pressure being exerted on the manufacturing sector to keep the rate of price increase under check, a pressure from which the service sector was largely protected (Levrero and Stirati 2005, pp 419-26; 2004: 79). In the last part of the period the pressure on manufacturing prices may have been intensified by competition in product markets from emerging economies.

Thus, it may be assumed that every real appreciation of the exchange rate forces a reduction in price increases, *first* in the sector exposed to international competition in product

markets (manufacturing), and only subsequently affecting prices in the other sectors of the economy through input-output relations, cost of living, and lower inertial inflation. This tends to determine a change in relative prices and re-distribution of profits between sectors that can be described as follows:

The *money* price equations in manufacturing and services are:

$$1) P_i = Wl_i + (1+r_i) (P_i a_{ii} + P_s a_{si})$$

$$2) P_s = Wl_s + (1+r_s) (P_i a_{is} + P_s a_{ss})$$

Where W is the uniform money wage, l is the labour coefficient, r is the rate of profit in each sector and a indicate the production coefficients.

We can then take as numeraire a composite basket of manufacturing and service sector products:

$$3) P_w = \alpha_i P_i + \alpha_s P_s; \quad \text{with} \quad \alpha_i + \alpha_s = 1$$

And thus define the relative prices in the two industries as:

$$4) p_i = P_i/P_w; \quad p_s = P_s/P_w$$

The relative price equations in terms of the numeraire on the assumption of a competitively determined uniform rate of profit r^* are therefore:

$$5) p_i^* = [wl_i + (1+r_i^*) p_s^* a_{si}] / [1 - (1+r_i^*) a_{ii}]$$

$$6) p_s^* = [wl_s + (1+r_s^*) p_i^* a_{is}] / [1 - (1+r_s^*) a_{ss}]$$

If “external pressures” determine a reduction in the rate of growth of P_i relative to P_s , and P_i/P_s falls, then p_s rises and p_i falls – with *given* w , this necessarily implies $r_s > r_s^*$ in equation 6) and *vice versa* in equation 5) – a result that thus emerges, at least for the short run, with *no need to refer to monopolistic conditions*.¹³

¹³ With free capital mobility, a situation of different returns on capital could not persist forever, and we should expect reactions to such disparity, which may be of different types, such as innovative behaviour or de-localization in manufacturing aimed at restoring higher profitability, or reduction of investments in manufacturing and the re-orientation of investments towards service industries. On the other hand, barriers to

In Italy, ‘redistribution’ of profits among sectors also appears to have originated from price policies and privatisations in the public utilities. This partly affects the aggregate business sector services considered here, which includes transport and communications and the financial sector, which have undergone processes of privatization and transformation in companies, and which exhibit a significant increase in margins and returns on capital (the gross rate of return on fixed capital has increased about five points since 1993 in *Transport and communications* and ten points since 2000 in *Financial intermediation*). It also affects another sector not included in this aggregate, but which certainly has significant effect on the cost of living index, namely the *Production and distribution of energy*, which has also experienced a continuous steep trend towards increasing margins over unit labour costs and returns on capital since 1993 (the latter increased almost ten points since the mid - 80s). While it is generally thought that privatizations and liberalizations will lead to a reduction in prices by increasing productivity in the privatised concerns, it has generally been overlooked that an opposite effect will derive from the fact that, in privatised firms, there must emerge a remuneration of capital that previously *might* have been absent or lower than in the business sector. This of course will be particularly important in exerting an upward pressure on prices when the privatised activity requires a high value of capital per unit of product.

In general, for a *given real wage* and *given methods of production*, the emerging of a normal profit rate (i.e. a remuneration of capital equal to that normally earned in competitive business activities) in the privatized sectors, determines a reduction of the overall profit rate.¹⁴

In order to simply illustrate this point we can consider the usual price equations, now taking for the sake of simplicity as numeraire the price of manufacturing products: $P_i = 1$. Consider an initial situation in which the services industry is public with, for the sake of simplicity, $r = 0$, and that subsequently it is privatised, so that, in order for the investment to be remunerative, the rate of profit must become the same as the one earned in manufacturing. With the methods of production unchanged and the real wage given in terms of the product of industry, the service sector relative price equations will be:

$$\begin{array}{ll}
 \text{Public services} & 1) \quad p_S = (wl_S + a_{iS})/(1-a_{SS}) \\
 \text{Privatized services} & 1') \quad p'_S = [wl_S + a_{iS}(1+r)]/[1-a_{SS}(1+r)]
 \end{array}$$

entry in the latter, and the re-iteration over time of external pressures on manufacturing prices, may contribute to render a disparity in profitability rather persistent over time.

¹⁴ See also Cesaratto, 2007.

and the increase in price after privatisation (in other words, that $p'_s > p_s$) is evident.

If we now look at the manufacturing price equation, under our assumptions, we have:

$$2) \quad I = wl_i + (1+r)(a_{ii} + p_s a_{si})$$

with given w an increase in p_s must cause a fall in the uniform rate of profit r in equation 2) in the system composed by equations 1') and 2) *vis-à-vis* the system consisting of equations 1) and 2).

This result means that in actual fact, privatizations will tend to cause a harshening of the conflict over income distribution, and may therefore result in a fall not of the profit rate, but of the proportion between real wage and product per worker, or any intermediate outcome, according to the circumstances affecting the bargaining strength of the parties.

3.3 Changes in relative prices and the bargaining position of workers

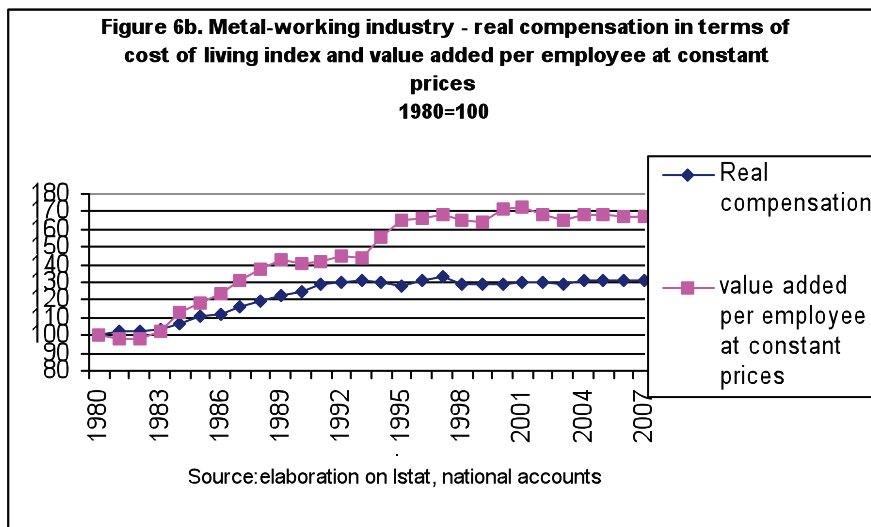
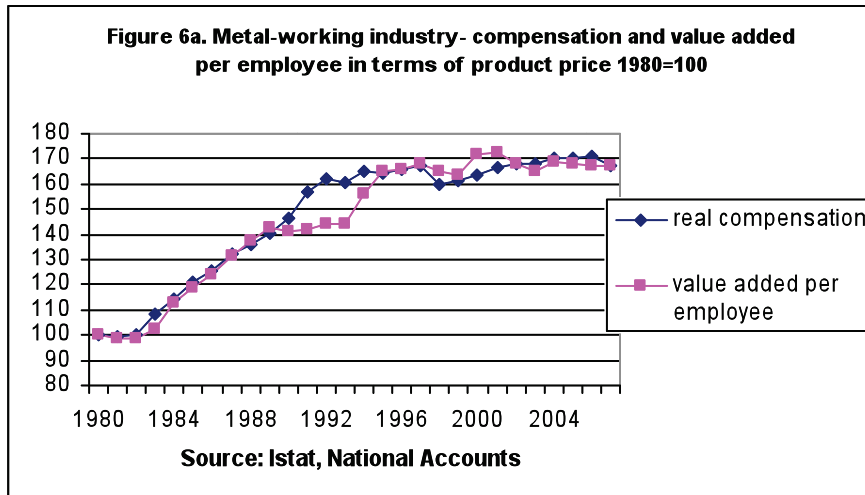
The role of changes in relative prices in affecting income shares in manufacturing and services shown by the above breakdown exercise is merely an accounting one – it highlights a potentially interesting phenomenon, but says nothing about any causal connection. However, it is reasonable to assume that the trend in real wages in the private sector from 1979 on may also have stemmed from a growing relative disadvantage of the sector exposed to international competition in product markets associated with changes in the exchange rate regime. Over the whole period considered, manufacturing was the leading sector in wage bargaining,¹⁵ and the situation described in the previous section contributed to harshening distributive conflict precisely in this area of production. Caught as it was between costs rising more than in competing countries and the restraints imposed on price increases deriving from the fixed exchange rate and the Italian position in international product markets, manufacturing experienced a deterioration in its *relative* terms of profitability. Unions in this sector, and hence by extension in the whole of the business sector, thus encountered growing

¹⁵ This leading role is shown, on the one hand, in the sensitivity of contract wages in manufacturing to specific conditions in the sector (in particular, employment growth in the sector), which is not found in business sector services, and on the other hand in the very strong correlation between rates of variation of remuneration in the two sectors (Levrero & Stirati 2004: 72; 2006: 95).

difficulties in obtaining monetary wage increases capable of defending purchasing power from price increases in sectors not exposed to international competition.¹⁶

To better illustrate this point, we can look at wages and productivity in *Metal-working* industry, where workers' union has been particularly strong and militant. Figures 6a and 6b show that in this industry, increases in gross real compensation in terms of product price roughly match the increases in value added per employee; yet, if we look at real compensation in purchasing power terms, the gap with productivity is very wide.

¹⁶ From some points of view, the situation described here may present some similarities to the one analysed by Ricardo when he perceives an increase in the cost of agricultural wage goods as a cause, with a given real wage, of the reduction in the rate of profit in the industrial sector in favour of rents.

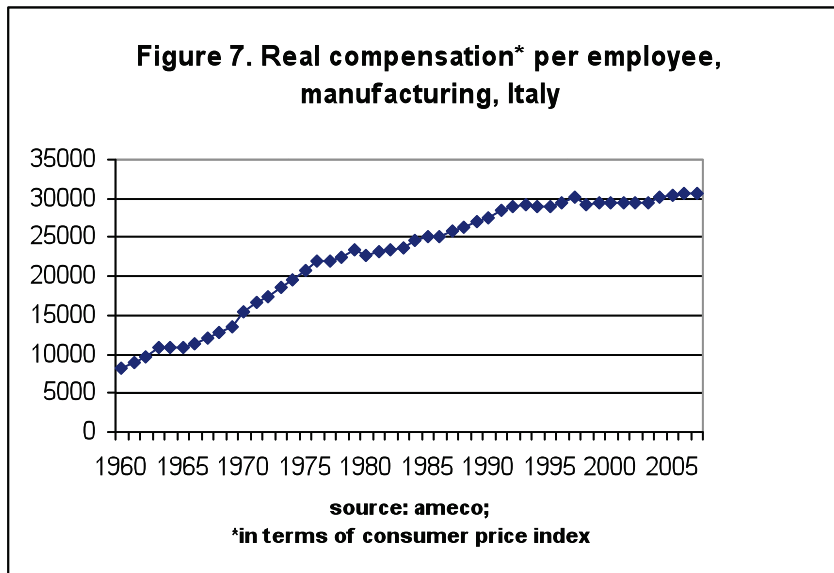


In the following section we shall discuss real wage trends and their possible causes, thus also testing the role of the changes in relative prices in affecting real wage trends.

4. The Italian Case: Trends in Real Wages

We have seen above that the fall in the ratio between real compensation (in terms of the consumer price index) and productivity has contributed to the decline in the wage share both in manufacturing and services. While for the purpose of the present paper productivity growth can be regarded as exogenous, some assessment will be attempted of the causes of the decline in wage growth. The focus will be on manufacturing wages (real compensation), owing to

their role in determining wage trends in the rest of the business sector; simple observation of their levels over time (figure 7) reveals that growth accelerated in 1969 and 1970, when rank and file union militancy was very strong, and remained outstanding until 1976 (the average annual growth rate between 1969 and 1978 is 7%), followed by a period of growth interruption and then by much more moderate growth until 1992 (the average growth rate 1978-92 is 1,9%). From 1993 until the end of the period wages tend to stagnate, with an average annual increase of about 0.4%.



The changes taking place in the late 1970s-early 1980s and in 1992 are very clearly associated with institutional changes.¹⁷ In 1992 a formal change in national wage-setting took place, entailing a complete dismantling of automatic wage indexation to the cost of living index (*scala mobile*), which was substituted by a system of money wage increases at national level based on ‘planned’ or target inflation, with subsequent recouping of the difference between target and actual inflation *de facto* subject to discretionary bargaining between the parties. Gains in productivity were supposed to be redistributed to workers by firm-level bargaining, which however remained very limited, affecting a minority of workers employed in larger firms. On the other hand, in 1991 incentives were approved that reduced the costs of short-term contracts for young workers (*contratti di formazione-lavoro*), and later on, in 1997 and 2001, new forms of flexible, short-term employment contracts were introduced.

¹⁷ For a more detailed discussion see Levrero and Stirati, 2006.

The end of 1970s-beginning of 1980s phase is a complex one. Along with the changes in the macroeconomic international context, in Italy there was along with a more moderate attitude on the part of the unions, a weakening in union rank and file militancy associated with processes of restructuring and employment reduction in larger firms, followed by a major union defeat in 1980, which marked a turning point in labour relations. It also was a period of great political turmoil, which saw the failure of the communist party's political project to become part of a wider government coalition. Macroeconomic policies changed, including a new exchange rate regime involving real appreciation of the lira, while later on, in 1984 there was a reduction in the degree of coverage against price increases provided by the indexation system (Levrero and Stirati, 2004: 78-80).

Such institutional changes appear to be able to account, *prima facie*, for the observed changes in real wages trends. It is legitimate however to wonder which other factors may have had a role, if any, in addition to those institutional changes. Not only this, but also whether the latter were in turn triggered, or at least made possible, by other underlying factors, or whether such factors had a role in rendering those changes effective in curbing workers' bargaining power and wage growth. From this point of view some obvious candidates are labour market variables such as the unemployment rate, which had been on the rise since the mid-seventies, employment growth in manufacturing and productivity growth. In the case of the latter however, the previous analysis shows that comparing the real wage in terms of the cost of living index with the real product per worker as calculated by the implicit industry deflator may be misleading, as it would conceal the role of the change in relative prices. Indeed productivity in each sector should be compared with the product wage – yet the expectation is that the other variables affect the bargaining power of workers over the real wage as commonly expressed as purchasing power in terms of the wage basket, which is the target of wage bargaining. I shall therefore follow the unusual procedure of deflating value added per worker by the consumer price index, thus taking account of the possible constraints to bargaining in manufacturing coming not only from productivity growth as it is customarily defined, but also from the changes in relative prices highlighted by the previous analysis. Indeed, non reported results show that productivity thus measured has a higher coefficient and statistical significance than when it is taken in the usual form. To take account of the changes undergone in labour market de-regulation, a variable consisting of the ratio of short term

labour contracts to the whole of employment in the economy is also introduced.¹⁸ Table 1 reports the results of simple regression analysis where the variables are taken in the form of 3-year moving averages in order to smooth out the variability related to cyclical factors as well as spurious elements, particularly the timing of the renewal of labour contracts. In one specification I also add dummies for 69-71, which were years of exceptionally high union militancy and wage explosion; for 1976-81, to take into account the influence of restructuring in large firms, which were at the core of union militancy and strength, as well as of the political situation briefly described above;¹⁹ and 1993-2006, when the above mentioned changes in labour market regulation were introduced. The regression results are very good, and confirm the statistical and economic significance of all the variables considered.²⁰

TABLE 1
DEPENDENT VARIABLE:GROWTH RATE OF REAL COMPENSATION°
MANUFACTURING
ITAL 1962-2006

		C	Un*	Empl ^{oo}	VA /L.**	ST ***	69-71 ^{ooo}	76-81	93-06	Adj R-sq	F	DW
		over CPI										
Eq 1	Coeff	8.1	-0.7	0.6						0.67	46.5	
	<i>Stat t</i>	7.8	-5.3	3.8								
	<i>P</i>	0	0	0								0
Eq 2	Coeff	4.9	-0.44	0.5	0.4					0.77	49.2	
	<i>Stat t</i>	4.2	-3.5	3.7	4.2							
	<i>P</i>	0	0.001	0	0							0
Eq 3	Coeff	4.3	-0.3	0.7	0.3	-0.13				0.79	43	
	<i>Stat t</i>	3.9	-1.9	4.6	2.8	-2.5						
	<i>P</i>	0	0.065	0	0.007	0.018						
Eq 4	Coeff	4.76	-0.27	0.57	0.26		2.32	-2.06	-1.79	0.9	68	1.15
	<i>Stat t</i>	5.99	-2.7	5.48	3.47		3.99	-5.11	-4.24			
	<i>P</i>	0	0.01	0	0.001		0	0	0			0

°Real compensation per employee (FTE when available), 3 years moving average of annual growth rate

* unemployment, Eurostat definition, 3-years moving average of the level

^{oo} employment growth in manufacturing, three years moving average

** manufacturing, 3-years moving average of annual growth rate

of value added per person employed (FTE when available)

***% of short term contracts over employees, entire economy, 3-years moving average,

series starts in 94, assumes value 0 before

^{ooo}all dummies assume value 1 in the years indicated, 0 otherwise

SOURCE: Ameco; Cnel (based on Istat data) for short term contract series

¹⁸ The available series however is unsatisfactory, since it starts in 1993, while forms of short term contracts already existed and were used before; in addition, it takes into account one type only of short term contracts, while several forms of non standard labour contracts were introduced during the 1990s.

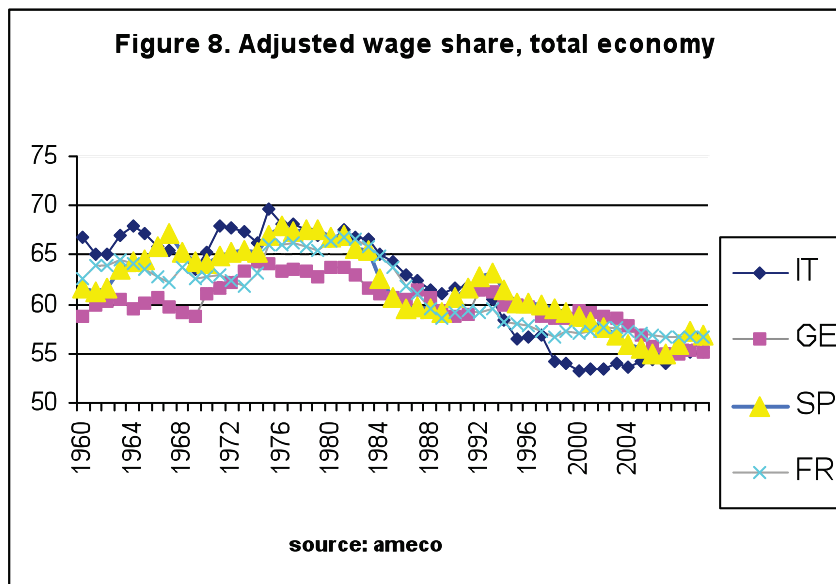
¹⁹ In that period there is also a significant divergence between unemployment as was then measured by national statistics and as it results from the unemployment series revised according to the more restrictive Eurostat definition used in the regression. So it may be the case that the variable used in the regression underestimates unemployment in those years.

²⁰ The DW test is just below the indeterminacy range: this reflects a slightly greater cyclical variability of the real variable *vis a vis* the predicted (see the graphical representation in the *Appendix*). To some extent this may be due to the fact that employment data expressed in full time equivalent units are available only since the

Overall, it is possible to conclude that institutional changes and the labour market variables considered, together with changes in value added per worker in terms of the consumer price index account for the changes in wages growth rates over a long period of time.

5. Comparing Major European Countries.

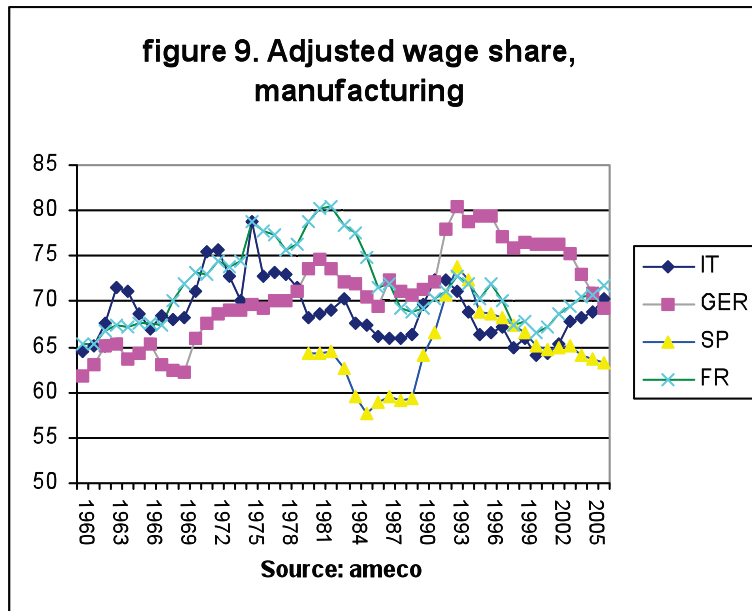
In this last section I shall compare the major economies in the euro-area - Germany, France, Italy and Spain - to check for similarities and differences, and verify whether the results of the comparison are consistent with the analysis suggested in the preceding paragraphs.



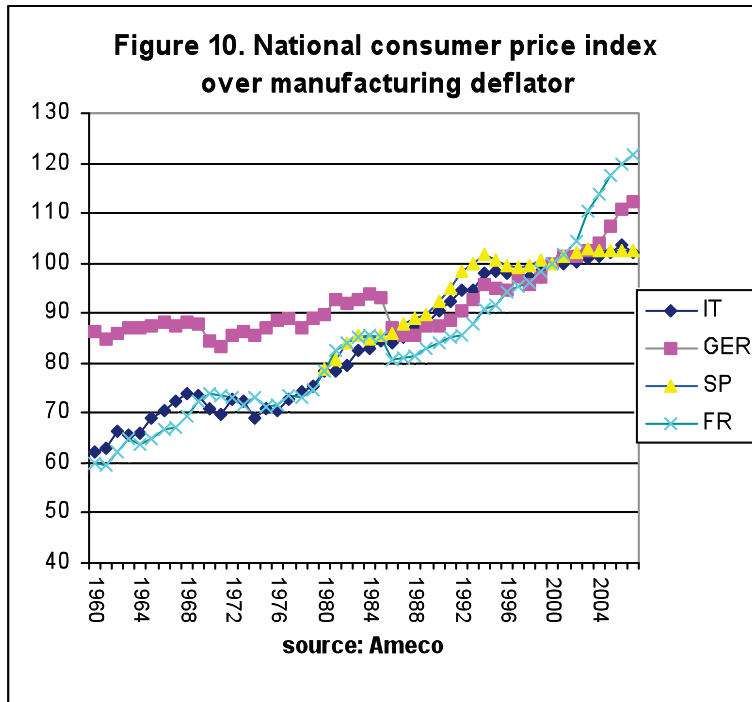
The trends in the aggregate adjusted wage share are very similar in the *timing* and *direction* of the changes (figure 8), though since the 1990s Italy has performed much worse than the others in terms of the *size* of the change. There is however greater diversity in the wage share in manufacturing (figure 9), particularly in the case of Germany: in this country the wage share declines only for a limited number of years between 1981-1986, and subsequently between 1996 and 2006 (after an upward jump in 1992, which coincides with the shift in the data series from West Germany alone to Germany as a whole), while in Italy,

seventies; but compensation per head (rather than per FTE unit) over the cycle resents also of the pro-cyclical

Spain and France in the mid-70s-early 1980s begins a long-term decline, which continues till 2000 with a brief interruption in the years of cyclical expansion between 1990 and 1992. After 2000 France and Italy exhibit an increase in the wage share, which in France is due to a faster rise in wages, while in Italy to the decline in productivity, with stagnant wages.

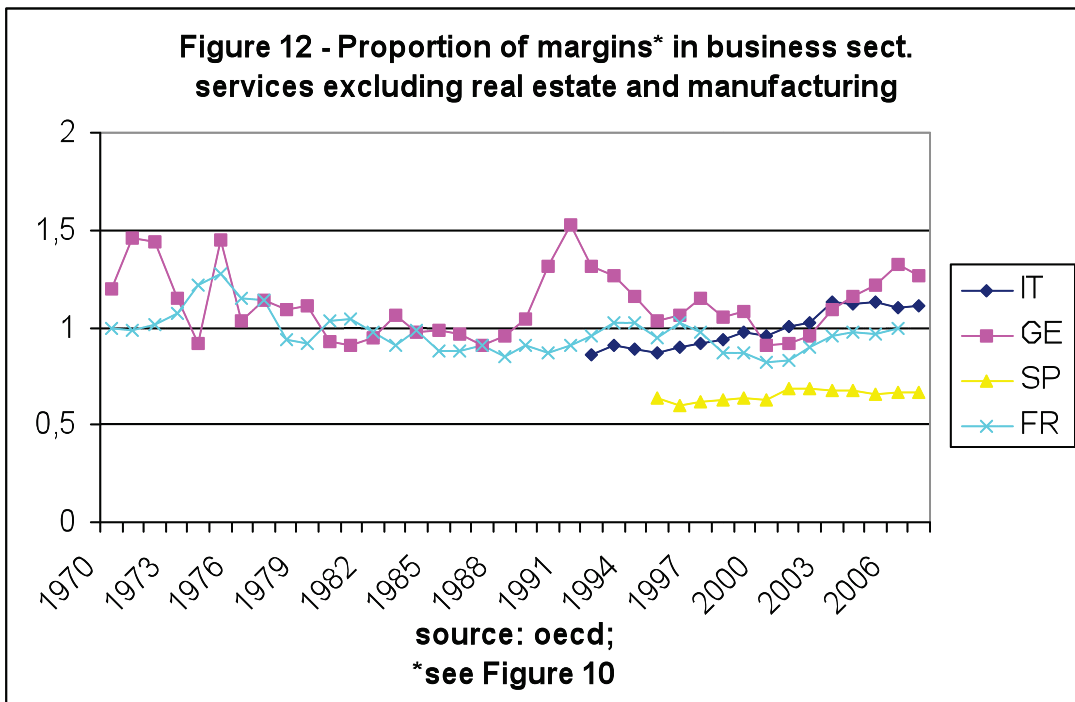
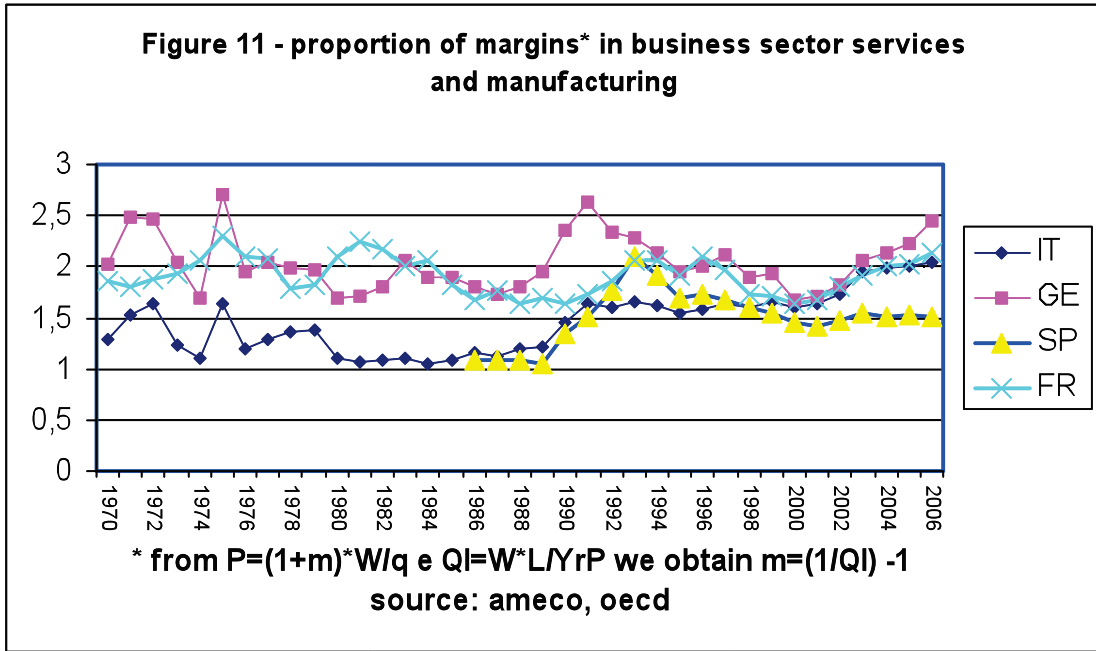


changes in hours worked. Heteroskedasticity is rejected and the residuals are distributed with mean zero.

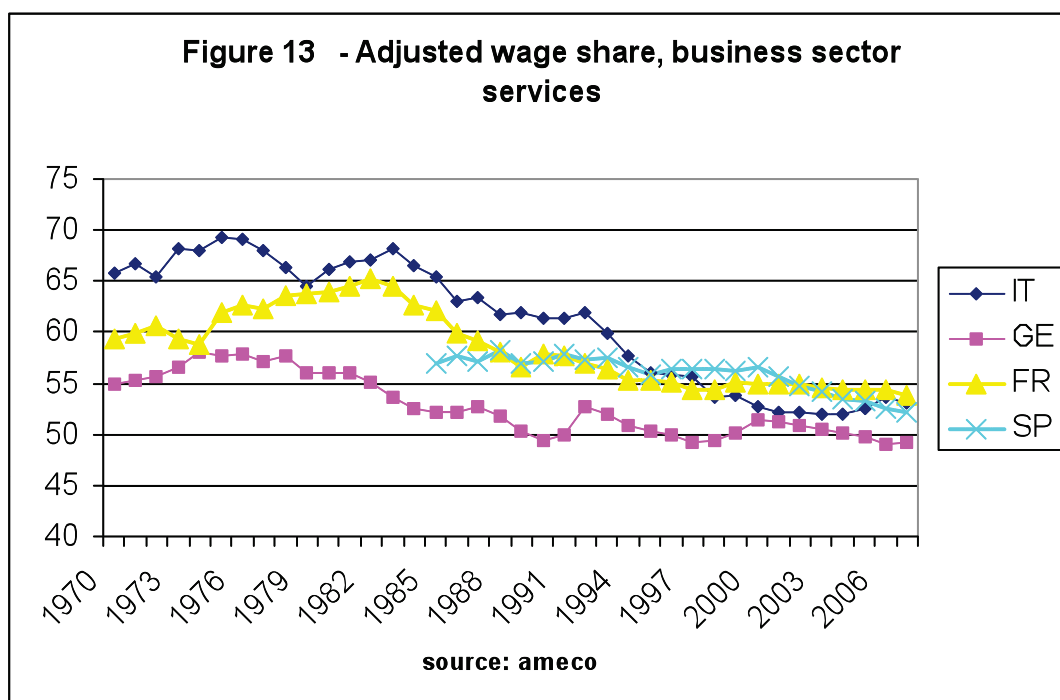


In Germany there is no long-term increase in the consumer price index compared with manufacturing deflator until the beginning of the 1990s, but afterwards it follows a path similar to that of other countries (figure 10).

More interestingly, however, in Germany and France there is no long-term tendency towards an increase of margins in business service sector relative to manufacturing until 2000, while they increase in Italy and Spain (figure 11). After 2000 there is a very fast and marked growth in the proportion between service and manufacturing margins in all countries, which is to a large extent determined by rising rents in the real estate sector (figure 12).



The increase in margins is mirrored in the decline in the adjusted wage share in the business sector services, which over the entire period is much less marked in Germany, followed by France, than in Italy (figure 13).



Overall, these data are consistent with the idea that changes in relative prices may have had a role in the decline in the wage share in manufacturing, with the case of Germany also confirming that one of the causes of this change may have been the pressure of international competition on manufacturing prices, since Germany has outpaced Italy and Spain in manufacturing productivity growth since the early 1990s and France since 2000, and has thus experienced a tendency towards real depreciation *vis-à-vis* the other major European countries. However, it can also be noted that since 2000 Germany has become more similar to the other countries in terms of changes in income shares and service *vis-à-vis* manufacturing sector margins. It may be the case that in the latter period, despite the better productivity performance with respect to the other major European countries, external pressures on manufacturing firms were increasingly caused by competition on international markets from non-European countries.

With regard to the variables affecting real wage growth in manufacturing, *table 2* reports the results of a simple regression exercise where the independent variables are unemployment rate, employment growth in manufacturing and value added per worker measured (except for Spain) in terms of the cost of living index;²¹ as before, all variables are three-year moving averages. Dummies have been added for episodes in which the actual rate of growth of wages

²¹ The reasons for this are explained above: 16-17

departed significantly from the trend predicted by the regression. The results indicate that in Spain and Germany either unemployment or employment growth, or both, as well as, in the case of Germany, productivity,²² have had a significant role, similarly with the results obtained for Italy.²³ As shown by the dummies, other factors as well have been very important at particular junctures.

In the case of France, although there is a significant correlation between unemployment and real wage growth, the overall regression results are not significant. One might conjecture that the existence of a legal minimum wage, the increase of which is partly related to what happens to actual wages,²⁴ and partly to economic policy decisions, may have caused a difference in the factors affecting wage fixing in this country with respect to the others.

In all cases, the existence of differences across countries in the weight and statistical significance of the variables indicates the importance of country-specific institutional and social conditions.

²² For Germany and France, as for Italy, non reported results show that productivity in terms of the cost of living index is more statistically significant and has higher coefficients than when measured in terms of the manufacturing deflator. For Spain however available data did not allow constructing this series and value added per worker at constant prices was used instead.

²³ For Spain and Germany heteroskedasticity is rejected and residuals have mean zero. The DW test for Spain is indeterminate but the Breush-Godfrey test rejects serial correlation. The latter instead exists for Germany, where actual wage growth is slightly more pro-cyclical than the estimated variable. The reason might be the same as was discussed for Italy (see fn 18 above), since the employment series expressed in full time equivalents is available for Germany only since 1990.

²⁴ Since it is established as a rule that it must grow at least as much as half the increase in actual hourly wages

TABLE 2										
DEPENDENT VARIABLE: GROWTH RATE OF REAL COMPENSATION ^o IN MANUFACTURING										
		C	Un*	Empl ^{oo}	VA/L**	69-71 ^{ooo}	95 ^{ooo}	Adj R-sq	F	DW
GE	1962-2006***				over CPI					
Eq 1	Coeff	4.9	-0.44					0.4	30	
	Stat t	10	-5.51							
	P	0	0						0	
Eq 2	Coeff	2.8	-0.28		0.56			0.7	51	
	Stat t	6	-4.54		6.52					
	P	0	0		0				0	
Eq 3	Coeff	3.9	-0.44	-0.24	0.58			0.74	43	
	Stat t	6.7	-5.49	-2.86	7.29					
	P	0	0	0.006	0				0	
Eq 4	Coeff	3.3	-0.35	-0.13	0.46	3.05	3.5	0.88	65	1.06
	Stat t	8.2	-6.19	-2.03	8.08	5.82	4.24			
	P	0	0	0.023	0	0	0		0	
		C	Un*	Empl^{oo}	VA/L			Adj R-sq	F	
FR	1962-2005				over CPI					
Eq 1	Coeff	4.8	-0.4					0.28	18	
	Stat t	6.9	-4.21							
	P	0	0						0	
Eq 2	Coeff	3.3	-0.31		0.38			0.32	11	
	Stat t	3	-2.92		1.81					
	P	0	0.005		0.076				0	
Eq 3	Coeff	3.2	-2.28	0.11	0.37			0.3	7.3	
	Stat t	2.8	-2.23	0.42	1.68					
	P	0	0.031	0.673	0.1				0	
		C	Un*	Empl^{oo}	VA/L	76-78^{ooo}	88-92^{ooo}	Adj R-sq	F	DW
SP	1962-2006				man. defl^{oooo}					
Eq 1	Coeff	6	-0.51					0.41	33	
	Stat t	5.8	-5.72							
	P	0	0						0	
Eq 2	Coeff	3.8	-0.41		0.26			0.42	18	
	Stat t	2	-3.37		1.33					
	P	0	0.001		0.19				0	
Eq 3	Coeff	1.5	-2.24	0.8	0.26			0.61	25	
	Stat t	0.9	-2.33	4.67	1.64					
	P	0.4	0.024	0	0.107				0	
Eq 4	Coeff	4.5	-0.48	0.56	0.13	-6.41	5.48	0.86	56	1.35
	Stat t	3.9	-6.66	5.15	1.2	-5.66	6.47			
	P	0	0	0	0.234	0	0		0	
^o Real compensation per employee (FTE when available), 3 years moving average of annual growth [*] unemployment, Eurostat definition, 3 years moving average of the level ^{**} manufacturing, 3-years moving average of annual growth rate of value added per person (FTE when available) ^{oo} employment growth in manufacturing, three years moving average ^{***} West Germany data until 1992; unified Germany afterwards. Estimates for the sub-period 1962-1992 give very similar results ^{ooo} all dummies assume value 1 in the years indicated, 0 otherwise ^{oooo} series of VA at current prices not available for the entire period. SOURCE: Ameco										

Conclusions

Along with institutional factors, labour market variables appear to have had a role in determining the trends in real wages that underlie the changes in income shares in Italy as well as in other European countries. This points to mutual interdependence between income distribution and unemployment of a nature entirely different from that normally assumed in mainstream models. Such interdependence rests on the Keynesian link, mentioned in the introduction, between income distribution and effective demand formation on the one hand, and a Classical-Marxian relation between labour market conditions and the bargaining position of workers on the other. This suggests that economic policies aimed at improving income distribution or sustaining aggregate demand and employment would be more effective if they addressed both issues together. The influence of labour market conditions on wages also suggests that in the current crisis further changes in distribution unfavourable to labour are most likely to occur. Policy intervention and institutional reforms in the area of industrial relations and labour market regulation opposite in sign to those pursued in previous decades therefore appear to be in order to preserve or increase the wage share, which in turn could contribute to sustaining aggregate demand and would enhance the impact of public expenditure packages adopted in many countries to counteract the current crisis. The analysis also suggests that, along with the changes mentioned above and the redistribution of income by means of taxation policy, another tool for improving workers' purchasing power could be that of price and tariff controls in the sectors (including real estate) not exposed to international competition in product markets.

The simple analysis carried out here does not allow any conclusions to be drawn concerning the relative contribution to the deterioration of labour market conditions and slow wage growth of factors such as capital market liberalization (as emphasized for example in ILO, 2008; Jayadev 2007), labour market de-regulation and macroeconomic policies carried out in advanced economies and European countries in particular (Unctad, 2001; ILO 2008), or the processes of globalization in product (Stockhammer, 2009) and labour markets. The question is important for policy-making, and is open to further empirical investigations carried out in a non main-stream perspective.

References

- Barba A. & Pivetti M. (2008) *Rising household debt: Its causes and macroeconomic implications—a long-period analysis*, *Cambridge Journal of Economics*, August.
- Brancaccio E. (2011) *Introduction* to Brancaccio E. & Fontana G (eds) *The Global Economic Crisis: New Perspectives on The Critique of Economic Theory and Policy*, Routledge
- Cesaratto S. (2007) The Classical ‘Surplus’ Approach and the Theory of the Welfare State and Public Pensions, in: G.Chiodi e L.Ditta (eds.), *Sraffa or An Alternative Economics*, Basingstoke: Palgrave Macmillan.
- Fitoussi J.P. and Saraceno F. (2010) Europe: How Deep is a Crisis? Policy Responses and Structural Factors Behind Diverging Performances, *Journal of Globalization and Development*, vol 1, no.1
- Fitoussi, J.P and Stiglitz J. (2009), *The ways out of the crisis and the building of a more cohesive world*, OFCE, Working paper no. 2009-17.
- Foster J.B. and Magdoff F. (2009) *The Great Financial Crisis, Causes and Consequences*, Montly Review Press, New York
- Garegnani P. (1970) Heterogeneous Capital, the Production Function and the Theory of Distribution, *Review of Economic Studies*, 3.
- ILO (2008) *World of Work Report*, Geneva
- IMF (2007a) *World Economic Outlook*, April, Washington
- IMF (2007b) *World Economic Outlook*, October, Washington
- Jayadev A. (2007) Capital account openness and the labour share of income, *Cambridge Journal of Economics*, 31: 423-443.
- Levrero S. and Stirati A. (2004) Real Wages in Italy 1970-2000, elements for an interpretation, *Economia & Lavoro*, XXXVIII, no 1: 65-89.
- Levrero S. and Stirati A. (2005), Distribuzione del reddito e prezzi relativi in Italia 1970-2002, *Politica Economica*, n. 3.
- Levrero S. and Stirati A. (2006) The Influence of Unemployment, Productivity and Institutions on Real Wage Trends: The Case of Italy 1970-2000, in E. Hein. A. Heise and A. Truger (eds) *Wages Employment and Growth – International Perspectives*, Palgrave-Macmillan

- Lopez A., Silva J.I. (2009) *Employment protection and the non-linear relationship between the wage-productivity gap and unemployment*, http://works.bepress.com/jose_silva/8/
- OECD (2008) *Growing Unequal? Income Distribution and Poverty in OECD Countries*, Paris.
- Petri F. (2004) *General Equilibrium, Capital and Macroeconomics*, Cheltenham, Edward Elgar.
- Stirati, A. (1992) "Unemployment, Institutions and the Living Standard in the Classical Theory of Wages", *Contributions to Political Economy*, 11.
- Stirati, A. (1999) "Wages in Sraffian Political Economy" entry in Ph. O'Hara (ed), *Encyclopedia of Political Economy*, Routledge, 1999
- Stockhammer E. (2009) *Determinants of Functional Income Distribution in Oecd Countries*, IMK studies, September.
- Stockhammer E., Onaran O., Ederer S. (2007) *Functional Income Distribution and Aggregate demand in the Euro Area*, Vienna University of Economics, Department of economics Working Paper series, no 102, February.
- UNCTAD (2001) *Globalization and the Labour Market*, Unctad/GDS/MDPB/Misc 14, October

APPENDIX

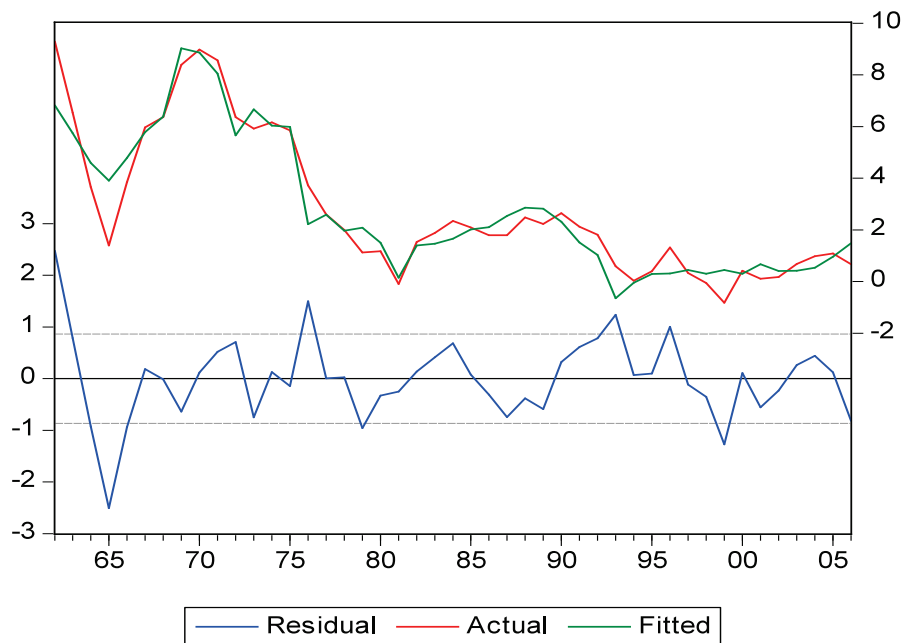
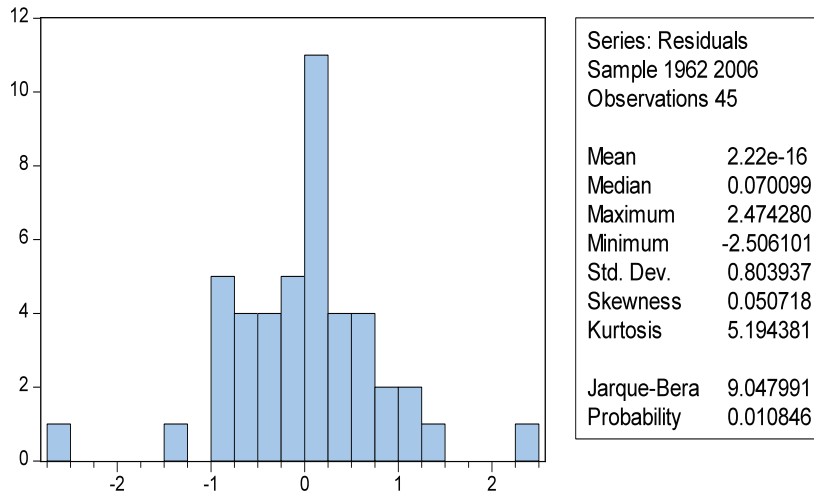
Statistical analysis and graphical representations of Equations 4 in tables 1 and 2 in the text for Italy, Germany and Spain

ITALY

Dependent Variable: REAL
 Method: Least Squares
 Date: 06/10/10 Time: 12:17
 Sample: 1962 2006
 Included observations: 45

	Coefficient	Std. Error	t-Statistic	Prob.
C	4.762149	0.795519	5.986217	0.0000
UNEMPLOYMENT	-0.267739	0.099125	-2.701013	0.0103
VA/L over CPI	0.263283	0.075825	3.472238	0.0013
EMPLOYEES	0.568563	0.103675	5.484102	0.0000
DUMMY_69_71	2.316978	0.580752	3.989616	0.0003
DUMMY_76_81	-2.062879	0.403371	-5.114093	0.0000
DUMMY93_2006	-1.792370	0.422158	-4.245729	0.0001
R-squared	0.914835	Mean dependent var		2.810494
Adjusted R-squared	0.901388	S.D. dependent var		2.754813
S.E. of regression	0.865081	Akaike info criterion		2.690048
Sum squared resid	28.43788	Schwarz criterion		2.971084
Log likelihood	-53.52607	Hannan-Quinn criter.		2.794815
F-statistic	68.03225	Durbin-Watson stat		1.154319
Prob(F-statistic)	0.000000			

Residuals:



Heteroskedasticity:

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.001199	Prob. F(6,38)	0.4388
Obs*R-squared	6.142717	Prob. Chi-Square(6)	0.4074
Scaled explained SS	9.186297	Prob. Chi-Square(6)	0.1634

Serial correlation:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	4.059150	Prob. F(1,37)	0.0512
Obs*R-squared	4.448747	Prob. Chi-Square(1)	0.0349

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 06/10/10 Time: 16:32

Sample: 1962 2006

Included observations: 45

Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023524	0.765399	-0.030735	0.9756
UNEMPLOYMENT	0.015691	0.095679	0.164001	0.8706
VA/L over CPI	-0.022294	0.073780	-0.302165	0.7642
EMPLOYEES	0.027102	0.100641	0.269295	0.7892
DUMMY_69_71	0.054617	0.559356	0.097643	0.9227
DUMMY_76_81	-0.033099	0.388401	-0.085217	0.9325
DUMMY93_2006	-0.142402	0.412232	-0.345441	0.7317
RESID(-1)	0.325790	0.161704	2.014733	0.0512
R-squared	0.098861	Mean dependent var		2.22E-16
Adjusted R-squared	-0.071625	S.D. dependent var		0.803937
S.E. of regression	0.832230	Akaike info criterion		2.630396
Sum squared resid	25.62648	Schwarz criterion		2.951581
Log likelihood	-51.18392	Hannan-Quinn criter.		2.750131
F-statistic	0.579879	Durbin-Watson stat		1.606152
Prob(F-statistic)	0.767656			

GERMANY

Dependent Variable: REAL_COMPENSATION

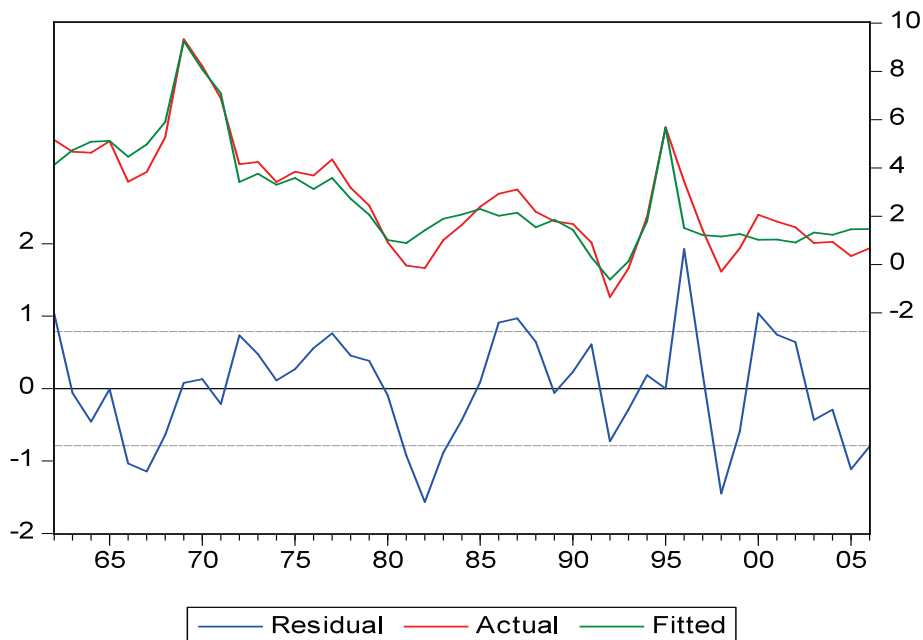
Method: Least Squares

Date: 06/10/10 Time: 16:38

Sample: 1962 2006

Included observations: 45

	Coefficient	Std. Error	t-Statistic	Prob.
C	3.284871	0.402368	8.163858	0.0000
GDPXPERS_CPI	0.462857	0.057246	8.085450	0.0000
UN	-0.353165	0.057019	-6.193792	0.0000
EMPLOYEES	-0.135657	0.058757	-2.308773	0.0263
DUMMY95	3.508269	0.828391	4.235038	0.0001
DUMMY_69_71	3.049536	0.523078	5.829980	0.0000
R-squared	0.893177	Mean dependent var		2.752152
Adjusted R-squared	0.879482	S.D. dependent var		2.266557
S.E. of regression	0.786851	Akaike info criterion		2.482010
Sum squared resid	24.14625	Schwarz criterion		2.722899
Log likelihood	-49.84523	Hannan-Quinn criter.		2.571811
F-statistic	65.21817	Durbin-Watson stat		1.063720
Prob(F-statistic)	0.000000			



Serial correlation

Heteroskedasticity:

Dependent Variable: REAL_COMPENSATION

Method: Least Squares

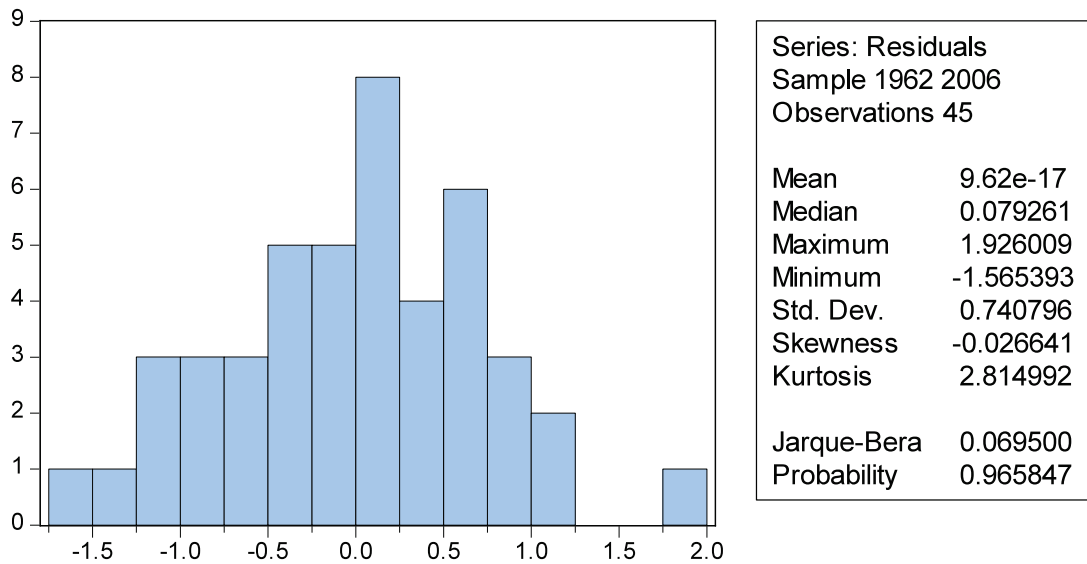
Date: 06/10/10 Time: 16:38

Sample: 1962 2006

Included observations: 45

	Coefficient	Std. Error	t-Statistic	Prob.
C	3.284871	0.402368	8.163858	0.0000
GDPXPERS_CPI	0.462857	0.057246	8.085450	0.0000
UN	-0.353165	0.057019	-6.193792	0.0000
EMPLOYEES	-0.135657	0.058757	-2.308773	0.0263
DUMMY95	3.508269	0.828391	4.235038	0.0001
DUMMY_69_71	3.049536	0.523078	5.829980	0.0000
R-squared	0.893177	Mean dependent var		2.752152
Adjusted R-squared	0.879482	S.D. dependent var		2.266557
S.E. of regression	0.786851	Akaike info criterion		2.482010
Sum squared resid	24.14625	Schwarz criterion		2.722899
Log likelihood	-49.84523	Hannan-Quinn criter.		2.571811
F-statistic	65.21817	Durbin-Watson stat		1.063720
Prob(F-statistic)	0.000000			
Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.690243	Prob. F(5,39)		0.6338
Obs*R-squared	3.658429	Prob. Chi-Square(5)		0.5996
Scaled explained SS	2.493696	Prob. Chi-Square(5)		0.7774

Residuals:



SPAIN

Dependent Variable: REAL_COMPENSATION

Method: Least Squares

Date: 06/11/10 Time: 18:06

Sample: 1962 2006

Included observations: 45

	Coefficient	Std. Error	t-Statistic	Prob.
C	4.478314	1.162715	3.851601	0.0004
UNEMPLOYMENT	-0.483619	0.072568	-6.664337	0.0000
EMPLOYEES	0.560228	0.108729	5.152513	0.0000
VA/L at const. prices	0.126904	0.105000	1.208613	0.2341
DUMMY 88_92	5.475516	0.845873	6.473211	0.0000
DUMMY 76_78	-6.410918	1.132380	-5.661453	0.0000
R-squared	0.878341	Mean dependent var		0.875440
Adjusted R-squared	0.862744	S.D. dependent var		4.606942
S.E. of regression	1.706786	Akaike info criterion		4.030667
Sum squared resid	113.6117	Schwarz criterion		4.271556
Log likelihood	-84.69001	Hannan-Quinn criter.		4.120468
F-statistic	56.31357	Durbin-Watson stat		1.346939
Prob(F-statistic)	0.000000			

Serial correlation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.944289	Prob. F(1,38)	0.0943
Obs*R-squared	3.235934	Prob. Chi-Square(1)	0.0720

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 06/11/10 Time: 18:19

Sample: 1962 2006

Included observations: 45

Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.003426	1.134775	-0.003019	0.9976
EMPLOYEES	0.007986	0.106218	0.075187	0.9405
UNEMPLOYMENT	0.001448	0.070829	0.020447	0.9838
VA/L at const. prices	-0.002626	0.102488	-0.025625	0.9797
DUMMY_76_78	0.136415	1.108023	0.123116	0.9027
DUMMY88_92	-0.145912	0.829913	-0.175816	0.8614
RESID(-1)	0.270683	0.157750	1.715893	0.0943
R-squared	0.071910	Mean dependent var		-1.70E-16
Adjusted R-squared	-0.074631	S.D. dependent var		1.606886
S.E. of regression	1.665769	Akaike info criterion		4.000486
Sum squared resid	105.4419	Schwarz criterion		4.281522
Log likelihood	-83.01093	Hannan-Quinn criter.		4.105253
F-statistic	0.490715	Durbin-Watson stat		1.865827
Prob(F-statistic)	0.811149			

Heteroskedasticity:

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.881497	Prob. F(5,39)	0.5026
Obs*R-squared	4.569183	Prob. Chi-Square(5)	0.4707
Scaled explained SS	2.663646	Prob. Chi-Square(5)	0.7517

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/11/10 Time: 18:20

Sample: 1962 2006

Included observations: 45

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.927959	2.181777	0.883665	0.3823
EMPLOYEES	-0.217722	0.204025	-1.067138	0.2925
UNEMPLOYMENT	0.017797	0.136171	0.130695	0.8967
VA/L at const.prices	0.190141	0.197027	0.965050	0.3405
DUMMY 76_78	0.623663	2.124855	0.293508	0.7707
DUMMY 88_92	-1.729891	1.587239	-1.089874	0.2825
R-squared	0.101537	Mean dependent var		2.524703
Adjusted R-squared	-0.013650	S.D. dependent var		3.181062
S.E. of regression	3.202699	Akaike info criterion		5.289431
Sum squared resid	400.0340	Schwarz criterion		5.530319
Log likelihood	-113.0122	Hannan-Quinn criter.		5.379232
F-statistic	0.881497	Durbin-Watson stat		1.585164
Prob(F-statistic)	0.502589			

Residuals: