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WORKING PAPER

Imports as product and labour market discipline

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Abstract

This paper tests the pro-competitive effect of trade in the product and labour markets of UK manufacturing sectors between 1988 and 2003 using a two-stage estimation procedure. In the first stage, we use data on 9820 firms from twenty manufacturing sectors to simultaneously estimate mark-up and workers' bargaining power parameters according to sector, firm size and period. We find a significant drop in both the mark-up and the workers' bargaining power in the mid-nineties. In the second stage, we relate our parameters of interest to trade variables. Our results show that imports from developed countries have significantly contributed to the decrease in both mark-ups and workers' bargaining power.

JEL classification : C23, F16, J51, L13.
Keywords : Workers' bargaining power, mark-ups, pro-competitive effect.

1 Introduction

Investigating the impact of foreign competition on price-marginal cost mark-ups is a prominent topic in the trade literature. In particular for the UK, Khalilzadeh-Shirazi (1974), Geroski (1981, 1982) and Conyon and Machin (1991) show evidence of the imports-as-market-discipline hypothesis, i.e. the negative impact of foreign competition on mark-ups, using *sector* data. Following Levinsohn's 1993 (JIE) article, many *firm-level* studies have drawn on Hall's (1988) approach to estimate price-marginal cost mark-ups and have provided support

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for the imports-as-market-discipline hypothesis (see Harrison, 1994; Krishna and Mitra, 1998; Konings et al., 2001; Kee and Hoekman, 2007 among others). However, Hall's (1988) method relies on perfect labour markets. Focusing on the labour side and inspired by Rodrik's (1997) argument that increased international trade weakens the position of the workers, only two studies (Brock and Dobbelaere, 2006 and Dumont et al., 2006) have *directly* investigated whether stronger import competition squeezes workers' bargaining power.[1] Dumont et al. (2006) find a negative impact using firm-level data covering five European countries, whereas Brock and Dobbelaere (2006) do not for Belgium. Using an extension of a microeconomic version of Hall's (1988) framework proposed by Crépon et al. (1999, 2002) to take into account labour market imperfections, our main contribution is to provide evidence of international competition curtailing domestic market power in the product market as well as in the labour market for UK manufacturing sectors. This is the first study that addresses both issues and that focuses on the UK using firm-level data.[2]

Graph 1 displays the evolution in price-cost margins at the UK sector level since 1970.[3] At first sight, there is little evidence of a general decline in price-cost margins despite a steady increase in openness. In fact, at the aggregated manufacturing level, the price-cost margin was 9.4% in 1970, 8.2% in 1980, 11.5% in 1990 and 9.2% in 2003. How could we reconcile these trends with the evidence of the pro-competitive effect of international trade highlighted above? In short, the effect of trade on the price-cost margin is not limited to its impact on the mark-up, because the price-cost margin only captures the part of the rents kept by the firms. Price-cost margins are therefore negatively related to the workers' bargaining power and a weakening of the workers' bargaining power may counterbalance, at least partly, a decrease in markups.

<Insert Graph 1 about here>

Taking into account labour market imperfections, Borjas and Ramey (1995) provide evidence of foreign competition exerting a negative impact on wages by reducing rents in concentrated sectors. However, the finding of lower rents per se does not mean that the rent-sharing scheme between capital and labour has changed. The seminal paper by Blanchard and Giavazzi (2003) draws attention to the importance of product and labour market interactions. Moreover, OECD studies (e.g. Brandt et al., 2005) point out that product and labour market deregulations are correlated across countries. Going one step further, Ebell and Haefke (2006), endogenising the bargaining regime, argue that the strong decline in coverage and unionisation in the US and the UK might have been a direct

[1] Abowd and Lemieux (1993) showed *indirectly* that foreign competition has an impact on workers' bargaining power by firstly linking the size of the rents to foreign competition and secondly the bargaining power to the size of the rents.

[2] Dumont et al. (2006) include the UK among the five countries but their sample is much smaller and they focus on the labour market only.

[3] Price-cost margin is defined, as in Schmalensee (1989, p.960), as the difference between revenue and variable cost over revenue. The variable cost is the sum of the costs of variable inputs, i.e. labour and materials.

consequence of product market reforms of the early eighties. Boulhol (2006) develops a theoretical model formalising the idea that capital market and trade liberalization put pressure on labour market institutions leading to deregulation. Studying the UK in the eighties and nineties, Pencavel (2004) documents how the changes in the legal and political framework were undoubtedly detrimental to unions, but he also stressed that it is the context of fiercer product market competition which determined the impact of the new laws. Moreover, Hornstein et al. (2005) suggest that, as union density did not fall in the public sector, competitive pressure seems to be a reasonable cause of deunionisation in the UK. According to the empirical analysis herein, the trend in UK price-cost margins is partially the result of the joint decline in the mark-up and the workers' bargaining power following the increased openness of the economy.

We contribute to the literature in different ways. We take advantage of a rich firm-level dataset consisting of 9820 firms in the UK manufacturing industry covering the period 1988-2003. This enables us to estimate mark-up and workers' bargaining power parameters simultaneously for 20 sectors split according to 3 firm size categories and 3 time periods. To our knowledge, investigating the cross-sectional heterogeneity in the two parameters at this level of disaggregation has never been carried out for the UK. Whereas previous empirical studies have tested the imports-as-market-discipline hypothesis either on the product market or on the labour market, our study bridges the gap by verifying the impact of increased import competition on both mark-ups and workers' bargaining power parameters.

We follow a two-stage approach in which we first estimate mark-ups and workers' bargaining power parameters according to three dimensions (sector, firm size and time period). Our results point to a significant drop in both parameters in the mid-nineties. In the second stage, we identify factors explaining mark-ups and workers' bargaining power with a special focus on international trade. We find clear evidence of imports from *developed* countries having contributed significantly to the decline in both mark-ups and workers' bargaining power.

In the remainder, we first describe the theoretical framework and the empirical strategy (section 2). Section 3 concentrates on the first-stage results. Section 4 discusses the second-stage results where we evaluate the pro-competitive effect on both mark-ups and workers' bargaining power. Section 5 concludes.

2 Methodology

2.1 Theoretical Framework

Hall's (1988) approach for evaluating mark-ups hinges on one crucial assumption, i.e. firms consider input prices as given prior to deciding their level of inputs. In other words, there is no imperfection in the labour market. However, there is widespread evidence of rent-sharing, hence the need for a framework to bring together imperfect competition in product and labour markets. Theoretically, we rely on the model of Crépon, Desplatz and Mairesse (1999, 2002), detailed further by Dobbelaere (2004), which extends Hall's framework to allow for the possibility that wages and employment are bargained over between firms and workers (efficient bargaining).[4] We start from a production function $Q_{it} = \Theta_{it} F(N_{it},\, M_{it},\, K_{it})$, where i is a firm index, t a time index, N is labour, M is material input, K is capital and $F(.)$ is assumed to be homogeneous of degree one in its arguments. Θ_{it} is an index of technical change or "true" total factor productivity. The logarithmic differentiation of the production function gives:

$$\Delta q_{it} = \varepsilon^{Q}_{N_{it}} \Delta n_{it} + \varepsilon^{Q}_{M_{it}} \Delta m_{it} + \varepsilon^{Q}_{K_{it}} \Delta k_{it} + \Delta \theta_{it} \tag{1}$$

Each firm operates under imperfect competition in the product market. On the labour side, we assume that the union and the firm are involved in an efficient bargaining procedure with both wages (w) and labour (N) being the subject of an agreement (McDonald and Solow, 1981). The union's objective is to maximize $U(w_{it},\, N_{it}) = N_{it} v(w_{it}) + (\overline{N}_{it} - N_{it}) v\,(\overline{w}_{it})$, where $v(.)$ is increasing and concave,[5] $\overline{N}_{it}$ is union membership ($0 < N_{it} \leq \overline{N}_{it}$), $\overline{w}_{it}$ is the alternative wage ($\overline{w}_{it} \leq w_{it}$). Consistent with capital quasi-fixity,[6] the firm objective is to maximize its short-run profit function: $\pi(w_{it},\, N_{it},\, M_{it}) = R(N_{it},\, M_{it}) - w_{it} N_{it} - j_{it} M_{it}$, where $R_{it} = P_{it} Q_{it}$ stands for total revenue. The outcome of the bargaining is the asymmetric Generalised Nash solution to:

$$\begin{aligned} & \max_{w_{it},\, N_{it},\, M_{it}} \left\{ N_{it} v(w_{it}) + (\overline{N}_{it} - N_{it}) v\,(\overline{w}_{it}) - \overline{N}_{it} v\,(\overline{w}_{it}) \right\}^{\phi_{it}} \left\{ R_{it} - w_{it} N_{it} - j_{it} M_{it} \right\}^{1-\phi_{it}} \\ = & \max_{w_{it},\, N_{it},\, M_{it}} \left\{ N_{it} (v(w_{it}) - v\,(\overline{w}_{it})) \right\}^{\phi_{it}} \left\{ R_{it} - w_{it} N_{it} - j_{it} M_{it} \right\}^{1-\phi_{it}} \end{aligned} \tag{2}$$

[4] One popular alternative to Hall's methodology is that developed by Roeger (1995). Unfortunately in our precise context, on top of the usual limitations referring either to the intricate computation of the user cost of capital or the assumption of perfect adjustment of capital, Roeger's specification requires mark-ups to be constant over time, an assumption which is obviously inconsistent with the very purpose of this study. In addition, when introducing labour market imperfections, e.g. with efficient bargaining, the derived specification (even if one assumes time-invariant parameters) cannot identify separately the mark-up and the bargaining power.

[5] Crépon et al. (1999, 2000) assume that workers are risk-neutral. We use a more general framework.

[6] Crépon et al. (1999, 2000) assume capital quasi-fixity. In their framework, what only matter is that capital is installed before bargaining takes place, which is a very reasonable hypothesis. When assuming that capital adjusts perfectly, the quasi-rents that unions target are lower and therefore a higher bargaining power would be needed empirically to match the data.

where $\phi_{it} \in [0, 1]$ represents the workers' bargaining power.

Maximization with respect to material input gives $R_{M,it} = j_{it}$ with $R_{M,it}$ the marginal revenue of material input, which directly leads to:

$$\varepsilon^{Q}_{M_{it}} = \mu_{it}\alpha_{M_{it}} \tag{3}$$

$\mu_{it} = \frac{P_{it}}{C_{Q,it}}$ refers to the mark-up of price (P_{it}) over marginal cost ($C_{Q,it}$) and $\alpha_{M_{it}} = \frac{j_{it}M_{it}}{P_{it}Q_{it}}$. Maximization with respect to employment and the wage rate respectively gives the following first-order conditions:

$$w_{it} = R_{N,it} + \frac{\phi_{it}}{1-\phi_{it}}\left[\frac{R_{it} - w_{it}N_{it} - j_{it}M_{it}}{N_{it}}\right] \tag{4}$$

$$v(w_{it}) = v\left(\overline{w}_{it}\right) + \frac{\phi_{it}}{1-\phi_{it}}\left[\frac{R_{it} - w_{it}N_{it} - j_{it}M_{it}}{N_{it}}\right] v^{'}(w_{it}) \tag{5}$$

Eq. (5) states that the wage premium over the alternative wage is positively related to the workers' bargaining power and to the size of the rents. Solving simultaneously (4) and (5) leads to an expression for the contract curve: $w_{it} - R_{N,it} = \frac{v(w_{it}) - v(\overline{w}_{it})}{v^{'}(w_{it})}$, which is positively sloped if workers are risk-averse ($v^{''} < 0$) and vertical in the (N, w)-space if they are risk-neutral. Expressing the marginal revenue of labour as $R_{N,it} = R_{Q,it}Q_{N,it} = \frac{P_{it}Q_{N,it}}{\mu_{it}}$ and using this expression together with (4), the elasticity of output with respect to employment can be written as:

$$\varepsilon^{Q}_{N_{it}} = \mu_{it}\alpha_{N_{it}} - \mu_{it}\frac{\phi_{it}}{1-\phi_{it}}\left(1 - \alpha_{N_{it}} - \alpha_{M_{it}}\right) \tag{6}$$

with $\alpha_{N_{it}} = \frac{w_{it}N_{it}}{P_{it}Q_{it}}$. Assuming constant returns to scale $\left(\varepsilon^{Q}_{N_{it}} + \varepsilon^{Q}_{M_{it}} + \varepsilon^{Q}_{K_{it}} = 1\right)$, the capital elasticity can be expressed as:

$$\varepsilon^{Q}_{K_{it}} = 1 - \mu_{it}\alpha_{M_{it}} - \mu_{it}\alpha_{N_{it}} + \mu_{it}\frac{\phi_{it}}{1-\phi_{it}}\left(1 - \alpha_{N_{it}} - \alpha_{M_{it}}\right) \tag{7}$$

Inserting (3), (6) and (7) in (1) and rearranging terms gives following expression of the Solow Residual SR_{it}:[7]

$$\begin{aligned} SR_{it} &\equiv \Delta q_{it} - \alpha_{N_{it}}\Delta n_{it} - \alpha_{M_{it}}\Delta m_{it} - (1 - \alpha_{N_{it}} - \alpha_{M_{it}})\Delta k_{it} \\ &= \beta_{it}\left(\Delta q_{it} - \Delta k_{it}\right) - \gamma_{it}\left(1 - \alpha_{N_{it}} - \alpha_{M_{it}}\right)\left(\Delta n_{it} - \Delta k_{it}\right) \\ &\quad + \left(1 - \beta_{it}\right)\Delta\theta_{it} \end{aligned} \tag{8}$$

[7] Estimating price-cost mark-up (μ), scale elasticity ($1 + \lambda$) and workers' bargaining power (ϕ) parameters simultaneously imposes identification problems in terms of estimating both μ and λ and in terms of estimating the workers' bargaining power precisely, which could be the result of multicollinearity of the RHS variables. These large problems of identification motivate our decision to maintain the constant returns to scale assumption in the paper, bearing in mind that the estimated mark-up might be downwardly biased and there is a possibly upward bias in the estimated workers' bargaining power.

where $\beta_{it} = \frac{\mu_{it}-1}{\mu_{it}}$ is the Lerner index and $\gamma_{it} = \frac{\phi_{it}}{1-\phi_{it}}$, strictly increasing functions of the mark-up and the bargaining power, respectively.

Eq. (8) discriminates between the efficient bargaining and the right-to-manage model. In the right-to-manage model, although wages are determined non-competitively, they are given before the firm's employment decision. Consequently, as in the perfect labour market case, the marginal revenue of labour is equal to the wage, and firms stay on their labour demand curve. Hence, the null hypothesis of $\gamma_{it} = 0$ in Eq. (8) does not only correspond to the assumption that the labour market is competitive but also to the less restrictive assumption that firms and workers only bargain over wages in a first step and firms unilaterally determine their employment level in a second step (right-to-manage assumption).

By embedding the efficient bargaining model into a microeconomic version of Hall's (1988) framework, the Solow Residual can be broken down into three components: (1) a factor representing the Lerner index (β_{it}), (2) a factor reflecting the relative bargaining power of the workers (γ_{it}) and (3) a technological term ($\Delta\theta_{it}$). Note that, as Δn_{it} and Δq_{it} are positively correlated, the original Hall (1988) approach assuming allocative wages, i.e. neglecting the second term, generates a downward bias in estimated markups. Moreover, this bias increases with the bargaining power of the workers. Intuitively, this underestimation corresponds to the omission of the part of product rents captured by the workers. Indeed, Crépon et al. (1999, 2002) estimate their model with and without the bargaining term on 1026 French firms over the period 1986-1992. They find that ignoring labour market imperfections leads to a significant underestimation of the actual mark-up. The bargaining power is estimated at 0.66 and the average markup at 1.41, compared to 1.11 only when ignoring the incidence of rent sharing, both being consistent with a Lerner index or price-cost margin of 0.10 (see Dobbelaere, 2004 and Dobbelaere and Mairesse, 2007 for sector-level evidence in the Belgian and the French manufacturing industry respectively).

2.2 Empirical Framework

To test the imports-as-product-and-labour-market-discipline hypothesis, we follow a two-stage estimation strategy. In the first part, we estimate the reduced-form equation (8) which allows us to identify our structural parameters of interest, i.e. the price-marginal cost mark-up $\hat{\mu}$ and the workers' bargaining power $\widehat{\phi}$. We estimate these parameters for 20 sectors in the UK manufacturing industry, split according to 3 size categories and 3 time periods. In the second part, our estimated parameters are regressed on international trade variables to test the hypothesis that international competition curtails domestic product and labour market power.

3 Part I : Identifying the parameters of interest $\hat{\mu}$ and $\widehat{\phi}$

In this section, we first present the data. Second, we outline our empirical strategy and compare consistently fixed effects (FE) and Generalised Method of Moments (GMM) estimates of our parameters of interest at the sectoral level for all firms and all periods. Finally, we conduct a variance analysis along the three dimensions, sector, firm size and period.

3.1 Data

Our analysis is based on two firm-level surveys: OneSource, which covers the years 1988-1998, and Financial Analysis Made Easy (FAME), which offers a coverage for the years 1994-2003.[8] We only keep firms within the manufacturing industry for which we have at least 4 observations for all variables, ending up with an unbalanced panel of 9820 firms with the number of observations for each firm varying between 4 and 14.[9]

We use turnover deflated by the producer price index at the four- and five-digit level, according to availability,[10] as a proxy for output (Q). Labour (N) refers to the average number of employees in each firm for each year. Intermediate inputs (M) are calculated by subtracting the value added from the value of production, deflated by the two-digit materials and fuel price index. The capital stock (K) is measured by the gross bookvalue of fixed assets deflated by a price index of net capital defined at the two-digit level. All deflators are drawn from the UK Office for National Statistics (ONS). The input shares (α_N and α_M) are computed by dividing respectively the firm total labour cost and undeflated intermediate inputs by the value of production and by taking the average of these ratios over adjacent years. Table 1 reports the means, standard deviations and first and third quartiles of our main variables used in the Part I estimation.[11]

<Insert Table 1 about here>

We split the total sample into 20 two-digit sectors according to the Standard

[8] OneSource is a database of company accounts constructed by OneSource Information Services Ltd, whilst FAME is gathered by Bureau Van Dijk Electronic Publishing and both derive ultimately from the information which companies are required to deposit at Companies House. For FAME a maximum of 10 years of complete data history can be downloaded at once. For OneSource we used the CD-ROM entitled "UK companies, Vol. 1", October 2000. Further details on the OneSource dataset can be found in Oulton (1998).

[9] In OneSource, the holding companies are reported in addition to their subsidiaries. To avoid the double accounting, we excluded the holdings.

[10] The PPI is available at the 5-digit level for the period 1990-2000 and at the 4-digit level for the period 2001-2003.

[11] We made two rounds of cleaning: the first in order to harmonize OneSource with Fame and to obtain a unique and coherent dataset, and the second to eliminate outliers and anomalies in the dataset. Details are available upon request.

Industrial Classification 2003.[12] Employment coverage of our sample is on average 60% of total UK manufacturing employment (SIC 15-37). Table A.1 in Appendix A shows the sector repartition of the sample.

3.2 Empirical Strategy

The main difficulty in estimating the extended Hall-type equation (8) lies in the potential correlation between the TFP-growth term ($\Delta\theta$) and the RHS variables. The problem arises because the productivity shocks are unobserved by the econometrician but not necessarily by the firms which, at least, might anticipate them before choosing their factor inputs. In this case, OLS estimates are likely to be biased. Moreover, the burgeoning literature on firm heterogeneity stresses the differences in productivity level and growth across firms (Bernard et al., 2003 for the US and Eaton et al., 2004 for France). As in Harrison (1994), this problem could be addressed by decomposing the productivity growth term into a firm and a time fixed effect, the latter capturing possible unobservable aggregate shocks and productivity shocks common to all firms within sector j, plus a disturbance term:

$$u_{ijt} = \left(1 - \beta_j\right) \Delta\theta_{ijt} = e_{ij} + e_{jt} + v_{ijt} \tag{9}$$

However, since inputs and output are simultaneously determined, the fixed-effects (FE) estimator might still be biased. Taking advantage of the panel dimension of the data, Eq. (8) can be estimated using the Generalised Method of Moments (GMM) technique. We use the 3- to 5-year lagged values of the factor inputs n, m and k as instruments.

To estimate Eq. (8), firm-level variables are deflated by a common sector price index. Output price differences between firms are hence not taken into account and show up in the error term. This may give rise to downwardly biased and inconsistent mark-up estimates if output price differences between firms within a sector are endogenous and correlated with the explanatory variables (changes in factor inputs and factor shares). This problem might arise when firms compete in an environment with differentiated products. To address this issue, we can adopt the solution suggested by Klette and Griliches (1996) which amounts to adding the growth in sector output as an additional regressor.[13] Because we include time dummies in our estimates run at the sector level, this effect is being controlled for.

[12] We paid attention to the fact that some firms were recorded in two sectors at different times. To create a one-to-one match between firms and sectors, each firm was attributed to the most recorded sector. Sectors 16 and 23 have been dropped due to parsimonious data.

[13] Theoretically, this solution relies on the assumption that the market power of firms originates from product differentiation. Intuitively, in the case of product differentiation, the demand for an individual firm's products is a function of its relative price within the sector. Relative price differences can then be expressed in terms of relative output growth differences in the sector.

3.3 Comparison of FE and GMM estimates

Table 2 reports the FE and GMM[14] estimates for each of the 20 sectors.[15] For the GMM estimates, the parameters of interest ($\hat{\mu}_j$ and $\widehat{\phi}_j$, $j = 1, ..., 20$) are computed from the two-step estimated values of the reduced-form coefficients ($\widehat{\beta}_j$ and $\widehat{\gamma}_j$ respectively). The estimated standard errors ($\widehat{\sigma}$) of the estimated parameters are computed using the Delta Method (Woolridge, 2002).[16]

The estimated Lerner index ($\widehat{\beta}_j$) is always very significant. The estimated relative bargaining power of the workers ($\widehat{\gamma}_j$) is significant for 19 out of the 20 sectors with FE, and this number drops to 10 with GMM. However, average parameters are very similar, around 0.20 for $\widehat{\beta}_j$ and 0.70 for $\widehat{\gamma}_j$, which implies an average estimated mark-up ($\hat{\mu}_j$) of 1.25 and an average estimated workers' bargaining power parameter ($\widehat{\phi}_j$) of 0.40 respectively. The latter is above Van Reenen's (1996) estimates, lying in the (0.22 - 0.29) range, but is very close to the UK estimates obtained by Dumont et al. (2006) using a smaller set of firms and sectors. More specifically, the FE range across sectors is (1.12 - 1.45) for the estimated mark-up and (0.19 - 0.56) for the estimated workers' bargaining power. The GMM specification tests behave well. The overidentification test is not rejected in all but two sectors. The autocorrelation tests are not rejected for sixteen sectors.

It is worth noting that the estimated mark-up ($\hat{\mu}_j$) and the estimated workers' bargaining power parameter ($\widehat{\phi}_j$) are positively correlated across sectors. The correlation between the two estimated structural parameters is 0.71 for the FE estimates and 0.53 for the GMM estimates. This is consistent with the findings of Abowd and Lemieux (1993) that the bargaining power is positively linked to the size of the rents, and with Dobbelaere (2004) and Dobbelaere and Mairesse (2007). Boulhol (2007) suggests that, as capital return is determined by the share of the rents kept by the firms, an arbitrage reasoning based on capital mobility across sectors can explain this positive correlation.

<Insert Table 2 about here>

Table 3 compares the FE and the GMM estimates more synthetically. The trade-off between the two should be that GMM reduces the bias (see section 3.2) at the cost of less precise estimates. The results indicate that the GMM estimates are more dispersed across sectors, even leading to two (insignificant)

[14] The GMM estimation was carried out in Stata 9.1 (Roodman, 2005).

[15] Note that a considerable share of firms generates negative profits in a given year. For instance, the sum of the shares of variable factors in output exceeds 1 for 21% of the observations in our sample, which is not uncommon. In this case, Eq. (8) is not symmetrical as bargaining does not apply to negative profits. In particular, wages cannot be lower than the marginal revenue of labour. It follows directly that $\left(1 - \alpha_{N_{it}} - \alpha_{M_{it}}\right)(\Delta n_{it} - \Delta k_{it})$ in (8) equals zero when the sum of the variable input shares exceeds one. We also tried to limit the sample to those observations of which the sum of the variable input factors is lower than 1.05 and found similar results.

[16] $\sigma_{\widehat{\mu}} = \frac{\sigma_{\widehat{\beta}}}{(1-\widehat{\beta})^2}$; $\sigma_{\widehat{\phi}} = \frac{\sigma_{\widehat{\gamma}}}{(1+\widehat{\gamma})^2}$.

negative bargaining power parameters. However, the correlation between the FE and the GMM estimates is strong and significant. For the estimated Lerner indexes, the Pearson correlation coefficient is close to 0.90 between FE and GMM. For the estimated relative bargaining power parameters, it reaches 0.57 unweighted and 0.72 when weighted to take into account the precision of the estimates. All in all, as the average level of the two parameters are very close with FE and GMM, FE proves to be as efficient as GMM. This comparison suggests that the year and firm fixed effects do a good job in accounting for the heterogeneity in productivity growth across firms. Harrison (1994) shows that her FE and IV estimates are very close and, consequently, sticks to the FE results as Levinsohn (1993) does. We follow the same route for the remainder of this study.

<Insert Table 3 about here>

3.4 Variance Analysis

The above estimates should be considered as sectoral average parameters. There are, however, many reasons to believe that mark-up and bargaining power parameters vary across time and firm size. What follows confirms this presumption. In addition to the sectoral dimension, the sample is split according to size and period criteria. For the former, the sample is divided between small firms (fewer than 75 employees on average), medium-sized firms (between 75 and 200 employees) and large firms (more than 200 employees), which provides three subsamples of comparable size. For the latter, three subperiods are defined: 1991-1994, 1995-1998, 1999-2003.[17] This leaves us with 179 estimates for the mark-up and the bargaining power parameter: 20 sectors x 3 periods x 3 size classes, minus sector 19, first period, small firms due to lack of data.

These 179 "observations" are used in our Part II estimates. Since our dependent variables in the Part II estimations are estimated in Part I, we need to correct the standard errors for the additional source of variance this induces. Following Lewis and Linzer (2005), we implement a correction procedure resulting in a consistent estimation of the standard errors in the Part II parameters. In addition, we cluster standard errors at the sector-period level[18] to deal with intra-cluster serial correlation, correlation generated by common shocks, and all other forms of intra-cluster correlation (Rogers, 1993; Woolridge, 2002). Before formally assessing the determinants of the two parameters of interest, we conduct a variance analysis along the three dimensions presiding over the splitting of the sample. 17 out of the 179 Part I estimates display a negative estimated bargaining power and 2 out of the 179 Part I estimates are estimated to be larger than 1. However, none of these 19 estimates are estimated to be significant. As a robustness check, the various results are compared with and without the 19 "outliers".

[17] We start in 1991 to allow for lags.

[18] Since our key variable of interest, imports, varies at the sector-period level only, we cluster standard errors at that level (cfr. infra).

As for the estimated mark-ups (see the left part of Table 4), the three dimensions (sector, size and period) are very significant at the 99% confidence level, the sectoral dimension, as expected, accounting for the larger part of the explained variance. Two findings show up clearly. First, mark-ups drop significantly and importantly by around 7 percentage points between the first and the second period. Second, the estimated mark-up is increasing in firm size. This is consistent with both theory (e.g. Cournot competition) and empirical evidence in the heterogeneous firm literature. The difference according to firm size is especially true between the small firms and the others.

The right part of Table 4 reports the variance analysis for the estimated workers' bargaining power parameters. The sector share of the explained variance is also predominant. Similar to the estimated mark-up, the workers' bargaining power dropped significantly, by around 0.12, after the first period. This decrease in the workers' bargaining power echoes Blanchflower and Bryson (2004) who find a significant decline in the union wage premium after 1994 for the UK. It is also consistent with the diluted role of UK labour market institutions, documented by Machin (1997). In addition to other legislative measures, he draws attention to the abolition of the Wages Council system of minimum wages in August 1993, covering 2.5 million workers at that time. Moreover, the workers' bargaining power is estimated to be lower, by around 0.05, for the smaller firms. However, this difference is only significant with the medium-sized firms.[19]

<Insert Table 4 about here>

4 Part II : Testing the imports-as-product-and-labour-market-discipline hypothesis

This section concentrates on the identification of the effect of increased import competition on the estimated mark-ups and workers' bargaining power parameters. As discussed above, we take into account the estimated nature of the dependent variables in the Part II estimations by correcting the standard errors following Lewis and Linzert (2005) and cluster standard errors at the sector-period level. A description of all variables used in this section and data sources are reported in Table A.2 in Appendix A. Our main focus is the impact of international trade on our two parameters of interest.

4.1 Mark-up

4.1.1 Specification

Firms under intensifying pressure from foreign competition are induced to reduce their margins because of the increase in the perceived elasticity of the

[19] When we drop the 19 estimated bargaining power parameters that are outside the $[0, 1]$-range, we find very similar results.

demand they are facing. This elasticity depends on the elasticity of substitution between varieties, the concentration level and the intensity of competition.

The following variables are defined. $IMPORT$ is the share of imports in sectoral demand. Trade theory highlights that the impact of imports is differentiated depending on the origin of the imports. For a developed country like the United Kingdom, trade with developing countries is supposedly based on comparative advantage and the impact of trade is mainly channelled through reallocation between sectors. In contrast, trade with developed countries is mostly intra-industry. It is based on imperfect competition and is therefore a better candidate for the pro-competitive effect on mark-ups. We distinguish $IMPNORTH$, which is the share of imports from Western Europe, North America, Japan, Australia and New Zealand in total demand, from $IMPSOUTH$, its complement. Since firms are likely to select foreign markets based on the margins they offer for their products, exports could be positively related to markups. The export ratio at the firm level is $EXPFIRM$. Table A.3 in Appendix A summarises the changes of the import variables over the period. The absence of correlation between the changes in imports from developed countries and those from developing countries across sectors is particularly striking (linear coefficient of -3%), implying that these trends reflect a very distinct rationale.

When competition intensifies, firms' reaction is not limited to pricing behaviour. Sutton (1991, 1998) insists on the endogeneity of market structure. An increase in the competitive environment may trigger an endogenous reaction of firms, through an increase in R&D or advertisement spending for instance. This might force out firms that are unable to keep the pace. R&D could hence be positively related to mark-ups. $R\&DRATIO$ is defined as the share of R&D spending in total output at the sectoral level.

There is a lack of data to take into account the change in domestic competition at the sectoral level. At the country level, we test three variables that might have an impact on mark-ups. PMR is the product market regulation index computed by the OECD on a scale from 0 to 6, in ascending order of regulation. The series is available for 1988, 1993, 1998 (Nicoletti et al., 2001) and 2003 (Conway et al., 2005), and is linearly interpolated between these years.[20] For the UK, it has decreased from 3.5 in 1988 to 1.0 in 2003. The second variable is the (log of) stock market capitalisation as a share of GDP, $CAPIT$. Hoekman et al. (2001) argue that financial deepening reduces the cost of capital, thus increasing the overall profitability of the economy. They provide evidence of stock market capitalisation exerting a significantly positive impact on average sector mark-ups. Finally, the Herfindahl index, $HERF$, is calculated from our sample. Caution is required using this variable as it is very sensitive to the entry or exit of big firms in the *database* at different times.

[20]The indicator is based on seven non-manufacturing sectors (energy, communication and transport). It is very correlated (linear coefficient of around 86%) to the regulation index for the whole economy, only available for 1998 and 2003.

Because of its importance in the drawing up of macroeconomic policies, an abundant literature deals with the cyclicality of mark-ups. Rotemberg and Woodford (1999) provide some detailed theoretical explanations, such as overhead labour, adjustment costs and labour hoarding, in support of the counter-cyclicality of mark-ups. The debate whether mark-ups are pro- or counter-cyclical remains unresolved although the empirical evidence rather leans towards counter-cyclicality. We use the annual change in value-added, and $VALUCYC$ is the de-trended series using a Hodrik-Prescott filter. Our empirical specification can be expressed as:

$$\widehat{\mu}_{jsp} = \alpha_1 Lag(IMPORT_{jp}) + \alpha_2 Lag(EXPFIRM_{jsp}) + \alpha_x X_{jsp} + e_j + e_s + e_p + \xi_{jsp} \quad (10)$$

with j, s and p indexing sector, size and period, respectively.

To account for the endogeneity problem of trade and other variables, all explanatory variables are lagged, except for firm size, the cyclical variable and the Herfindahl index. We use 3-year lagged values of the endogenous variables. In order to avoid overlapping between the subperiods, ideally we would need 5-year lags. However, such a long lag is likely to weaken the explanatory power substantially and we therefore use it as a robustness check only.

Appendix B provides some evidence that the import variable is related to structural policy measures. In particular, there seems to be a positive relation across sectors between the changes in the $IMPNORTH$ ratio and the expected impact of the 1992 Single Market Program. This is reassuring because this means that the trade ratio seems to capture reasonably well the major structural reforms that took place at the beginning of the period under study.[21]

4.1.2 Results

The estimates are presented in Table 5. The main result is that imports exert a negative impact on mark-ups, although this effect is not significant when the origin of imports is not differentiated. As column (2) indicates, this is because only imports from developed countries appear to have a significant effect, which is consistent with the discussion above. The estimated impact looks strong, as an increase of one point in the share of imports from the North in total demand would trigger a decrease of around one point. Note that, compared to the variance analysis, the explanatory power measured by the adjusted R^2 increases from 0.38 to 0.44.

Exports never show up as being significant. Consistent with the heterogenous firm literature, we find that exports increase with firm size, as the export ratio is on average 0.065 higher for the large compared to the small firms. However, it seems that the size-effect on mark-ups is not amplified by the export status.

When we substitute the (log of) average employment $EMPL$ to the size dummies or when the sample is restricted to the positive bargaining power observations, the results are not altered. When time dummies are withdrawn, the

[21] Thanks to an anonymous referee to have pushed us in this direction.

coefficient of the cyclical variable $VALUCYC$ is negative and significant in two specifications, hence supporting the counter-cyclicality of mark-ups.

As a robustness check, we use 5-year lags which produce in general qualitatively similar -although not always significant- results. As an illustration, we report in the last column the specification consistent with the one in column (2).

<Insert Table 5 about here>

4.2 Workers' Bargaining Power

4.2.1 Specification

Formalising the impact of foreign competition on workers' bargaining strength is not as straightforward as doing so on mark-ups, even if it is generally reflected in the increase in the elasticity of labour demand due to imports, for which Fabbri et al. (2003) provide some evidence for low skilled workers. Rodrik (1997) points out that imports increase the substitution between domestic and foreign workers. Moreover, the possibility of offshoring improves the position of employers in bargaining and at the same time narrows the range of outside options available to workers. Therefore, pressure from foreign competition could increase the risk of breakdown in bargaining and loosen labour market tightness, thereby diminishing workers' bargaining power (see Brock and Dobbelaere, 2006 and Dumont et al., 2006 for a further discussion). Pencavel (2004) documents "the surprising retreat of union Britain". He details the changes in the legal framework for unionism in the 1980s and 1990s and suggests that the context of a harsher domestic and international competitive environment determined the impact of the new laws.

In addition to the variables described in section (4.1.1), we evaluate the effect of three labour market variables on workers' bargaining power: $UNIONDENS$, $REPLRATE$ and $UNEMPRATE$, referring to union density, the replacement rate and the unemployment rate at the country level respectively. Union density and the replacement rate are expected to be positively related to the workers' bargaining power, as shown by Karier (1985) and Conyon and Machin (1991). For the unemployment rate, the link might not be clear-cut. An increase in the unemployment rate has a negative effect on the outside option, hence a negative relationship with the workers' bargaining power is expected. However, because the union wage premium softens the impact of shocks on wages, Blanchflower and Bryson (2004) find that the union wage premium is counter-cyclical, pointing to a positive relationship. Therefore, the resulting effect is, a priori, ambiguous.

Product market deregulation (PMR) has been found to be positively correlated to labour market deregulation across countries and seems to precede labour market reforms (see Fig. 34 in Brandt et al., 2005). If capital deepening ($CAPIT$) is linked to increased capital mobility, it might have a negative impact on the workers' bargaining power. Finally, it is often argued that technological change,

instead of international trade, triggers changes in the labour market (see e.g. Berman et al., 1994; Krugman and Lawrence, 1996). Technological change ($R\&DRATIO$) might exert an effect on the workers' bargaining power by impacting the nature of the production process. However, this effect is, a priori, unclear. As discussed in Betcherman (1991), it depends on the importance of labour costs in the firm's total costs and on the workers' essentiality in the production process.

Finally concentration ($HERF$) can have two opposite effects on the bargaining power. On the one hand, in concentrated sectors, firms may tend to have monopsony power in the labour market which weakens the workers' bargaining power. On the other hand, as argued by Veugelers (1989), output concentration may allow firms to shift costs on to customers more easily and accept stronger unions. Ebell and Haefke (2006) find a positive correlation between concentration and union coverage in a cross-section of US sectors.

To test the imports-as-labour-market discipline hypothesis, we estimate the following specification:

$$\widehat{\phi}_{jsp} = \alpha_1 Lag(IMPORT_{jp}) + \alpha_2 Lag(EXPFIRM_{jsp}) + \alpha_x X_{jsp} + e_j + e_s + e_p + \xi_{jsp} \tag{11}$$

with j, s and p indexing sector, size and period, respectively.

4.2.2 Results

Our results, which are reported in Table 6, provide robust evidence of imports from developed countries having squeezed the workers' bargaining power. Total imports is also significant but this is only due to the effect of imports from developed countries. An increase of one point in the share of imports from the North seems to have reduced the bargaining power by 0.008 on average.[22] The fact that only increased import competition from the North exerts a significantly negative impact might seem surprising at first sight. However, one would need to rely on a more detailed skill structure within sectors to have a clearer analysis. Our results seem to point out that, because of similar characteristics in terms of education, productivity and skills, foreign workers in *developed* countries are more substitutable through imports to UK workers than those in developing countries. Interestingly, Neven and Wyplosz (1999) find similar effects. Also, Greenaway et al. (1999) study the impact of international trade on UK employment between 1979 and 1991. They find that only imports from developed countries had a negative impact, which is even more surprising, and suggest that the competition from developing countries is in sectors that had already declined in the 1970s.

The coefficient on $EXPFIRM$ is positive and significant at 10% in three specifications. Because most of the other explanatory variables lack the sectoral

[22] Considering 5 EU countries (Belgium, France, Germany, Italy and the UK), Dumont et al. (2006) find a comparable effect.

dimension, we run into severe multicollinearity issues. This makes it almost impossible to disentangle the effect of these country variables. Therefore, we test each of them separately, keeping in mind that the contribution of each variable should not be cumulated. The impact of $UNIONDENS$, PMR, $REPLRATE$, $CAPIT$ and $UNEMPRATE$ show up significantly. The first two variables have the highest explanatory power. Deunionisation seems to be associated with a decline in the workers' bargaining power between 1991 and 2003. Product market and labour market deregulation are found to go hand in hand. A higher unemployment rate, a lower replacement rate and financial deepening seem negatively related to the workers' bargaining power. Finally, the workers' bargaining power is found to be significantly higher in concentrated sectors whereas no significant relationship is detected with R&D.[23]

<Insert Table 6 about here>

4.3 Exporters versus non-exporters

To test whether the competitive effect of imports is dependent on the export behaviour of firms,[24] we subdivided the original sample into exporting and domestically oriented firms (labelled non-exporters hereafter). The subsample of exporters consists of those firms for which we have data on exporting activity for each year. Based on this criterion, 41% of the firms belong to the subsample of exporting firms. Each of the two subsamples is split according to the same sector, size and period criteria as in section 3.4. Due to the constraint that each "sector-size-period subsample" should contain at least 30 observations, we are able to obtain 161 estimates of Eq. (8) -controlling for year and firm effects- for the subsample of exporters and 174 estimates for the subsample of non-exporters. Both subsamples have 159 "sector-size-period subsamples" in common. For reasons of comparability, we focus on these 159 estimates in the discussion below. Table A.5 in Appendix A summarises the mean and quartile values of the estimated reduced-form coefficients for respectively the subsample of exporters, the subsample of non-exporters and the total sample. To take into account the precision of the estimates, we weight each estimate by the inverse of the sampling variance. From Table A.6, it follows that the estimated reduced-form coefficients ($\widehat{\beta}_{jsp}$ and $\hat{\gamma}_{jsp}$) do not differ significantly between the subsample of exporters and the subsample of non-exporters.

[23] As a robustness check, limiting ourselves to the 160 bargaining power Part I estimates lying in the $[0,1]$-interval produces similar results. Also, we used a logit transformation. The results are presented in Table A.4 in Appendix A. As can be seen, the orders of magnitude are comparable. When the bargaining power is the dependent variable, the average parameter on $IMPNORTH$ is around -0.80, i.e. $\Delta\phi \approx -0.80\,\Delta IMPNORTH$. With the logit specification, the average $IMPNORTH$ parameter is around -3.0 from which we infer: $\Delta \ln\left(\frac{\phi}{1-\phi}\right) \approx -3.0\,\Delta IMPNORTH \Longleftrightarrow \Delta\phi \approx -3.0\,\phi\,(1-\phi)\,\Delta IMPNORTH$. The average estimated bargaining power is around 0.40 (Table 2), hence an average sensitivity of $-3 * 0.4 * 0.6 = -0.72$. Of course, from the logit specification the implied sensitivity to $IMPNORTH$ depends on the level of the bargaining power. One can calculate that this sensitivity is equal to -0.27 when the bargaining power is 0.10 and -0.63 when it is 0.70.

[24] We are grateful to an anonymous referee for this suggestion.

To check whether the competitive effect varies according to the export status of firms, we re-estimated specification (2) of Tables 5 and 6 for the subsample of exporters, the subsample of non-exporters and the total sample (see Table 7[25]). From Table 7, it follows that imports from developed countries exert a statistically significant negative effect on both the estimated mark-up and workers' bargaining power of exporting as well as non-exporting firms. Moreover, the size of the effect does not depend on the export status.

<Insert Table 7 about here>

4.4 Product market versus labour market discipline and the price-cost margin puzzle

What is the significance of both the mark-up and the bargaining power sensitivities to imports in relation to the overall findings in graph 1 highlighting that price-cost margins are about the same? Based on the model in section 2, the price-cost margin, PCM, is derived from equation (7) which -dropping subscripts- is rewritten as:

$$\alpha_N + \alpha_M = \frac{\left(1-\varepsilon_K^Q\right)(1-\phi)}{\mu} + \phi$$

$$\Longrightarrow PCM \equiv 1-\alpha_N-\alpha_M = \left(1-\frac{1-\varepsilon_K^Q}{\mu}\right)(1-\phi) \tag{12}$$

Differentiation of Eq. (12) implies:

$$\frac{\Delta PCM}{PCM} = \frac{\frac{\left(1-\varepsilon_K^Q\right)}{\mu}}{1-\frac{\left(1-\varepsilon_K^Q\right)}{\mu}}\frac{\Delta\mu}{\mu} - \frac{\Delta\phi}{1-\phi}$$

Using the expression of $\frac{\left(1-\varepsilon_K^Q\right)}{\mu}$ implied by Eq. (12) leads to:

$$\Delta PCM \quad = \quad \frac{1-\phi-PCM}{\mu}\Delta\mu - \frac{PCM}{1-\phi}\Delta\phi$$

Focusing on the effect of imports, the impact on the price-cost margin can be broken down in two components, the product-market-discipline effect and the labour-market-discipline effect:

[25] In order not to lose any information, we used all available "Part I" estimates of $\hat{\mu}_{jsp}$ and $\widehat{\phi}_{jsp}$ for each (sub)sample resulting in a different number of observations for each (sub)sample whereas in Table A.5 in Appendix A, we only used the estimates of the common "sector-size-period subsamples" to ensure comparability.

$$\frac{\partial PCM}{\partial IMPNORTH} = \frac{1-\phi-PCM}{\mu}\frac{\partial \mu}{\partial IMPNORTH} - \frac{PCM}{1-\phi}\frac{\partial \phi}{\partial IMPNORTH}$$

Based on the average estimates in Table 2 and Graph 1 ($\mu = 1.25$, $\phi = 0.40$, $PCM = 0.14$), the order of magnitude of the impact of imports from developed countries on the price-cost margin is given by:

$$\frac{\partial PCM}{\partial IMPNORTH} = 0.37\,\frac{\partial \mu}{\partial IMPNORTH} - 0.23\,\frac{\partial \phi}{\partial IMPNORTH}$$

The average estimates in Tables 5 and 6 give $\frac{\partial \mu}{\partial IMPNORTH} \approx -1.0$ and $\frac{\partial \phi}{\partial IMPNORTH} \approx -0.8$, which leads to the following break-down:

$$\begin{aligned} \Delta PCM &= \text{product-markt-discipline effect} + \text{labour-market-discipline effect} \\ &= -0.37\,\Delta IMPNORTH + 0.19\,\Delta IMPNORTH \end{aligned}$$

This back-of-the-envelope calculation suggests that firstly, the labour-market discipline effect might have counteracted half of the product-market discipline effect and secondly, that import competition has contributed to a decline in the price-cost margin of around 1 point on average over the period.[26] The puzzle is therefore only partially resolved.

5 Conclusion

Many empirical studies have provided evidence that trade has a pro-competitive effect by reducing mark-ups to marginal cost in import competing sectors. Most of them have focused on developing countries assuming a perfectly competitive labour market. In contrast, this study concentrates on a developed country and takes into account labour market imperfections, using firm-level data for UK manufacturing sectors. Our results indicate that both the mark-ups and workers' bargaining power decreased in the mid-nineties. Moreover, imports from developed countries are shown to contribute significantly to these changes, whereas firm exports have a weakly significant positive influence on the workers' bargaining power. These joint effects imply that trade has exerted a conflicting impact on price-cost margins, i.e. on the share of the rents kept by the firms. Based on the estimates, the labour-market-discipline effect might have counteracted half of the product-market-discipline effect. We also find, consistent with the recent literature on firm heterogeneity, that small firms have lower mark-ups. Additionally, their workers are subject to a lower bargaining power.

[26] Based on Table A.3 in Appendix A, $IMPNORTH$ has increased by 6 points on average over the total period and $(-0.37 + 0.19)\,0.06 \approx -0.01$.

Appendix A: Statistical annex

Table A.1
Sector repartition of the sample

Code	Name
15	Food products and beverages
17	Textiles
18	Wearing apparel, dressing, dying of fur
19	Leather, leather products and footwear
20	Wood and products of wood and cork
21	Pulp, paper and paper products
22	Printing and publishing
24	Chemicals and chemical products
25	Rubber and plastic products
26	Other non-metallic mineral products
27	Basic metals
28	Fabricated metal products, except machinery and equipment
29	Machinery and equipment, n.e.c.
30	Office, accounting and computing machinery
31	Electrical machinery and apparatus, n.e.c.
32	Radio, television and communication equipment
33	Medical, precision and optical instruments
34	Motor vehicles, trailers and semi-trailers
35	Other transport equipment
36	Manufacturing, n.e.c.

Table A.2
Description and source of variables in Part II regressions

Variable	Description	Source
CAPIT	Log of stock market capitalization as a percentage of GDP	Datastream
EMPL	Log of firm average employment level across the whole period	OneSource, FAME
EXPFIRM	Firm exports/turnover ratio	OneSource, FAME
HERF	Sample-based Herfindahl index	OneSource, FAME
IMPORT	Sectoral import penetration ratio: imports/(imports+production-exports)	STAN
IMPNORTH	IMPORT from Western Europe, North America, Japan, Australia and New Zealand	Bilateral Trade Database (OECD)
IMPSOUTH	Complement of IMPNORTH	Bilateral Trade Database (OECD)
PMR	Product market regulation index	Nicoletti et al. (2001), Conway et al. (2005)
R&DRATIO	Sectoral share of R&D expenses in total output	OECD
UNEMPRATE	Country-level unemployment rate	Nickell and Nunziata (2001)
UNIONDENS	Manufacturing-level union density	Nickell and Nunziata (2001)
REPLRATE	Manufacturing-level replacement rate	Nickell and Nunziata (2001)
VALUCYC	De-trended sectoral annual change in value added	STAN

Table A.3
Summary statistics for the import variables

	IMPNORTH			IMPSOUTH			Change in IMPNORTH	Change in IMPSOUTH
Sector	**1988**	**1994**	**2000**	**1988**	**1994**	**2000**	**1988/2000**	**1988/2000**
15	0.117	0.123	0.139	0.056	0.067	0.069	0.022	0.014
17	0.201	0.210	0.194	0.166	0.253	0.345	-0.008	0.179
18	0.201	0.210	0.234	0.166	0.254	0.417	0.033	0.251
19	0.215	0.260	0.303	0.178	0.314	0.539	0.088	0.361
20	0.218	0.206	0.188	0.105	0.110	0.127	-0.030	0.022
21	0.312	0.285	0.291	0.042	0.055	0.067	-0.022	0.024
22	0.062	0.067	0.065	0.008	0.013	0.015	0.002	0.006
24	0.258	0.334	0.403	0.085	0.108	0.137	0.145	0.052
25	0.183	0.182	0.181	0.050	0.064	0.083	-0.003	0.034
26	0.115	0.115	0.123	0.037	0.044	0.057	0.008	0.021
27	0.195	0.275	0.314	0.248	0.173	0.156	0.119	-0.092
28	0.106	0.101	0.115	0.028	0.036	0.053	0.009	0.024
29	0.390	0.401	0.455	0.078	0.078	0.114	0.065	0.036
30	0.672	0.684	0.660	0.138	0.192	0.406	-0.012	0.268
31	0.235	0.312	0.377	0.072	0.106	0.188	0.143	0.116
32	0.372	0.465	0.590	0.147	0.261	0.311	0.218	0.164
33	0.412	0.419	0.493	0.098	0.117	0.138	0.081	0.040
34	0.379	0.409	0.489	0.073	0.101	0.128	0.110	0.054
35	0.153	0.148	0.365	0.371	0.353	0.349	0.213	-0.022
36	0.178	0.166	0.195	0.147	0.177	0.184	0.017	0.037
Unweighted average	0.249	0.269	0.309	0.115	0.144	0.194	0.060	0.079

Table A.4

Determinants of the estimated workers' bargaining power, dependent variable $\ln(\frac{\widehat{\phi}_{jsp}}{1-\widehat{\phi}_{jsp}})$

Variables	**(1)**[a]	**(2)**[a]	**(3)**[a]	**(4)**[a]	**(5)**[a]	**(6)**[a]	**(7)**[a]	**(8)**[b]	**(9)**[b]	**(10)**[b]
1995-1998	-0.412***	-0.406***						-0.419***		
	(0.0861)	(0.089)						(0.095)		
1999-2003	-0.368***	-0.375***						-0.409***		
	(0.112)	(0.112)						(0.118)		
Medium-sized	0.145	0.141						0.131	0.163	
	(0.106)	(0.105)						(0.107)	(0.107)	
Large	0.024	0.021						0.001	0.066	
	(0.109)	(0.109)						(0.111)	(0.109)	
EMPL			-0.019	-0.018	-0.004	-0.012	-0.011			-0.005
			(0.026)	(0.026)	(0.028)	(0.026)	(0.026)			(0.026)
lag(EXPFIRM)	0.731	0.838	1.021	0.989	0.593	0.899	0.885	0.989	0.529	0.632
	(0.855)	(0.886)	(0.909)	(0.911)	(0.887)	(0.899)	(0.898)	(0.879)	(0.850)	(0.868)
lag(IMPORT)	-2.163**									
	(0.868)									
lag(IMPNORTH)		-3.061**	-2.516	-2.586	-5.461***	-3.191*	-3.261*	-0.707	-1.764	-1.988
		(1.469)	(1.683)	(1.742)	(1.447)	(1.893)	(1.905)	(1.773)	(1.655)	(1.668)
lag(IMPSOUTH)		-0.458	-0.024	-0.161	-3.150*	-0.960	-1.060	-1.803	-6.268***	-6.166**
		(1.398)	(1.547)	(1.619)	(1.652)	(1.843)	(1.860)	(1.858)	(2.252)	(2.467)
lag(R&DRATIO)	-10.446	-7.752	-7.554	-7.964	-11.431	-9.749	-9.962	-3.896	-12.008	-11.926
	(7.720)	(7.480)	(8.802)	(9.136)	(7.796)	(10.101)	(10.159)	(7.909)	(10.275)	(10.720)
lag(PMR)			0.245***							
			(0.065)							
lag(UNIONDENS)				4.675***						
				(1.310)						
lag(UNEMPRATE)					-8.277***					
					(2.826)					
REPLRATE						12.321***				
						(4.418)				
lag(CAPIT)							-0.373***			
							(0.138)			
HERF		0.982*	1.377*	1.426*	1.014	1.532	1.537	1.216	1.852	1.932
		(0.686)	(0.804)	(0.848)	(0.906)	(0.988)	(0.937)	(0.735)	(1.242)	(1.224)
Sector dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.632	0.638	0.610	0.604	0.591	0.583	0.581	0.632	0.558	0.547
#Obs.	160	160	160	160	160	160	160	160	160	160

The dependent variable ($\ln(\frac{\hat{\phi}_{jsp}}{1-\hat{\phi}_{jsp}})$ is taken from the Part I estimation. Standard errors are reported in parentheses, they have been corrected to account for the generated regressand problem following Lewis and Linzer (2005) and clustered at the sector-period level. ***Significant at 1%; **Significant at 5%; *Significant at 10%.

[a] 3-year lags used.

[b] 5-year lags used except for $EXPFIRM$.

Table A.5
Weighted[a] mean and quartile values of the reduced-form coefficients $\hat{\beta}_{jsp}$ and $\hat{\gamma}_{jsp}$
Exporters, non-exporters and total sample

	YEAR AND FIRM	**FIXED EFFECTS**
159 ssp estimates[b]	$\widehat{\beta}_{jsp}$	$\widehat{\gamma}_{jsp}$
Exporters		
ssp mean	0.210 (0.077)	0.827 (0.993)
ssp Q_1	0.157	0.194
ssp median	0.202	0.757
ssp Q_3	0.252	1.390
Non-exporters		
ssp mean	0.203 (0.075)	0.774 (0.838)
ssp Q_1	0.155	0.170
ssp median	0.194	0.681
ssp Q_3	0.231	1.162
Total sample		
ssp mean	0.206 (0.069)	0.790 (0.606)
ssp Q_1	0.171	0.219
ssp median	0.197	0.726
ssp Q_3	0.227	1.230

[a] Each estimate is weighted by the inverse of the sampling variance.
[b] "ssp" denotes **s**ector-**s**ize-**p**eriod.

Appendix B: 1992 Single Market Program

In order to address the endogeneity issue related to the trade variables, some empirical studies (e.g. Botasso and Sembenelli, 2001; Griffith, 2001) have used a criterion suggested by the European Commission. Sectors were grouped according to the level of non-tariff barriers that the 1992 Single Market Program (SMP) was expected to reduce. Based on this criterion, sectors were classified as having a high, moderate or low sensitivity to the SMP (Buigues et al., 1990). Out of 120 NACE three-digit manufacturing sectors, 14 were classified as highly sensitive and 26 as moderately sensitive to the SMP. There is one major difficulty in applying such a strategy here. In order to identify the structural parameters of interest, the mark-up and bargaining power, the level of aggregation is two-digit and, for a given two-digit sector, the corresponding three-digit components generally fall in different sensitivity categories.

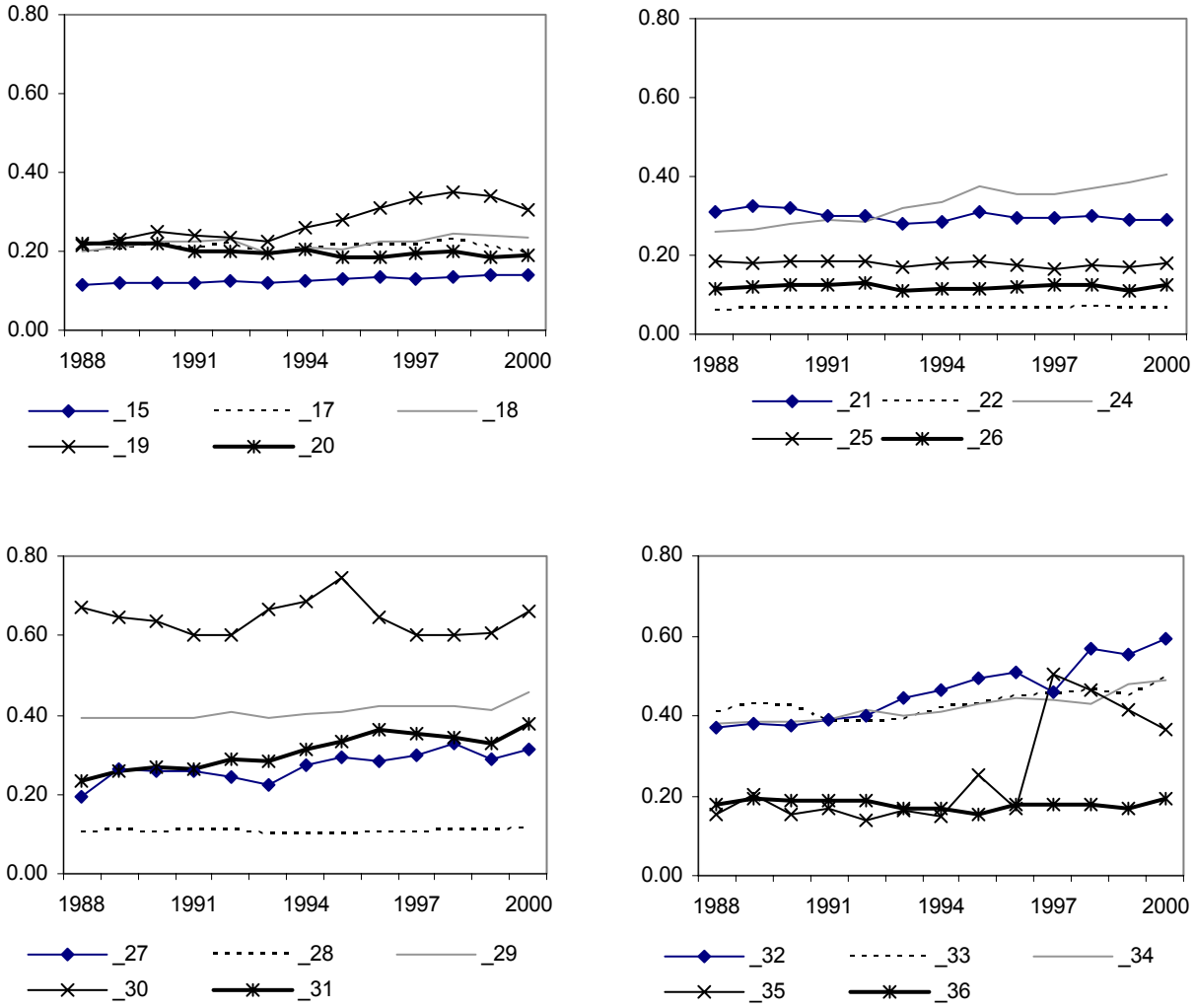
However, even though the match is far from perfect, the two-digit sectors were tentatively classified according to their sensitivity level, as displayed in Table B.1. Sectors are ranked based on the changes in the $IMPNORTH$ ratio in column 2. Column 3 reports the apparent break in the series based on Graph B.1, i.e. the year where imports from developed countries have accelerated. The average increase in $IMPNORTH$, which is reported in Table A.3 in Appendix A, is entirely explained by 9 out of the 20 sectors, 7 of which saw an acceleration in $IMPNORTH$ just after the completion of the SMP. Moreover, the sensitivity to the SMP reported in the fourth column of Table B.1 indicates that there is a fairly clear relation between the increase in imports from developed countries and the expected sensitivity to the SMP. This is reassuring because this means that the trade ratio seems to capture reasonably well the major structural reforms that took place at the beginning of the period under study.

Table B.1
Changes in imports from developed countries and sensitivity to the 1992 Single Market Program

Sector	Change in IMPNORTH between 1988-2000	Apparent break in the IMPNORTH series	Tentative two-digit sensitivity based on Griffith (2001)	Comments
32	+0.22	1993	high	
35	+0.21	1995	high/medium	Shipbuilding, Railway and tramway are classified as highly sensitive, while aerospace equipment falls in the medium category. The latter explains most of the increase in import penetration.
24	+0.15	1993	high/low	Specialised chemical and pharmaceutical products had had high NTBs and account for more of the increase in $IMPNORTH$.
31	+0.14	1994	medium	
27	+0.12	1988?	low	Most of the increase seems to be due to the surprising 1988 trough in the series.
34	+0.11	gradual	medium	
19	+0.09	1994	medium/low	
33	+0.08	1994	high	
29	+0.06	1994	medium/high	
18	+0.03		medium/low	
15	+0.02		low	
36	+0.02		high	
28	+0.01		low	
26	+0.01		low	
22	+0.00		low	
25	-0.00		low	
17	-0.01		low	
30	-0.01		high	Foreign competition based on the import ratio was already intense before the SMP.
21	-0.02		low	
20	-0.03		low	

Graph B.1

Share of UK imports from developed countries in sectoral demand,
two-digit manufacturing sectors, OECD database



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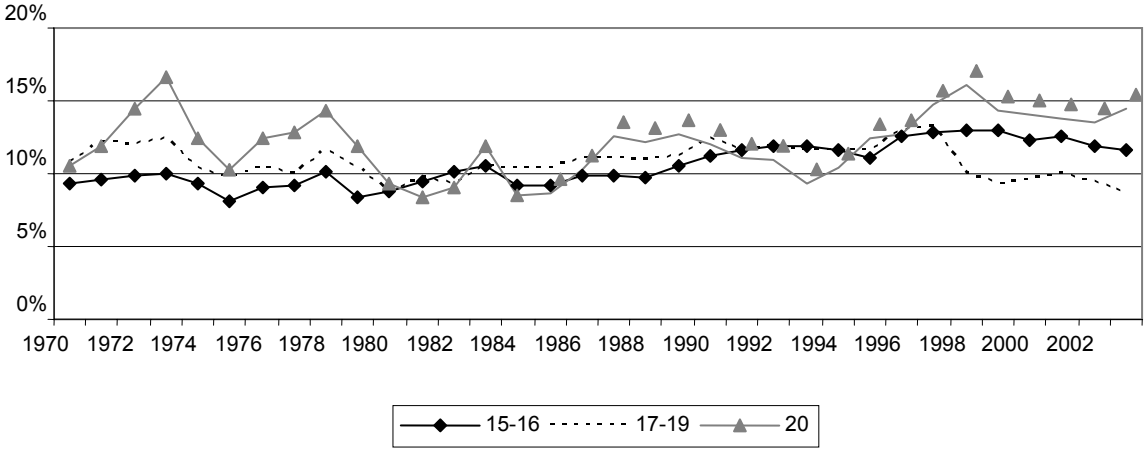
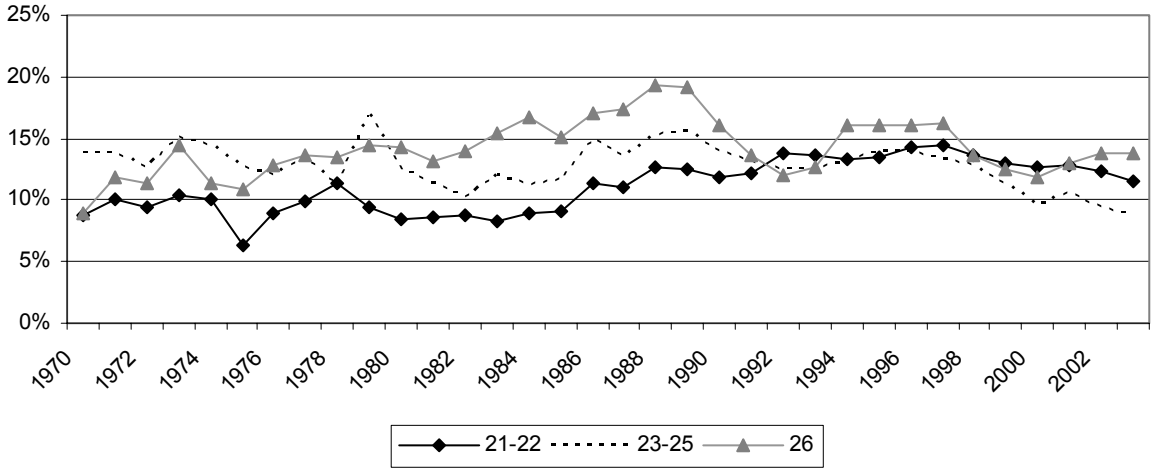
Graph 1

Price-cost margins for large UK manufacturing sectors (description in A.1 in Appendix A) 1970-2003, STAN database





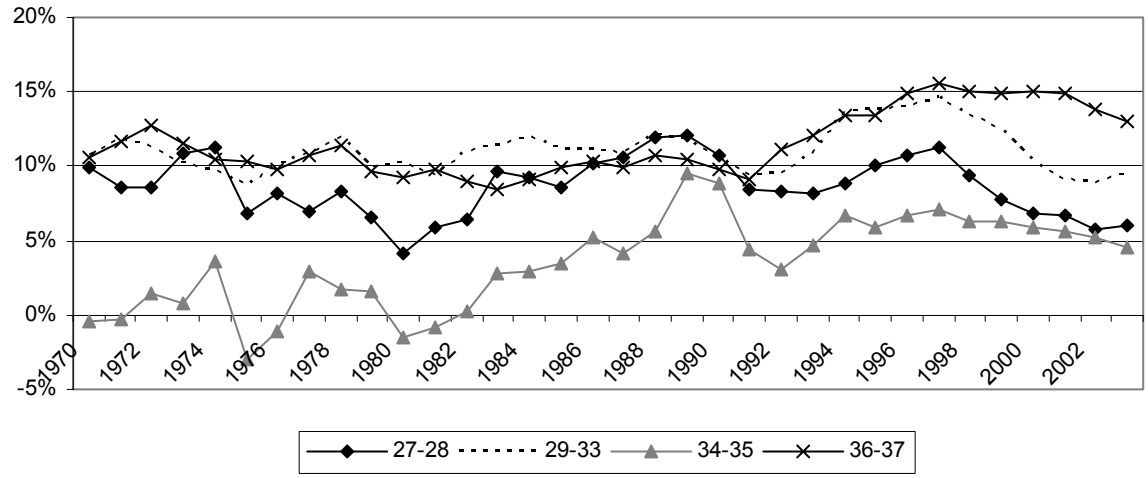


Table 1
Summary statistics

Variables	1990-2003			
	Mean	Sd.	Q_1	Q_3
Real firm output growth rate Δq	0.014	0.166	-0.081	0.107
Labour growth rate Δn	0.003	0.129	-0.061	0.062
Capital growth rate Δk	0.006	0.178	-0.090	0.088
Intermediate inputs growth rate Δm	0.029	0.189	-0.084	0.138
Share of labour in nominal output α_N	0.287	0.130	0.192	0.369
Share of intermediate inputs in nominal output α_M	0.656	0.137	0.567	0.752
Solow residual SR^a	0.0008	0.079	-0.037	0.037
$\Delta q - \Delta k$	0.007	0.219	-0.116	0.137
$(\alpha_N + \alpha_M - 1)(\Delta n - \Delta k)$	0.0002	0.019	-0.005	0.005

Number of observations: 60579.
[a] $SR = \Delta q - \alpha_N \Delta n - \alpha_M \Delta m - (1 - \alpha_N - \alpha_M)\Delta k$.

Table 2
Sector analysis: Estimated sector-level mark-up $\hat{\mu}_j$ and workers' bargaining power $\hat{\phi}_j$, FE and GMM results

		YEAR AND FIRM FIXED EFFECTS				**GMM**						
Code	# Obs. (# Firms)	$\hat{\beta}_j$	$\hat{\mu}_j = \frac{1}{1-\widehat{\beta}_j}$	$\widehat{\gamma}_j$	$\hat{\phi}_j = \frac{\widehat{\gamma}_j}{1+\widehat{\gamma}_j}$	$\hat{\beta}_j$	$\hat{\mu}_j = \frac{1}{1-\widehat{\beta}_j}$	$\widehat{\gamma}_j$	$\hat{\phi}_j = \frac{\widehat{\gamma}_j}{1+\widehat{\gamma}_j}$	$Sargan$	$m1$	$m2$
15	3893 (787)	0.195*** (0.008)	1.242*** (0.012)	0.670*** (0.120)	0.401*** (0.043)	0.198*** (0.032)	1.247*** (0.050)	0.350 (0.441)	0.259 (0.242)	0.153	0.000	0.189
17	1957 (377)	0.178*** (0.010)	1.216*** (0.014)	1.137*** (0.165)	0.532*** (0.036)	0.211*** (0.037)	1.267*** (0.059)	1.679*** (0.543)	0.627*** (0.076)	0.547	0.000	0.025
18	834 (192)	0.111*** (0.012)	1.124*** (0.015)	0.420* (0.254)	0.296*** (0.126)	0.134*** (0.027)	1.155*** (0.036)	0.022 (0.711)	0.022 (0.681)	0.999	0.000	0.233
19	432 (74)	0.103*** (0.019)	1.115*** (0.023)	0.238 (0.371)	0.192 (0.242)	0.101*** (0.036)	1.112*** (0.045)	1.272* (0.680)	0.560*** (0.132)	1.000	0.000	0.309
20	948 (213)	0.145*** (0.016)	1.170*** (0.022)	0.597** (0.268)	0.374*** (0.105)	0.076*** (0.021)	1.082*** (0.246)	-0.302 (1.840)	-0.433 (3.777)	1.000	0.000	0.415
21	1565 (306)	0.197*** (0.013)	1.246*** (0.019)	0.841*** (0.145)	0.457*** (0.043)	0.213*** (0.037)	1.271*** (0.060)	1.155*** (0.274)	0.536*** (0.059)	0.487	0.000	0.498
22	4824 (1120)	0.187*** (0.007)	1.230*** (0.011)	0.244*** (0.075)	0.196*** (0.048)	0.191*** (0.035)	1.236*** (0.053)	0.316 (0.287)	0.240 (0.166)	0.117	0.000	0.079
24	4061 (781)	0.235*** (0.009)	1.308*** (0.015)	0.821*** (0.104)	0.451*** (0.031)	0.209*** (0.038)	1.264*** (0.051)	1.171** (0.460)	0.539*** (0.098)	0.030	0.000	0.187
25	3194 (612)	0.200*** (0.009)	1.250*** (0.014)	0.455*** (0.107)	0.313*** (0.050)	0.212*** (0.034)	1.269*** (0.055)	0.066 (0.358)	0.062 (0.315)	0.245	0.000	0.125
26	1607 (305)	0.236*** (0.016)	1.309*** (0.027)	0.978*** (0.174)	0.494*** (0.044)	0.253*** (0.056)	1.339*** (0.100)	0.552 (0.476)	0.356* (0.198)	0.502	0.000	0.672
27	1779 (337)	0.186*** (0.011)	1.329*** (0.017)	0.733*** (0.192)	0.423*** (0.064)	0.210*** (0.033)	1.266*** (0.053)	1.385** (0.566)	0.581*** (0.100)	0.373	0.000	0.213
28	5061 (1115)	0.190*** (0.007)	1.235*** (0.011)	0.442*** (0.109)	0.306*** (0.053)	0.175*** (0.034)	1.212*** (0.050)	-0.231 (0.264)	-0.300 (0.446)	0.075	0.000	0.017
29	5417 (1101)	0.198*** (0.006)	1.247*** (0.010)	0.829*** (0.100)	0.453*** (0.030)	0.225*** (0.031)	1.290*** (0.052)	0.869* (0.507)	0.465*** (0.145)	0.105	0.000	0.039
30	563 (142)	0.179*** (0.018)	1.219*** (0.026)	0.523*** (0.202)	0.344*** (0.087)	0.159*** (0.037)	1.189*** (0.052)	0.179 (0.251)	0.152 (0.181)	1.000	0.001	0.353
31	2181 (475)	0.273*** (0.012)	1.375*** (0.023)	1.228*** (0.147)	0.551*** (0.030)	0.318*** (0.043)	1.466*** (0.092)	1.046** (0.451)	0.511*** (0.108)	0.729	0.000	0.170
32	1393 (325)	0.309*** (0.015)	1.448*** (0.032)	1.289*** (0.211)	0.563*** (0.040)	0.390*** (0.041)	1.639*** (0.110)	1.316*** (0.467)	0.568*** (0.087)	0.707	0.000	0.611
33	2155 (478)	0.222*** (0.012)	1.285*** (0.019)	0.637*** (0.148)	0.389*** (0.055)	0.210*** (0.033)	1.266*** (0.053)	0.252 (0.488)	0.201 (0.311)	0.821	0.000	0.020
34	1682 (320)	0.193*** (0.012)	1.239*** (0.019)	0.807*** (0.223)	0.447*** (0.068)	0.269*** (0.026)	1.368*** (0.049)	1.526*** (0.486)	0.604*** (0.076)	0.650	0.000	0.301
35	847 (205)	0.234*** (0.015)	1.306*** (0.026)	0.951*** (0.188)	0.488*** (0.049)	0.230*** (0.026)	1.299*** (0.044)	0.807** (0.368)	0.447*** (0.113)	1.000	0.000	0.302
36	2468 (555)	0.173*** (0.009)	1.210*** (0.013)	0.627*** (0.136)	0.385*** (0.051)	0.174*** (0.031)	1.211*** (0.045)	0.265 (0.414)	0.209 (0.259)	0.377	0.000	0.971
Sector average		0.197 (0.012)	1.250 (0.018)	0.723 (0.172)	0.403 (0.065)	0.208 (0.044)	1.272 (0.068)	0.685 (0.517)	0.310 (0.378)			

$SR_{it} = \Delta q_{it} - \alpha_{N_{it}} \Delta n_{it} - \alpha_{M_{it}} \Delta m_{it} - (1 - \alpha_{N_{it}} - \alpha_{M_{it}}) \Delta k_{it}$
$= \beta \left(\Delta q_{it} - \Delta k_{it} \right) - \gamma \left(1 - \alpha_{N_{it}} - \alpha_{M_{it}} \right) \left(\Delta n_{it} - \Delta k_{it} \right) + (1 - \beta) \Delta \theta_{it}$

*** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Time dummies are included but not reported. FE: robust standard errors in parentheses.

GMM: robust standard errors with finite-sample correction for the two-step covariance matrix (Windmeijer, 2005).

$Sargan$: test of overidentifying restrictions for the GMM estimator, asymptotically distributed as χ^2_{df}. p-values are reported.

$m1$ and $m2$: tests for first-order and second-order serial correlation in the first-differenced residuals for the GMM estimator, asymptotically distributed as $N(0,1)$. p-values are reported.

Table 3
Correlation between FE and GMM estimates

						Correlation FE-GMM		
		Mean	Sd.	Min	Max	Unweighted	Weight 1	Weight 2
$\widehat{\beta}_j$	**FE**	0.197	0.048	0.103	0.309	0.89***	0.85***	0.86***
	GMM	0.208	0.069	0.076	0.390			
$\widehat{\gamma}_j$	**FE**	0.723	0.298	0.238	1.289	0.57***	0.72***	0.71***
	GMM	0.685	0.611	-0.302	1.679			

Weight 1: $\frac{1}{\widehat{\sigma}^2_{FE}}$, weight 2: $\frac{1}{\widehat{\sigma}_{FE}\widehat{\sigma}_{GMM}}$

Table 4
Variance analysis

	Mark-up $\hat{\mu}_{jst}$	**Barg. power** $\widehat{\phi}_{jst}$
PERIOD (ref: 1991-1994)		
1995-1998	-0.070***	-0.120***
	(0.024)	(0.021)
1999-2003	-0.067**	-0.126***
	(0.025)	(0.022)
SIZE (ref: small firms)		
Medium-sized	0.050***	0.055**
	(0.014)	(0.025)
Large	0.055***	0.029
	(0.016)	(0.026)
R^2	0.377	0.628
# Obs.	179	179
SHARE OF EXPL. VARIANCE		
Sector	73%***	71%***
Period	11%***	26%***
Size	16%***	3%**

Standard errors are reported in parentheses, they have been corrected to account for the generated regressand problem following Lewis and Linzer (2005) and clustered at the sector-period level.
*** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table 5
Determinants of estimated price-cost mark-up $\hat{\mu}_{jsp}$

Variables	**(1)**[a]	**(2)**[a]	**(3)**[a]	**(4)**[a]	**(5)**[a]	**(6)**[a]	**(7)**[b]
1995-1998	-0.044	-0.060**	-0.060**				-0.075***
	(0.027)	(0.025)	(0.025)				(0.026)
1999-2003	-0.032	-0.027	-0.025				-0.045**
	(0.026)	(0.023)	(0.022)				(0.014)
Medium-sized	0.045***	0.044***					0.045***
	(0.015)	(0.014)					(0.014)
Large	0.049***	0.051***					0.053***
	(0.017)	(0.017)					(0.017)
EMPL			0.016***	0.016***	0.016***	0.016***	
			(0.005)	(0.005)	(0.005)	(0.005)	
VALUCYC	-0.123	0.019	0.013	-0.310	-0.362*	-0.328*	0.025
	(0.272)	(0.255)	(0.252)	(0.186)	(0.189)	(0.194)	(0.268)
lag(EXPFIRM)	0.062	0.001	-0.021	-0.016	-0.019	-0.008	-0.035
	(0.178)	(0.178)	(0.174)	(0.171)	(0.171)	(0.173)	(0.181)
lag(IMPORT)	-0.272						
	(0.427)						
lag(IMPNORTH)		-1.133**	-1.161**	-0.849*	-0.934*	-0.890	-1.492***
		(0.522)	(0.511)	(0.482)	(0.523)	(0.550)	(0.523)
lag(IMPSOUTH)		0.241	0.245	0.307	0.202	0.310	0.794*
		(0.339)	(0.328)	(0.307)	(0.325)	(0.307)	(0.368)
lag(R&DRATIO)	4.523	3.971	4.055	3.990	3.934	3.818	2.645
	(3.372)	(2.797)	(2.747)	(2.871)	(2.935)	(3.272)	(2.487)
lag(PMR)				0.017		0.018	
				(0.013)		(0.013)	
lag(CAPIT)					-0.018		
					(0.028)		
HERF						-0.068	
						(0.259)	
Sector dummies	YES	YES	YES	YES	YES	YES	YES
$\mathbf{R}^2$	0.408	0.444	0.438	0.423	0.418	0.423	0.444
#Obs.	179	179	179	179	179	179	179

The dependent variable (price-cost mark-up) is taken from the Part I estimation. Standard errors are reported in parentheses, they have been corrected to account for the generated regressand problem following Lewis and Linzer (2005) and clustered at the sector-period level.

***Significant at 1%; **Significant at 5%; *Significant at 10%.

[a] 3-year lags used.

[b] 5-year lags used except for $EXPFIRM$. For this variable, we are forced to take 3-year lags because of data availability in the first sub-period.

Table 6
Determinants of the estimated workers' bargaining power $\widehat{\phi}_{jsp}$

Variables	**(1)**[a]	**(2)**[a]	**(3)**[a]	**(4)**[a]	**(5)**[a]	**(6)**[a]	**(7)**[a]	**(8)**[b]	**(9)**[b]	**(10)**[b]
1995-1998	-0.112***	-0.109***						-0.115***		
	(0.021)	(0.021)						(0.023)		
1999-2003	-0.108***	-0.108***						-0.119***		
	(0.027)	(0.027)						(0.029)		
Medium-sized	0.049*	0.048*						0.045*	0.061**	
	(0.026)	(0.026)						(0.026)	(0.026)	
Large	0.015	0.016						0.011	0.036	
	(0.029)	(0.029)						(0.029)	(0.028)	
EMPL			-0.005	-0.004	0.0005	-0.002	-0.002			0.001
			(0.006)	(0.006)	(0.007)	(0.006)	(0.006)			(0.006)
lag(EXPFIRM)	0.284	0.297	0.378*	0.370*	0.235	0.348	0.344	0.343*	0.200	0.256
	(0.194)	(0.203)	(0.212)	(0.214)	(0.209)	(0.216)	(0.216)	(0.200)	(0.200)	(0.207)
lag(IMPORT)	-0.376**									
	(0.181)									
lag(IMPNORTH)		-0.850**	-0.655*	-0.665*	-1.539***	-0.817**	-0.836*	-0.476	-0.935*	-1.020**
		(0.323)	(0.349)	(0.365)	(0.333)	(0.408)	(0.411)	(0.488)	(0.524)	(0.510)
lag(IMPSOUTH)		0.211	0.327	0.303	-0.416	0.140	0.117	0.189	-0.768	-0.733
		(0.285)	(0.288)	(0.304)	(0.364)	(0.367)	(0.372)	(0.437)	(0.537)	(0.603)
lag(R&DRATIO)	-2.041	-1.688	-1.305	-1.359	-2.040	-1.612	-1.653	-0.107	-1.517	-1.481
	(1.696)	(1.508)	(1.644)	(1.728)	(1.695)	(2.018)	(2.040)	(1.779)	(2.544)	(2.639)
lag(PMR)			0.072***							
			(0.016)							
lag(UNIONDENS)				1.384***						
				(0.320)						
lag(UNEMPRATE)					-2.281***					
					(0.676)					
REPLRATE						3.795***				
						(1.116)				
lag(CAPIT)							-0.115***			
							(0.035)			
HERF		0.274*	0.390**	0.408**	0.292	0.449**	0.451**	0.321**	0.501*	0.536*
		(0.148)	(0.170)	(0.182)	(0.206)	(0.219)	(0.222)	(0.158)	(0.290)	(0.288)
Sector dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.638	0.648	0.618	0.612	0.594	0.591	0.589	0.640	0.566	0.547
#Obs.	179	179	179	179	179	179	179	179	179	179

The dependent variable (workers' bargaining power) is taken from the Part I estimation. Standard errors are reported in parentheses, they have been corrected to account for the generated regressand problem following Lewis and Linzer (2005) and clustered at the sector-period level..

***Significant at 1%; **Significant at 5%; *Significant at 10%.

[a] 3-year lags used.

[b] 5-year lags used except for $EXPFIRM$. For this variable, we are forced to take 3-year lags because of data availability in the first subperiod.

Table 7
Determinants of estimated price-cost mark-up $\hat{\mu}_{jsp}$ and $\widehat{\phi}_{jsp}$
Exporters, non-exporters and total sample

	$\hat{\mu}_{jsp}$			$\widehat{\phi}_{jsp}$		
	Exporters	**Non-exporters**[a]	**Total sample**	**Exporters**	**Non-exporters**[a]	**Total sample**
Variables	**(2)**[b]	**(2)**[b]	**(2)**[b]	**(2)**[b]	**(2)**[b]	**(2)**[b]
1995-1998	-0.080**	-0.067***	-0.060**	-0.136***	-0.109***	-0.109***
	(0.031)	(0.025)	(0.025)	(0.020)	(0.023)	(0.021)
1999-2003	-0.023	-0.019	-0.028	-0.134***	-0.107***	-0.108***
	(0.030)	(0.024)	(0.023)	(0.031)	(0.029)	(0.027)
Medium-sized	0.049**	0.045***	0.044***	0.040	0.051*	0.048*
	(0.021)	(0.015)	(0.014)	(0.034)	(0.028)	(0.026)
Large	0.043*	0.052***	0.051***	-0.002	0.017	0.016
	(0.022)	(0.017)	(0.017)	(0.034)	(0.030)	(0.029)
VALUCYC	0.471	0.088	0.019			
	(0.287)	(0.264)	(0.256)			
lag(EXPFIRM)	0.132	-0.0000	0.001	0.147	0.299	0.297
	(0.237)	(0.182)	(0.178)	(0.226)	(0.213)	(0.203)
lag(IMPNORTH)	-1.327**	-1.395**	-1.133**	-0.822*	-0.839**	-0.850**
	(0.551)	(0.544)	(0.522)	(0.479)	(0.331)	(0.323)
lag(IMPSOUTH)	-0.288	-0.098	0.240	-0.069	0.145	0.211
	(0.412)	(0.360)	(0.339)	(0.364)	(0.385)	(0.285)
lag(R&DRATIO)	2.754	3.161	3.972	-5.205***	-1.844	-1.688
	(2.791)	(2.899)	(2.795)	(1.445)	(1.851)	(1.508)
HERF				0.285*	0.285*	0.274*
				(0.160)	(0.153)	(0.148)
Sector dummies	YES	YES	YES	YES	YES	YES
$\mathbf{R}^2$	0.401	0.449	0.444	0.645	0.643	0.648
#Obs.	161	174	179	161	174	179

The dependent variable (price-cost mark-up or workers' bargaining power) is taken from the Part I estimation.
Standard errors are reported in parentheses, they have been corrected to account for the generated regressand problem following Lewis and Linzer (2005) and clustered at the sector-period level.
***Significant at 1%; **Significant at 5%; *Significant at 10%.

[a] 41% of the firms belong to the subsample of exporters. Within the subsample of non-exporters, 28% of them report export activity for at least one year but not for each year.
[b] This number refers to specification (2) in Tables 5 and 6.