

The Declining Labour Share: Lessons from Finnish Micro-Data

Tomi Kyyrä (VATT)* and Mika Maliranta (ETLA)†

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Abstract

Contrast with the experiences of UK and US, the distribution of labour and capital income has changed sharply in favour of capital in most continental European and Nordic countries during the past two decades. In this study we examine forces behind the evolution of the aggregate labour share by analysing the dynamics of labour shares within and between firms/plants in the Finnish business sector. Using the decomposition methods applied in labour economics and productivity analysis, we show that much of the decline in the aggregate labour share stems from the reallocation of resources between firms and plants, while labour shares at firm/plant level have remained relatively stable.

Keywords: Factor income shares, wage policy, decomposition, productivity

JEL classification: J23, J24, D33

*The Government Institute for Economic Research (VATT), P.O.Box 1279, FIN-00101 Helsinki, FINLAND; E-mail: tomi.kyyra@vatt.fi

†The Research Institute of the Finnish Economy (ETLA), Lönnrotinkatu 4 B, FIN-00120 Helsinki, FINLAND; E-mail: mika.maliranta@elta.fi

1 Introduction

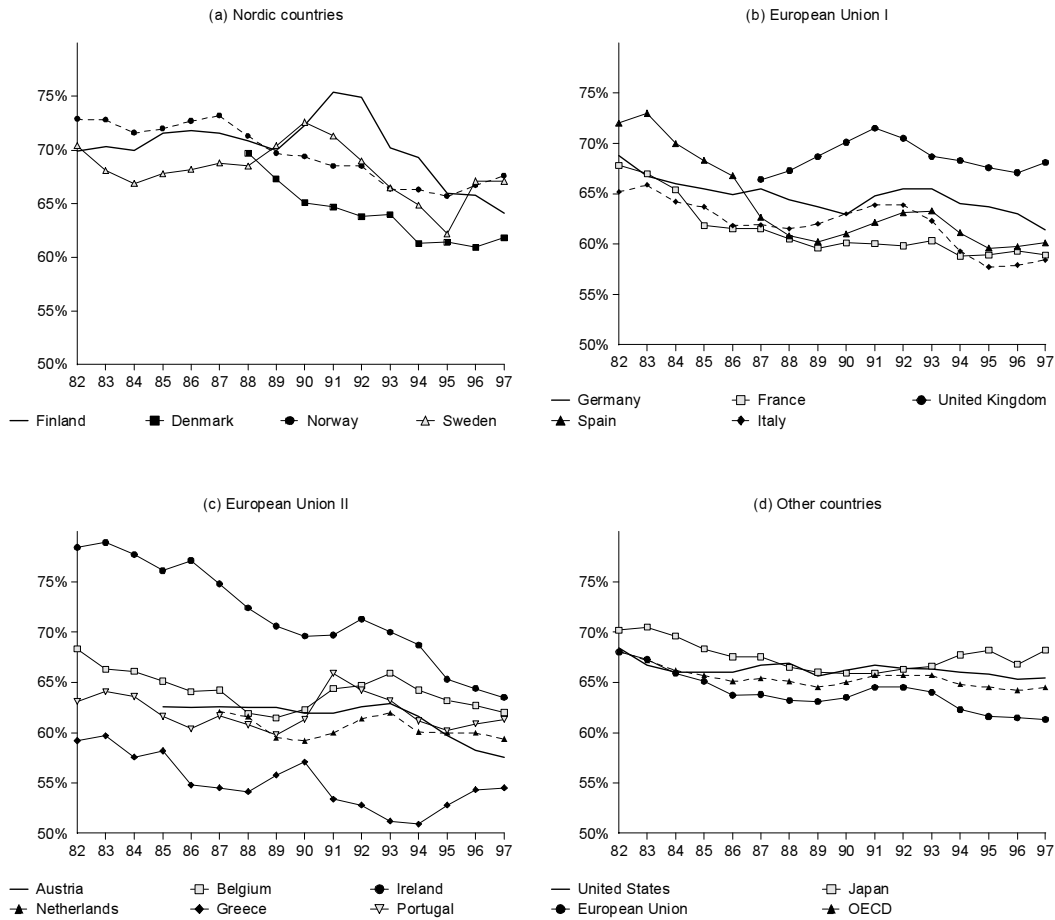
Factor income shares between labour and capital are interesting for various reasons. Low returns to capital and bad profitability of firms can be expected to lead to low investments, low job creation and high job destruction. As the collateral value of R&D investments are often doubtful from the point of view of lenders, internal funds are likely to be particularly important source for this type of investments that are important for technological progress. On the other hand, looking at from another direction, the balance of the factor income shares have often been argued to be a matter of equity and as such it is an important issue in the field of political economy and an essential aspect behind the process of evolution of institutions. Moreover, in Finland, as in many other Scandinavian countries, the balance of factor income shares is one important target of wage policy and consequently has direct consequences to wage formation.

Figure 1 shows the evolution of labour shares in the business sector since 1982 for selected OECD countries. It points smooth declining paths, starting in the early or mid 1980s, for most economies in the continental Europe and sharp declines in the 1990s for the Nordic economies. These findings are in clear contrast to the US, UK, and Japan, where the labour shares exhibit stable paths over the period.

Changes in income shares can be explained by the characteristics of technological progress (e.g. non-neutral technological change) as well as by institutional factors (e.g. changes in bargaining power). Caballero and Hammour (1998) argue that institutional reforms aiming to capture rents from capital a few decades ago have eventually led to higher unemployment and sclerotic production structures in France, and as in many other countries in mainland Europe. After a temporary increase during the 1970s the labour income share eventually pounced back to the starting level and then fell below it by the end of the 1980s. The explanation provided by Caballero and Hammour is that the "appropriation push" induced firms to such technology choices that allowed them substitute capital for labour in the long run. According to their argument, insider workers managed to gain job-protection regulations that were needed to hamper job destruction of their jobs. Adjustment process also involved decline in job creation so that the burden of adjustment fell very much on the younger workers and the other outsiders of the rent-seeking coalitions.

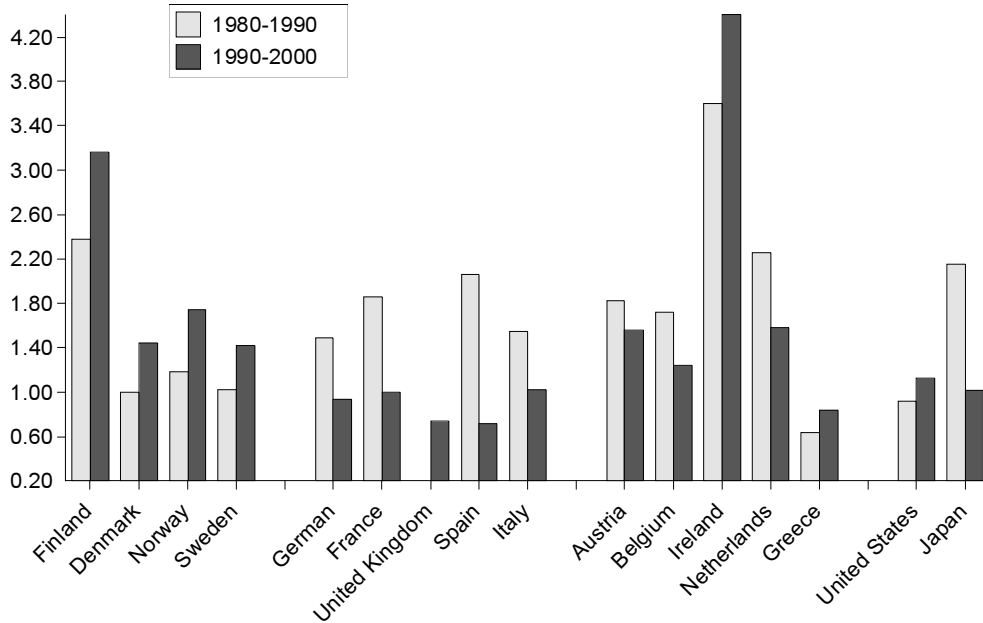
On the other hand, Bertola and Rogerson (1997) has pointed out that the restrictions (firing cost policies) in the labour markets are usually implemented together

Figure 1: Labour shares in the business sector for some OECD countries (Source: OECD, 1998)



with wage compression policies. Wage compression in itself can be expected to lead to more intensive micro-level restructuring through simultaneous job creation and destruction and thus faster technological transformation when technology is embodied into production capital of new firms and plants (see e.g. Moene and Wallerstein, 1997). At this point it is important to note that Scandinavian countries differ from many countries in mainland Europe. Severance payments are rear. For example, according to Eurostat (1996) payments to employees leaving the enterprise as a percent of total labour cost were particularly low in Finland, like in Sweden and in Denmark in particular. Difficulty of dismissals is low, especially when a firm has financial or production-related reasons (OECD, 1999). OECD (1999) provides evidence that this feature of employment protection has a very significant negative relationship with worker turnover and unemployment inflow rate that both are important for an

Figure 2: Multi-factor productivity growth estimates for some OECD countries (Source: OECD, 2003)



micro-structural adjustment to a technology shock. The greater insecurity due to lower dismissal restrictions are compensated by reasonable social security provided by the government. In Nordic countries inequality of overall income (after taxation and transfers) is among the lowest in the world (Schettkat, 2002).

From the point of view of micro level restructuring, wage dispersion between plants and firms is arguably important. Coordination of agreements on the terms and conditions of employment between industries and firms characterises the Finnish and Scandinavian wage bargaining. One of the possible consequences of this may be that there is low "non-competitive" correlation with profitability, average productivity and capital intensity. This would mean that identical worker (with identical working conditions) receive the same wage irrespective of the profitability, productivity or capital of the industry or firm. For example, various kinds of profit sharing systems have been relatively uncommon and insignificant in Finland, especially up to the mid 1990s.

Caballero and Hammour (1998) emphasise the difficulties in writing and enforcing complete long-term contracts that might be needed in the presence of appro-

priable specific quasi-rents. Those can be expected to have emerged in Finland in the latter part of the 1980s as a consequence of increased innovation activity and investments into tangible capital. One stimulus for these may have been the increased integration to the Western markets, which expanded opportunities and generated pressures to productivity advancements. Consistent with this, manufacturing productivity growth was spectacular during the transition period 1985-95 lifting the Finnish productivity level to the global frontier. Maliranta (2003) shows that an important part of this great leap can be explained by increased productivity-enhancing plant-level restructuring during that episode. As a sharp contrast to the development in US manufacturing since the latter part of the 1980s, documented by Dunne, Foster, Haltiwanger, and Troske (2000), the Finnish manufacturing sector did not witness substantial increases in wage dispersion between plants (Maliranta and Vainiomäki, 2004). This is in accordance with the view that collective agreements have hindered the extraction of firm or plant-specific quasi-fixed rents by current insider workers.

At this point it is illustrative to compare the long-term patterns of the labour shares with the estimates of average annual multi-factor productivity growth rates in Figure 2. In the 1990s productivity growth has been fastest in Ireland (4.41%) and Finland (3.16%), both of which experienced the sharpest drops in the labour share. Other Nordic countries (Norway, Sweden, and Denmark), which have labour markets institutions quite similar to Finland, experienced declines in labour shares in the 1990s that were entailed with high multi-factor productivity growth rates, too. By contrast, countries with stable labour shares seem to have experienced clearly less rapid technological progress, the US with 1.13 per cent, the UK with 0.74 per cent and Japan with 1.02 per cent growth rate of multi-factor productivity in the 1990s. These observations give some support to the technology-related explanations of the factor income share changes.

An additional piece of motivation comes from some findings made in the OECD's firm-level growth project that involved micro-level decompositions of productivity growth. Those computations shed some further light on the differences in productivity growth rates across countries. According to the results reported in OECD (2002), the restructuring components (between, entry and exit) together had no contribution whatsoever to labour productivity growth in the US manufacturing in years 1992-97. The respective number in the UK was 0.7 percentage points per year. On the other hand, productivity increases through reallocation of labour at the micro level were substantially higher in Finland, the respective number being

2.2 percentage points per year in years 1989-94.

As there is a growing theoretical and empirical literature that emphasises the role of micro-level restructuring in the presence of profound technological advancements it seems advisable to have a look at the micro-level dynamics of changes in factor income shares. Our approach differs fundamentally from the existing analysis of the topic that has based on the aggregate numbers. By using a decomposition method applied in labour economics literature and productivity analysis, we are able to distinguish two very different sources of these aggregate changes; the one reflecting changes in labour shares within plants (i.e. the within component) and the one attributable to micro-structural changes (i.e. the between, entry and exit component). We argue that to the extent that changes in income shares reflect such profound technological advances that involve irreversible investments and substituting new firms and plants for older ones they may be best captured by restructuring components of aggregate income share change. If, on the other hand, the changes in bargaining power between employers and employees is the driving force it should be rather reflected in the within component. When the bargaining power of workers is low due to the high unemployment rate, or because of some other reasons, they must content themselves with low wage increases (e.g. low wage drifts) despite the firms' high productivity and profitability increases.

We apply the decomposition method to two high-quality micro data from Finland. The first one consists of the universe of manufacturing plants above a certain size threshold from 1974 to 2001. The second one is a firm panel for the period 1989-1998, covering a wide range of the business sector. Our empirical results point to a high degree of restructuring between firms and plants. Movements in the aggregate labour share in the 1990s are driven mainly by reallocation of resources between firms and plants. Within firms and plants the labour shares have been surprisingly stable compared with turbulent macro patterns. We interpret these findings so that, in respond to changes in economic environment, the Scandinavian type labour market institutions have stimulated productivity growth and led to a decline in the aggregate labour share via restructuring between sectors and, in particular, between firms and plants within sectors.

The structure of the paper is as follows. In the next section we give an overview of the Finnish labour market institutions and economic environment. Section 3 presents the decomposition method applied in the empirical analysis. The data sets are described in Section 4, which is followed by a section containing our empirical findings. The final section concludes.

2 Background

The nature and magnitude of resource allocation in the economy are determined in large part by institutions, market environment, and their interactions. This makes the period under investigation particularly interesting. During the past two decades Finland has carried out comprehensive liberalization of financial and product markets, experienced one of the most severest depressions in the OECD countries, joined to the European Union and subsequently to the European Monetary Union. Finland has changed from a closed and highly regulated economy to a modern open economy frequently ranked among the top economies in the world in terms of competitiveness and usage of information technologies. This exceptional period in the Finnish economic history has shaped the economic environment to a large extent. Nevertheless, the traditional labour market institutions with a tight corporatist structure have remained unchanged. In this section we give a brief description of the Finnish wage setting institutions and describe macroeconomic trends and changes in the market environment over the past two decades.¹

2.1 Wage setting institutions

The Finnish labour market is characterised by a corporatist structure, where comprehensive unions and employer associations bargain collectively over wages and working conditions in coordination with the government. Unions and employer associations are formed along the industrial lines, and they are further represented by their own central organisations.² Within industries collective agreements are extended to cover also non-organised workers and employers provided that the unionisation rate exceeds a certain threshold value. As a result as much as some 95 percent of all employer-employee relationships are regulated by the collective agreements (Vartiainen, 1998).

Although the binding collective agreements are signed between industrial unions and their employer counterparts, wage negotiations are often coordinated at na-

¹Vartiainen (1998), and Koskela and Uusitalo (2003) include a more complete description of the Finnish labour market institutions. The time around the depression of the 1990s has been analysed in detail by Honkapohja and Koskela (1999) and Kalela et al. (2001).

²The central organisations of unions are SAK, STTK and AKAVA, where the first one represents blue-collar unions and the other two white-collar unions. On the other side, employers in manufacturing and service sectors are represented by TT and PT respectively. In addition, small firms and entrepreneurs have their own organisation, SY, but it has not been allowed to participate in the collective negotiations so far. The central and local governments are of course large employers and have their own bargaining organisations but they typically play a less active role by following the collective agreements reached in the private sector.

tional level. A typical bargaining round begins with preliminary discussions between unions and their central organisations. If the goals of unions appear to be similar enough, the central organisations of the unions can open negotiations with the central employer organisations in an attempt to obtain a nation-wide agreement. If the negotiations are successful, the central organisations agree about a centralised framework that specifies a common wage increase with a very narrow range for industry differentials. This framework is not legally binding but serves as a proposition for individual unions. If acceptable for the major unions, the centralised agreement will become into effect as the unions make out their industry-specific agreements accordingly. Although a sufficient coverage is a precondition for the centralised framework to be endorsed, some unions may remain outside by referring to industry-specific problems or higher wage claims, and thereby bargain separate agreements for their industries. The alternative to centralised bargaining is an uncoordinated round of bargaining, where each union enters into negotiations on its own terms. This happens if there were no willingness for a nation-wide agreement in the first place or if the centralised framework did not gain enough support among the unions.

When bargaining takes place between the central organisations, the government is usually indirectly involved in these negotiations. The government may encourage the labour market parties to reach a moderate centralised agreement by making concessions about tax and policy issues, such as income taxes, unemployment benefits, active labour market policy and/or pension schemes. This can lead to a wide 'income policy' agreement which implicitly covers a variety of labour market issues that are beyond the direct control of the labour market parties.³ In practice, coordination takes place in various informal forums where the governmental officers meet the representatives of the employer organisations and unions to discuss about the topics of economic policy. One goal of such discussions is to search for a mutual understanding of the state of the economy, and hence of an 'acceptable' range of wage increases for the next round of wage bargaining.⁴

In the era of the fixed exchange rate, the competitiveness of the export sector was seen to impose a restriction on wage growth. However, this restriction did not hold in practice but the labour costs in the export sector increased usually at a

³A peculiar feature of this corporatist setting is that there is no formal legal basis for such a nation-wide coordination: The unions that make out the binding collective agreements are not legally forced to follow the guidelines prepared in negotiations between the central organisations and government.

⁴For example, a particular body of experts, the Income Policy Information Commission, continually collects information on wages, prices and productivity for purposes of such discussions.

higher rate than in the rival economies, which in turn led to frequent devaluations. In the 1990s the economic conditions changed due to Finland's commitment to the EMU convergence criteria. Success in controlling for inflation became much more important than ever before. As a response the labour market parties adopted in 1995 a new rule of thumb for determining the upper bound of wage growth. According to this rule, known as the 'wage norm', the increase in the average labour cost should not exceed the sum of productivity growth and the target inflation rate in the economy. If the target inflation equals the growth rate of product prices, the average increase in the wage level derived from the wage norm principle keeps the aggregate labour share unchanged. The labour market parties believe that they can keep the inflation expectations down by jointly announcing the target rate for inflation and subsequently tailoring the wage agreements accordingly.

In addition to the average wage growth the unions are concerned with unemployment and distributional issues. Solidarity wage policy, that offers roughly equal wage growth to all groups with an intension of wage compression, has been a vital union goal and enjoys much support among the citizens (though not among the employers). While the solidarity nature of the centralised agreement is obvious, such a goal may be present in the rounds of uncoordinated wage bargaining as well. There is evidence that unions' wage claims are not independent of each others. While unions in profitable industries may bargain over industry-specific agreements on their own terms, the wage claims of unions in the weaker industries are tied to wage claims in other industries. It follows that industrial discrepancies in economic conditions are not fully accounted for in the collective agreements even during uncoordinated rounds of bargaining. Moreover, wage increases followed by the uncoordinated rounds are found to be lower on average (Koskela and Uusitalo, 2003). This supports the view that the high degree of centralisation in wage bargaining leads to wage moderation due to the internalisation of the cost of unemployment.

To summing up, we highlight the two key features of the Finnish bargaining system that are of importance to understand the movements in the aggregate labour share: (1) the average wage growth is closely tied to economy-wide aggregates; and (2) wage increases, both negotiated and realized ones, exhibit less industrial variation than economic conditions do. Strikes, both at the firm and industry level, are illegal during the contract periods that typically last a couple of years. This hinders workers' efforts to capture firm or industry-specific (quasi-)rents. Taken as a whole, the Finnish bargaining system can be expected to accelerate resource allocation between industries as well as between firms within industries. Wage growth

determined by aggregate conditions deteriorates the production and employment prospects of weak industries and firms where productivity and profitability have evolved less favourably. At the same time such a uniform wage policy is beneficial for the stronger industries and firms as it prevents profits from flowing to workers. Moreover it is worth noting that the stable and 'fair' labour share is one of the union goals.

2.2 Macroeconomic environment

The beginning of the early 1980s was time of steady economic growth but there was an overheating of the economy in the last years of the decade. The liberalization of the monetary markets in the mid 1980s was followed by an expansion in bank credits and a huge rise in asset prices. Especially the foreign indebtedness in the private sector increased rapidly due to improved possibilities of obtaining loans in foreign currencies. At the end of the 1980s the annual growth of the GNP was around 5 percent and the unemployment rate within a range of 3 and 5 percent. However, at the same time the export prices were falling due to the deterioration of the world economy and rapid domestic inflation was eroding the competitiveness of the Finnish economy. The collapse of the Soviet Union in 1991, with which the Finland's foreign trade was notable at that time, caused an additional negative demand shock.

Rapidly worsening economic conditions and foreign indebtedness in the private sector ran the hard-currency policy of the Bank of Finland into credibility problems. After a defending battle, the currency was devalued in 1991 and, finally, let float in 1992 as a result of continued speculative attacks. High interest rates, losses from foreign currency loans, and falling asset prices run over-indebted firms into financial problems. This caused a wave of bankruptcies, and large-scale job destruction took place in virtually every sector of the economy. The GNP contracted three years in row (1991–1993), and in the worst year of 1991 the GNP decreased by over 7 percent. The unemployment rate increased from 3 to close to 20 percent between 1990 and 1994, even though masses of people were removed from the unemployment register and directed to the active labour market programmes.

The collapse of the economy was followed by a strong recovery period. The devaluation and subsequent floating of the Finnish markka in the early 1990s restored the competitiveness of the open sector within a couple of years. The exports turned on a strong growth path already in 1992. The same occurred in the aggregate economy with a delay of two years, and the average growth rate of the GNP was around 5 percent between 1994 and 2000. However, economic growth built entirely

on the export sector for a long time. Whereas the volume of exports doubled during the 1990s, record-high unemployment and households' debt problems, which the high interest rates and the collapse of asset prices were made worse, kept the domestic demand below its pre-depression level up to 1999.

Not surprisingly, the economic crisis and mass unemployment have been reflected in the collective agreements in the 1990s. At the beginning of the crisis the central organisations of employers and unions agreed to hold nominal wages constant for 1992-1994 in two subsequent centralised agreements. This effectively cut the real wages by some X percent. In 1994 negotiations between the central organisations failed and wage bargaining took place at the industry level with a consequence of relatively high wage increases. At the latter part of the 1990s the labour market parties returned to the comprehensive centralised agreements, which include only moderate wage increases. These agreements were strongly supported by the new government which cut income taxes to compensate the unions for wage moderation.

This policy was driven by a consensus that strong economic growth over several years was the only way to pull the economy out of the depression and bring unemployment down again. The 1994 round of industry-level bargaining was scared the policy makers by recalling how easily the wage pressures arising from the booming export sector can trigger wage competition between industries. An economy-wide wage moderation was seen as a means of minimizing industrial disputes and protecting the competitiveness of the export sector. Afterwards this strategy looks relatively successful: the aggregate production and employment grew rapidly up to the end of the decade without inflationary pressures, although unemployment remained at a high level (which is partly due to increases in the labour supply). On the other hand, equal wage growth over a period of large industrial discrepancies in economic development led to distributional changes between labour and capital in some industries.

At the turn of the new millennium the Finnish economy was recovered from the depression in terms of many macroeconomic indicators. At this point it is important to recognise that the economic environment in Finland has fundamentally changed in a number of ways from the times preceding the depression years. First, the Finnish markka has been replaced by the euro. Capital flows and foreign ownership are no longer subject to any restrictions. Within the single currency area the interest rates and exchange rate are determined by economic conditions in the Continental Europe. As a result of the increasing foreign ownership, a new governance culture was emerged and returns to investments were determined by international standards.

Second, as a part of the economic integration and deregulation within Europe and globally, the Finnish firms have to respond to increasing international competition. A wave of mergers has taken place both within and across the border. Third, the export-led recovery was associated with a rapid structural change towards high tech industries. The increasing importance of information and communication technology has been exceptionally sharp in Finland, which is in large part attributable to the rise of the mobile phone industry dominated by Nokia. For example the volume of the exports of electrical equipment multiplied during the 1990s, which in fact explains a large fraction of the overall increase in exports.

Gross and net job creation increased very strongly in many Finnish sectors and industries, but in manufacturing sector and electronics industry in particular (Ilmakunnas and Maliranta, 2003). Labour demand was particularly high among high productivity and profitable plants and firms, which led to productivity-enhancing micro level restructuring within sectors and industries. As a matter of fact, the labour share of newly established plants had started to increase substantially about a half of decade before the great recession in manufacturing. Maliranta (2003) also provides evidence that the pre-recession established plants have played an important role in the productivity leap of the Finnish manufacturing sector during the 1990s.

3 Decomposition method

3.1 Basic version

Vainiomäki (1999) proposes the following kind of decomposition method for the analysis of skill upgrading:

$$P_t - P_s = \sum_{i \in C} \bar{S}_i (P_{it} - P_{is}) + \sum_{i \in C} \bar{P}_i (S_{it} - S_{is}) + S_t^E (P_t^E - P_t^C) - S_t^D (P_s^D - P_s^C) \quad (1)$$

where $P = \sum_i G_i / \sum_i T_i$ is the aggregate proportion of interest, which is the labour income share in our case; $P^X = \sum_{i \in X} G_i / \sum_{i \in X} T_i$ is the labour income share among the group $X = E, C$ or D ; $P_i = G_i / T_i$ is the labour income share in unit i ; $S_i = T_i / \sum_{j \in C} T_j$ is the share (weight) of unit i in terms of T ; and $S^X = \sum_{i \in X} T_i / \sum_i T_i$ is the share of group $X = E$ or D ; and \bar{S}_i and \bar{P}_i are the average values of S_i and P_i over the periods t and s , respectively.

Subscript t denotes the end and s the initial year. Units appearing in s or t are classified into three groups: those appearing in both s and t , i.e. continuing units indicated by C , those appearing in t but not in s , i.e. entrants indicated by E and those appearing in s but not in t , i.e. disappearing units indicated by D .

According to equation (1) the change in the aggregate measure P can be decomposed into four components. The first term in the right-hand side of the equation is the within units component, the second is the between units component, the third is the entry component and the fourth is exit component. The within component is the weighted average of the changes in the ratio P of the continuing units. The between component is positive when there is a systematic structural change in terms of T towards those units that have high P . The sum of the within and the between components is the aggregate change in S among the continuing units. Then the total effect of entries and exits is the difference of the total aggregate change in P and the aggregate change in P among the continuing units.

This method proposed by Vainiomäki (1999) is intuitively appealing. Entry is positive if the ratio P is higher among the new units in year t than among the older units, i.e. those who appeared also in s . It can be seen that the entry effect is the larger the greater is the proportion of new units in terms of T and the greater is the difference in P between new and older units.

Exit is positive if the ratio of P is lower among those units that disappear before t than among those how still appear in t . The exit effect is the bigger the larger is the proportion of exit units in terms of T and the bigger is the difference in P between exitors and survivors.

3.2 Weighted data version

Our data on firms is based on a stratified sample, where the probability of being included in the sample varies across strata, defined by industry and size of personnel. To deal with this type of the weighted data, the decomposition outlined above must be modified.

Let w_i be the sampling weight of unit i , i.e. the inverse of the sampling probability, which may change from year to year. Furthermore, let us denote the two-period average of the sampling weights with $\bar{w}_i = (w_{it} + w_{is}) / 2$. Then the weighted version of the decomposition is obtained by replacing P , S , \bar{S} , P^X , and S^X in equation (1)

with the corresponding weighted terms:

$$\begin{aligned}\tilde{P} &= \sum_i w_i G_i / \sum_i w_i T_i; \\ \tilde{S}_i &= \bar{w}_i T_i / \sum_{j \in C} \bar{w}_i T_j; \\ \tilde{\tilde{S}}_i &= \frac{\tilde{S}_{is} + \tilde{S}_{it}}{2}; \\ \tilde{P}^X &= \sum_{i \in X} w_i G_i / \sum_{i \in X} w_i T_i \text{ for } X = E, C, \text{ and } D; \\ \tilde{S}^X &= \sum_{i \in X} w_i T_i / \sum_i w_i T_i \text{ for } X = E \text{ and } D.\end{aligned}$$

Note that we use the two-period average of the sampling weights in computing $\tilde{\tilde{S}}$. In doing so we eliminate the effect of variation in the sampling weights to the between component. However, as a consequence, the decomposition works only approximately, i.e. the sum of the within, between, entry, and exit components does not necessarily coincide to the aggregate change in the labour share, $\tilde{P}_t - \tilde{P}_s$. In our empirical applications, the approximate decomposition is found to perform sufficiently well.

4 Data sets

4.1 Plant data for manufacturing

Longitudinal Data on Plants in Manufacturing (LDPM) is one of the two micro level data sources used in this study. This data set is constructed especially for research purposes from the annual Industrial Statistics databases. In principle, a plant is defined in the Finnish Industrial Statistics survey as a local kind-of-activity unit. In other words, it is a specific physical location, which is specialised in the production of certain types of products or services. A single local unit may consist of several plants that have activities in different industries. In some special cases a plant is delineated to include parts that are located geographically detached from it. However, it is required that the units are located within the same municipality. This solution seems to be well justified, especially when the geographically separated units are closely attached to each other operationally. This way of grouping plants may help firms to provide more accurate information on their activities within a certain specific industry.

The Industrial Statistics survey annually compiles comprehensive information on the economic activity of industrial plants. This electronic database now contains

information from 1974 to 2000. Up to 1994 it includes basically all plants with at least 5 persons. Since 1995 all plants owned by an enterprise with at least 20 persons have been included in the surveys. As there is a relatively large number of single unit firms employing less than 20 (but more than 5) persons, the number of plants drops by almost one half due to this change in the applied criteria. However, the number of persons diminishes only moderately, by a few per cent. Thus, there is a break in the series between 1994 and 1995 that needs to be taken into account in handling and interpreting the time series. In particular, there may appear to be some artificial entries and exits in 1995. To correct this problem, for entry and exit numbers in year 1995 we have used the average of numbers of the years 1994 and 1996. As it comes to the within and between components, the break in time series does not have similar problems. This is because these components are computed by focusing on the continuing plants only in this particular method used in the present study.

4.2 Firm data for the business sector

The principal data source on firms is the Financial Statements Statistics (FSS), which is an annual survey conducted by Statistics Finland on the basis of corporate income statement and balance sheet data. The survey includes firms from manufacturing, construction, retail and wholesale trade, business services, accommodation and catering services, and transportation. Until 1996 (1995 in manufacturing and construction) the survey covers the entire population of firms above certain industry-specific size thresholds plus a stratified sample from the smaller firms. The stratified sample was rotated annually by replacing a fraction of the oldest companies in each stratum with new ones. The rotation sampling was applied to keep the survey representative in each point of time and to reduce the inquire burden of smaller firms. In 1995/1996 the size thresholds were lowered but all firms below the new size thresholds were excluded from the survey. As a result, coverage with respect to medium-size firms improved but all data on small firms were lost.

In the first stage we combined the annual FSS surveys from 1989-1998. These data were complemented by adding records on small firms for the period 1994-1998 from the Business Tax Register. Whereas the information content is more limited, the Business Tax Register cover basically all firms. As a result, we have panel data for the selected industries, which cover the universe of the firms from 1994 to 1998 and a representative sample from 1989 to 1993. In the subsequent analysis we exclude all firms with less than five employees, as the data on very small firms

is often noisy. This group of firms is not important in terms of employment or production.

Observations in the firm data refers to the accounting periods, which may deviate from the calendar years for some firms. A particular problem in the data is that firm identifiers may change for several reasons, such as in cases of merger or of a change in ownership or industry classification. We have been able to correct such spurious changes in the firm identifiers to some extent. This is so because the firm records can be matched to the records of all employees of each firm (see Korkeamäki and Kyrrä, 2000, for details of the data). By following the worker flows between firms one can infer whether the entry and exit of firm identifiers in the data result from firm closures, births, take overs, mergers, or some administrative reasons.

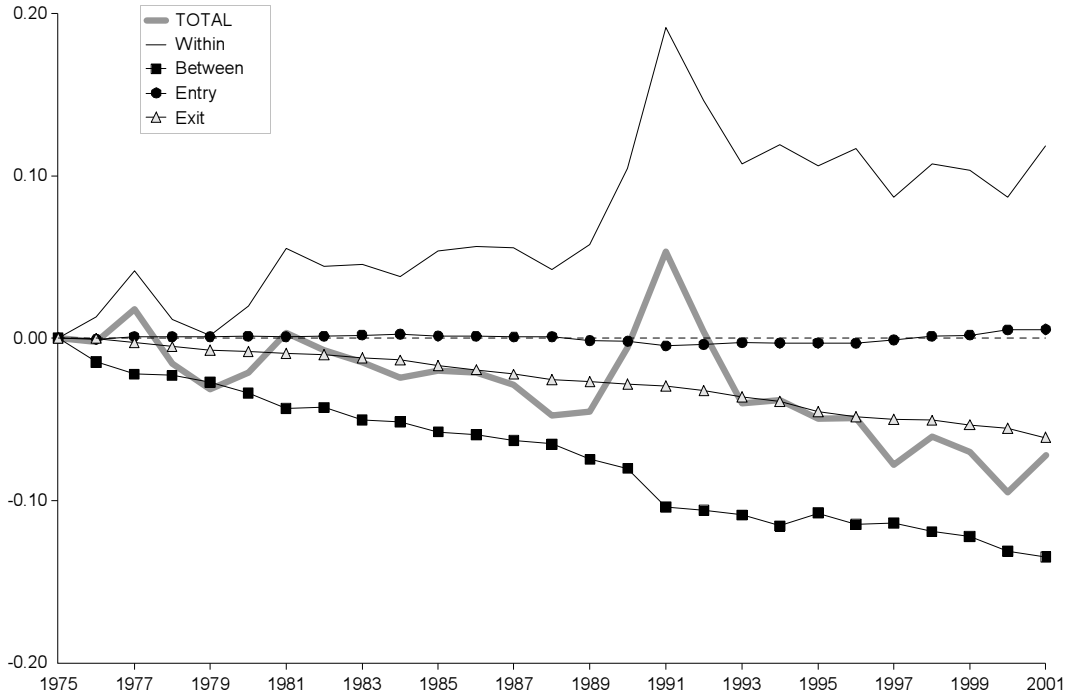
5 Results

We begin with an analysis of the plant data from the manufacturing sector. We have calculated the micro-components of changes in the aggregate labour share within 2-digit manufacturing industries using the decomposition formula (1). To give an overview of dynamics in the manufacturing sector, Figure 3 shows the cumulative effects for the period 1975-2001, as obtained by aggregating industry-specific effects to the total manufacturing level. The aggregation over industries was performed using nominal value added as weights. This serves as to eliminate the effect of structural shifts between industries. In the graphs we focus on the cumulative effects, as they are less noisy than the values of individual components which vary from year to year to a large extent. In addition, the averages of annual within and between components for the periods 1975-1990 and 1990-2001 by 2-digit industries are reported in Table 1.

The bold line in Figure 3 points to a declining trend for the aggregate labour share, starting from the early 1980s. The other lines in the graph describe the relative importance of the underlying micro-level forces that are responsible for the aggregate development. The cumulative effect of the within component appears to be positive over the long run. From Table 1 we see that the within component is typically positive also within detailed industries. Thus at the plant level labour shares are typically growing, not declining as it was the case at the aggregate level in the 1980s and 1990s. Discrepancy between developments at the micro and macro level is due to restructuring, i.e. the entry, exit and between components.

The between component is of particular interest because it captures the contri-

Figure 3: Cumulative effects of micro level sources of labour income share change within 2-digit manufacturing industries



bution of reallocation of resources between continuing plants, who comprise some 80-85 percent of total annual labour reallocation in Finland. It is the most robust and reliable indicator of restructuring especially at the detailed industry level. In many industries the between component is consistently negative from year to year. Consequently, the cumulative contribution of the between component is often very strong despite its minor role in explaining the annual changes in the industry labour share. The numbers given in Table 1 show that restructuring tend to decrease aggregate labour share in industries, electrical machinery in the period 1975-90 and food, beverages and tobacco being the only exceptions with zero between component. We see particularly strong negative effects in the manufacture of radio, television and communication equipment and in the manufacture of office machinery and computers in the 1990s.

Not surprisingly, the between component in Figure 3 is strongly negative over the recession years, indicating that plants with low labour shares were raising their market shares as measured by nominal value added. This makes sense as a low

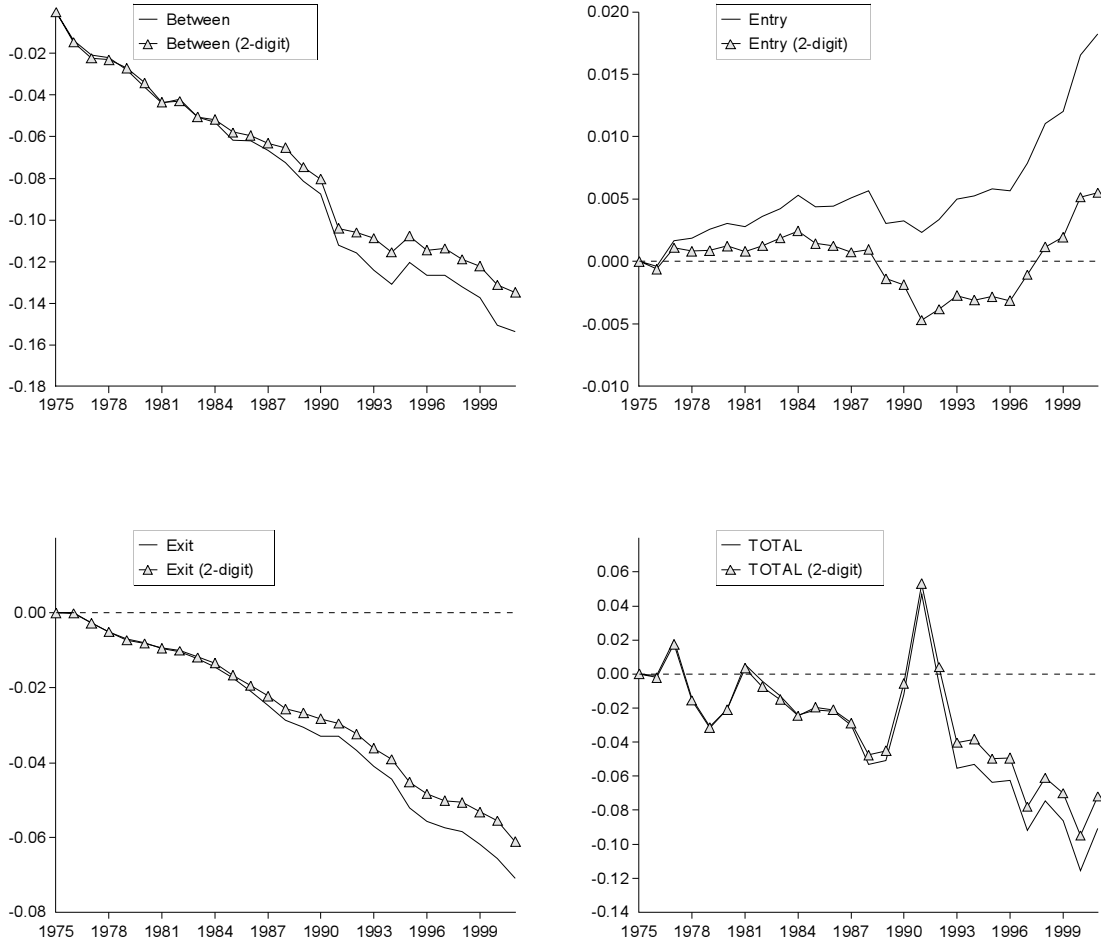
Table 1: Within and between components of labour income share change, the annual average

Nace	Industry	1975-1990		1990-2001	
		Within	Between	Within	Between
15-16	Food, beverages and tobacco	1.6	-0.6	0.1	0.0
17-19	Textiles, leather and products	2.1	-0.6	0.4	-0.8
20	Wood	-1.0	-0.5	1.6	-0.8
21	Pulp, paper and products	0.4	-0.6	-0.9	-0.4
22	Publishing and printing	0.8	-0.3	-0.2	-0.3
23	Coke and petroleum	6.3	0.4	9.5	-1.0
24	Chemicals	0.5	-0.6	0.0	-0.6
25	Rubber and plastic	0.0	-0.2	0.5	-0.5
26	Non-metallic minerals	0.5	-0.4	0.0	-0.5
27	Basic metals	0.8	-0.5	-1.6	-0.2
28	Fabricated metal products	1.1	-0.4	0.8	-0.6
29	Machinery and equipment	0.8	-0.5	0.5	-0.5
30	Office machinery and computers	-0.1	-0.5	4.6	-1.1
31	Electrical machinery	0.0	0.0	0.3	-0.8
32	Radio, television and communication equipment	-0.3	-2.0	1.0	-1.3
33	Instruments	1.4	-1.4	-0.7	-0.4
34	Motor vehicles	-1.3	-0.4	1.0	-0.2
35	Other transport	1.0	-0.8	-3.3	-0.8
36	Furniture, n.e.c	0.7	-0.6	1.4	-0.3
	Unweighted average	0.798	-0.555	0.797	-0.577

labour share points to a good financial position or to a capital intensive production technology, and among such plants the need to cut employment and production was probably lower than among other plants.

The entry and exit components, to the extent they capture the impact of plant births and deaths, are closely related to the between component in describing the reallocation of resources in the market. The exit component is typically negative, indicating higher than average labour shares for plants exiting the marker. It has an important cumulative effect, which is, however, smaller than that of between component. Griliches and Regev (1995) provide evidence on the "shadow of death" tendency. It is usual than an exiting plant or firm has had a below average productivity level (and above average labour income share) many years before their death. It has also had lower than average labour demand and thus its relative size has decreased. So, an exiting plant or firm has usually contributed negatively to the between component during their "countdown" that may have lasted several years. All in all, arguably the between and exit component gauge largely the same underlying

Figure 4: Discrepancy in the components at the total manufacturing and 2-digit industry level (the role of industry level restructuring)



renewal process.

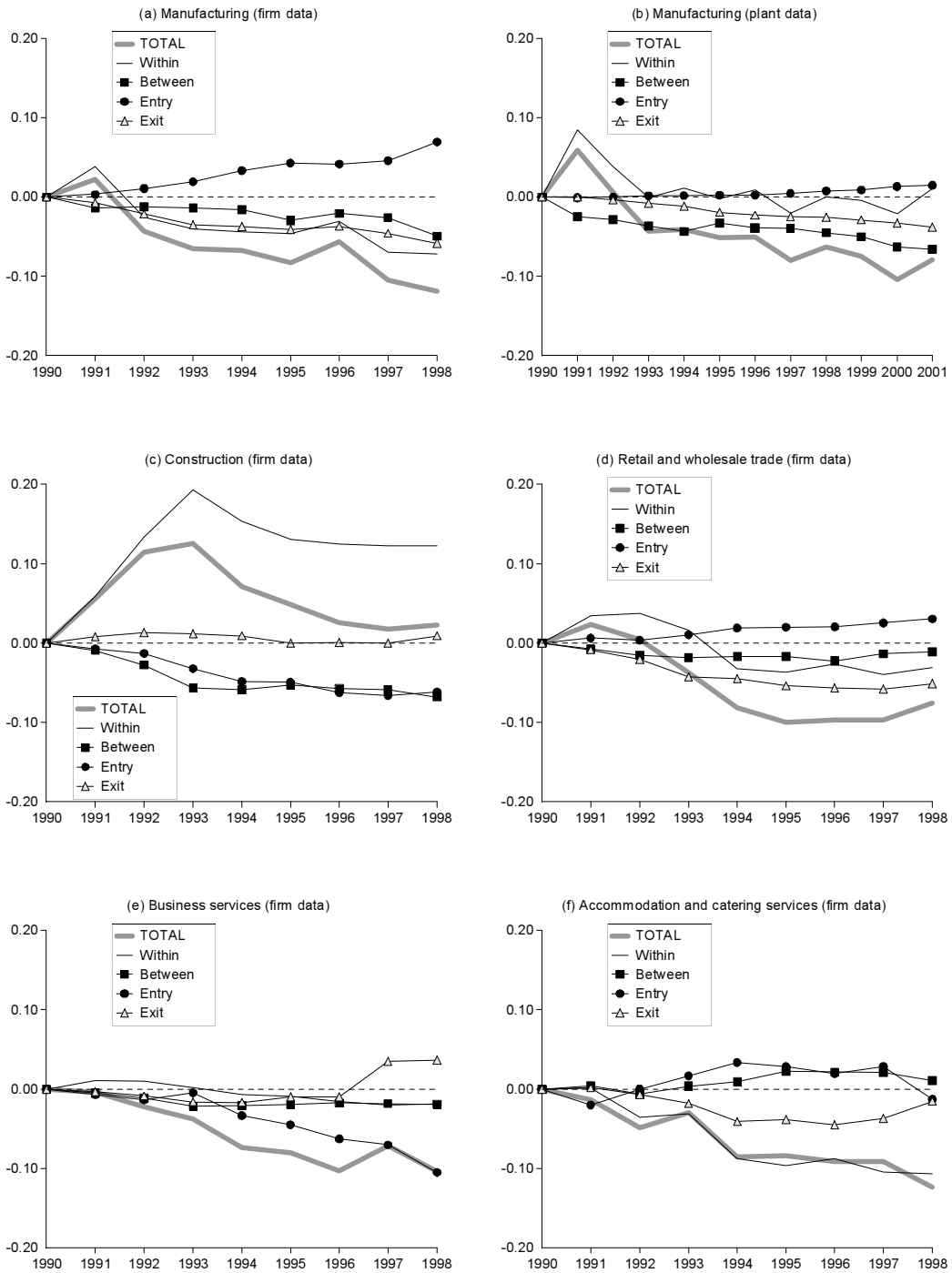
The entry component has had relatively neutral effect on the factor income shares over the observation period. On the other hand, entry process, like exit process, is a time consuming process. The initial productivity level of the new firms and plants is usually less and labour income share more than that of incumbent ones. The group of young firms and plants is, however, particularly heterogeneous and subject to intensive selection in the subsequent years. This after-birth selection is likely to have a tendency to decrease labour income share and this should be reflected in the negative between component. Perfectly consistently with these considerations, Maliranta (2003) has showed that a disproportionately large part of the productivity-enhancing restructuring can be attributed to the relatively young plants.

When the economy was hit by the recession in the early 1990s, the labour shares within plants increased, which was followed by a period of the falling labour shares. That is, the spike in the aggregate labour share in the early 1990s can be attributed almost entirely to the within component (see Figure 3). This dynamics can be explained by a delay between drops in production and employment. In the first stage the production fell rapidly pushing the labour shares up. With a delay of about one year the plants reacted to this demand shock by laying off masses of workers. This in turn cut the wage sums and hence the labour shares in the second stage. As a result, the recovery that started in 1992-93 in manufacturing entailed about equally large cyclical rebound within plants.

Next we explore the importance of changing industrial structure in explaining the aggregate development in manufacturing. Recall that this effect was controlled for in Figure 3. Table 1 indicated that the between component was quite negative in the manufacture of telecommunication equipment, which has been expanding rapidly over the past decade. In 1990 this industry accounts for less than 10 per cent of value added in manufacturing but in 2000 as much as one-fourth of the manufacturing value added came from it. The IT boom, boosted by the success of Nokia, is responsible for much of rapid growth in the manufacture of telecommunication equipment. In order to check the effect of this particular industry, we have also performed computations by leaving this industry out. The general picture turns out to be reasonably similar.

Furthermore, we have carried out the decomposition computations at the total manufacturing level. The discrepancy between these results and those derived by aggregating numbers from 2-digit industries indicates the role of reallocation of nominal value added shares between industries. Figure 4 shows how much controlling the changes in industry structures affect the results. The within component is the same in both computations by construction and therefore it is not shown here. The cumulative between component turns out to be a somewhat more negative when industry level restructuring is ignored. Quite similar findings can be made for the exit component, too. The entry component, on the other hand, behaves differently. While the entry effect has been quite insignificant within industries, it seems that entry of plants has contributed positively to the aggregate labour share through industry-level restructuring. However, one should notice that the magnitude of this effect is very small compared with those of the exit and between components. Overall restructuring between industries has had a small negative effect on the aggregate labour share in manufacturing.

Figure 5: Cumulative effects from firm data



Next we turn to the decomposition results obtained from the firm data. Figure 5 gives the cumulative effects over the period 1990-1998 for manufacturing, construction, retail and wholesale trade, business services, and accommodation and catering services. In the case of the firm data we have performed all decomposition computations at the sector level, not within industries within sectors. This is because the number of observations for the early 1990s is quite limited and because larger firms have multiple plants which may operate in different industries within the same sector.

From Panel A we see that in manufacturing the within and between components are equally important and explain the major part of the fall in the aggregate labour share in the 1990s. In most periods the entry and exit components are of the same magnitude with the opposite signs. It follows that their joint effect is close to zero in each period as well as cumulatively over the observation period.

Note that the manufacturing results based on the plant data are replicated in Panel B for the period 1990-2001. Compared with the plant data results, the within component is lower and the between component is less negative on average in Panel A. This indicates that a significant fraction of micro-level restructuring takes place between plants of multi-plant firms. In other words, firms simultaneously downsize lower profitability plants and expand higher profitability plants. The findings for the entry component obtained from the firm data suggest that a typical entrant firm has relatively low profitability (i.e. high labour income share). As we noted above computations from the plant level data yield somewhat different result. An explanation for the discrepancy between plant and firm level results here is that the new plants established by an incumbent firm are, at least initially, more productive (i.e. have lower labour income share) than the new plants established by a new firm (i.e. the plants established in the greenfield entry).

Not surprisingly, the exit component is typically negative from year to year. The picture for the entry component is less clear; it is consistently positive in manufacturing and trade but the opposite is true for construction and business services. Although we can see similarities in the time patterns of different components between the industries, the magnitude and relative importance of particular components vary a lot. This may not be so surprising once we recall the great discrepancy in economic conditions between sectors in the 1990s.

6 Conclusion

We found evidence that the decline in the aggregate labour share in the 1990s stems in large part from reallocation of resources between firms and plants. This reallocation process has taken place mainly within the industries, i.e. changes in industry structures play only a limited role in explaining the aggregate development. Within industries much of the decline in the labour share is attributable to the between and exit components, which are negative from year to year. The cumulative effect of the within component, especially in case of the plant data, has only a small contribution to the aggregate decline in the labour share in the 1990s. In other words, the distribution of capital and labour income has been much more stable at the firm and plant level than at the industry level.

This striking finding – which is beyond the aggregate level analysis – has two essential implications. First, attempts to hike the aggregate labour share up again via equal and high wage increases at the industry/economy level are likely to result in strong negative employment effects. This is because such a wage policy would evidently lead to distributional change in favour of labour within firms, where employment decisions are made. Secondly, as a lesson for those who are building theoretical models, our results highlight the importance of firm and plant level heterogeneity in explaining movements in the aggregate labour share. Insights derived from macro models of the representative firm should therefore be interpreted with a great caution.

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