WAGES AND INTERNATIONAL RENT SHARING IN MULTINATIONAL FIRMS

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Abstract—We use a unique firm-level panel of multinational parents and their foreign affiliates to analyze whether profits are shared across borders within multinational firms. Affiliate wages are estimated to respond to both affiliate and parent profitability. The elasticity of affiliate wages to parent profits per worker is approximately 0.03, which can explain over 20% of observed variation in affiliate wages. These results reveal a previously ignored aspect of rent sharing. They also reveal an important micro-level linkage with potential macro-level implications. International rent sharing can transmit economic conditions across countries, and can thereby provide an implicit risk-sharing mechanism.

I. Introduction

THE economic implications of increased globalization have been widely conjectured and researched. One prominent concern has been how foreign competition, trade protection, and foreign ownership affect the level and distribution of wages.[1] Largely overlooked, however, has been the issue of whether international linkages condition how firms share profits with their workers.

A large literature has found that economic rents are often shared with workers: profits and wages move together.[2] With the exception of Budd and Slaughter (2004), however, this rent-sharing literature has an explicitly domestic focus: industry, firm, or establishment wages in a specific country are regressed on profit measures for operations in that same country. Yet with increased globalization, this implicitly closed-economy perspective may miss important international aspects of wage setting.

Consider, for example, the United Auto Workers. This U.S. labor union agreed to major concessions in the early 1980s to help save the then-U.S.-owned Chrysler. More recently, however, the UAW has reportedly been unwilling to grant concessions because while the U.S. operation is struggling financially, its German parent Daimler-Chrysler is profitable.[3] As an example of international rent sharing as an explicit compensation strategy of multinational firms, in 1989 PepsiCo implemented a global employee stock ownership plan in which all employees worldwide were granted shares of stock equivalent to 10% of their pay. Numerous other companies have implemented similar strategies (Irwin, 1998).

These examples all demonstrate how cross-border flows of capital, labor, goods, and information may exert strong influences on the nature of profit sharing between firms and workers. Budd and Slaughter (2004) consider whether wages in one country may depend on profit conditions outside of that country. Empirically, they found that union wage contracts in Canadian manufacturing industries depend not just on Canadian industry profits but also on U.S. industry profits—and also that the nature of this profit sharing depends on the nationality of the firm and union.

This paper builds on this theme of international rent sharing by examining whether profits are shared across borders within multinational firms. We do this using a rich firm-level panel data set on multinationals with parents and affiliates operating in Europe. This panel we assembled from the Amadeus Database, which reports detailed financial and operational data for both parents and affiliates in multinationals.[4] The panel spans 1993 through 1998, with a total of 865 parents and 1,919 foreign affiliates. With this panel we can ask whether affiliate wages vary not just with affiliate profits but also with parent profits, and similarly whether parent wages vary not just with parent profits but also with affiliate profits.

Our main empirical finding is that parents share profits with majority-owned foreign affiliates. For affiliates owned at least 50% by the controlling parent, foreign-affiliate wages are correlated with parent profits per worker. This correlation is both statistically and economically significant,

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[1] Foreign ownership has been studied by Aitken, Harrison, and Lipsey (1996) and Feliciano and Lipsey (1999); trade protection by Gaston and Trefler (1995) and Haskel and Slaughter (2003); and foreign competition by Borjas and Ramey (1995) and Freeman and Katz (1991). These are representative examples, as the trade-and-wages literature has grown very large. Many representative studies can be found in the volumes of Abowd and Freeman (1991) and Feenstra (2000).

[2] Analyses of interindustry wage differentials (e.g., Katz & Summers, 1989) revealed positive correlation between these differentials and industry profitability. A number of subsequent studies, whether using industry wages and profits (Blanchflower, Oswald, & Sanfey, 1996), union contract wages with company profits (Abowd & Lemieux, 1993; Currie & McConnell, 1992; Svejnar, 1986), union contract wages with industry profits (Christofides & Oswald, 1992; Budd & Slaughter, 2004), or company wages with company profits (Hildreth & Oswald, 1997), all find that wages depend on ability to pay.

[3] The December 18, 2000 issue of *Business Week* reported, "[Chrysler Group President Dieter Zetsche is] not likely to get much of a hearing from UAW President Stephen P. Yokich. After winning the richest contract terms in years in 1999, union members have little reason to start giving money back. That's in part because, despite Chrysler's deepening problems—it's expected to lose some $1 billion in the fourth quarter—the German parent remains exceedingly profitable," More recently, a similar cross-border wage dispute has arisen in the multinational steel producer Corus. The February 12, 2002 edition of *The Times* reported, "Corus, the Anglo-Dutch steel maker, could face industrial action in a clash with unions for imposing a pay freeze in the U.K. while increasing salaries of Dutch workers. . . . A spokesman for the [British] union said, 'We all work for the same company, and we should all get the same deal.' "

[4] In other contexts, Budina, Garretsen, and de Jong (2000) and Konings, Van Cayseele, and Warzynski (2001) use this same data source. It is available from Bureau van Dijck Electronic Publishing.

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and appears across a range of specification and estimation choices addressing various measurement and endogeneity issues. The degree of multinational ownership appears to condition the degree of intrafirm profit sharing, with many specifications indicating parents share profits only with majority-owned affiliates, and more strongly with fully owned affiliates. Our central estimates indicate that a doubling of parent profitability raises affiliate wages by somewhere between 1% and 5%. Affiliate wages are also positively correlated with affiliate profits per worker, consistent with the closed-economy perspective of previous rent-sharing studies. The same is true of parent wages and parent profits per worker; however, we find no evidence that parent wages are correlated with affiliate profits per worker.

For a number of reasons, we consider this explicitly international focus on profit sharing to be an important innovation on earlier research. First, within the rent-sharing literature it broadens the understanding of how firms relate to workers. Budd and Slaughter's (2004) cross-border focus was limited to unionized wage negotiations in manufacturing for a single country using industry-level profit measures. Our panel extends their focus along many important dimensions—many parent and affiliate countries, firms in all industries, wages for all employees—and therefore takes a much broader look at the relevance of international profit sharing. The need to examine profit sharing in an international context is underscored by rising foreign direct investment, which has been a central aspect of globalization in recent years. Indeed, it has been reported that by the end of our sample period, in Europe nearly 20% of all manufacturing employees worked in foreign-owned affiliates (Barba et al., 2002).[5]

Second, our paper extends the research on globalization and labor markets. Many studies have found that establishments owned by multinational firms pay higher wages than do domestically owned establishments, even controlling for a wide range of worker and/or plant characteristics such as worker occupation and plant capital intensity.[6] This "multinational" wage premium is sometimes seen as a puzzle. But if multinationals are, on average, more profitable than domestic firms, then international rent sharing with multinationals could explain this wage premium. Within the globalization-and-wages literature, other studies have examined whether multinationals alter the mix of activities within parent and host countries.[7] One point of contrast is that much of the empirical work in this literature has followed from the perfectly competitive Heckscher-Ohlin trade model in which all sectors earn zero profits and all workers earn their marginal revenue products. Our focus on profit sharing extends this literature to consider important noncompetitive wage issues.[8]

Finally, our findings on international rent sharing carry implications for the international macro literature on cross-country movements in macro aggregates. In international macro and real-business-cycle models, the standard mechanism by which national income shocks are transmitted and smoothed across countries is by trading risk in international capital markets (e.g., Stockman & Tesar, 1995). However, many researchers have documented that the extent of international asset diversification is less than the standard models predict (Lewis, 1999; Obstfeld & Rogoff, 2001). Our finding of international rent sharing in multinational firms provides a micro-level linkage, very different from risk sharing in international financial markets, which is an implicit risk-sharing mechanism that can also transmit economic conditions across countries.

The paper is organized as follows. Section II motivates the empirical analysis with a discussion of the underlying theory of profit sharing, and with an extension to the multinational context. It then discusses our empirical framework. Section III presents a description of the data, and section IV the empirical results. Section V concludes.

II. Theoretical Background and Empirical Framework

A. *Theoretical Background*

Baily (1974) and Azariadis (1975) developed implicit-contract models in which wages provide insurance against demand shocks for risk-averse workers [see Rosen (1985) for a survey]. Blanchflower et al. (1996) showed that if these models are generalized to allow firms to be risk-averse, then wages will be positively correlated with profits. We extend this idea to multinational firms, which by definition operate in multiple countries.

Consider a multinational firm that operates in a parent country p and an affiliate country a. Without loss of generality, assume that demand shocks τ have a distribution function $g(\tau)$ that affect both countries equally, so that profits π are defined as

$$\pi = \pi^p + \pi^a = \tau f(n^p) + \tau f(n^a) - w^p n^p - w^a n^a,$$

where w is the wage, n is employment, $f(\cdot)$ is the production function, and superscripts indicate parent or affiliate. The

[5] UNCTAD (2000) reports that from 1979 to 1999, the ratio of world FDI stock to world gross domestic product rose from 5% to 16%, and the ratio of world FDI inflows to global gross domestic capital formation rose from 2% to 14%. One consequence is that an increasing share of country's output is accounted for by foreign affiliates of multinational firms. The foreign-affiliate share of world production is now 15% in manufacturing and other tradables (Lipsey, Blomstrom, & Ramstetter, 1998).

[6] For example, Howenstine and Zeile (1994) and Doms and Jensen (1998) document these wage differentials among U.S. manufacturing plants. Globerman, Ries, and Vertinsky (1994) present similar evidence for Canada; Aitken et al. (1996), for Mexico and Venezuela.

[7] Examples here include Konings and Murphy (2001) and Slaughter (2000).

[8] Our noncompetitive approach is closer to studies such as Borjas and Ramey (1995), who investigate whether import competition squeezes rents paid to less-skilled U.S. workers in imperfectly competitive industries, and Gaston and Trefler (1995), who examine the effect of U.S. tariffs on industry wage premia.

firm maximizes over wages and the employment utility function $v(\cdot)$:

$$\text{maximize} \int v(\pi)\, g(\tau) d\tau \tag{1}$$

subject to satisfying the minimum-utility constraints of its employees:

$$\int [n^p u(w^p) + (1 - n^p) u(b^p)] g(\tau) d\tau \geq \underline{u}^p, \tag{2}$$

$$\int [n^a u(w^a) + (1 - n^a) u(b^a)] g(\tau) d\tau \geq \underline{u}^a, \tag{3}$$

where $u(\cdot)$ is the workers' utility function, b is some exogenous alternative (such as an unemployment benefit), n is normalized to represent the probability of employment relative to unemployment, and $\underline{u}$ is a minimum utility level.

To see cross-border profit sharing within this multinational firm, consider affiliate wages. The first-order condition derived from differentiating equation (1) with respect to w^a is

$$-v'(\pi^p + \pi^a) + \lambda^a u'(w^a) = 0, \tag{4}$$

where λ^a is the Lagrange multiplier for equation (3) in the constrained maximization problem. Ignoring corner solutions, equation (4) implies that $\lambda^a > 0$ and defines an implicit wage function for the affiliate wage.[9]

Differentiating (4) with respect to π^p yields

$$\frac{\partial w^a}{\partial \pi^p} = \frac{v''(\pi^p + \pi^a)}{\lambda^a u''(w^a)}. \tag{5}$$

If the firm is risk-neutral, then this derivative equals 0 and wages do not respond to firm profitability. But if both firms and workers are risk-averse, then both $v(\cdot)$ and $u(\cdot)$ are concave (and thus their second derivatives positive), and the derivative in equation (5) is positive: affiliate wages respond to parent profits as a form of risk sharing.[10] By similar logic, it can be shown that parent wages can vary with affiliate profitability. Thus, within multinational firms cross-border rent sharing can stem from implicit contracts between risk-averse firms and workers.[11]

Profit sharing is also predicted by other models. One is union bargaining over the firm's economic rents. Bargaining over parent as well as affiliate profits by unions representing affiliate employees is a straightforward extension in a Nash bargaining framework (Budd & Slaughter, 2004). Alternatively, employee bargaining power need not stem from unionization: in Lindbeck and Snower's (1988) insider-outsider model, current employees (insiders) derive the power to extract economic rents from the employer via their ability not to cooperate with new employees if they are hired at a lower wage. This framework can yield international rent sharing if insiders at an affiliate use their power to extract parent as well as affiliate profits. Finally, international rent sharing can also result from models of fairness in which not sharing parent profits is perceived to be somehow unjust (e.g., Blanchflower et al., 1996), or from models of corporate strategy in which multinationals share parent profits with affiliate workers to generate positive goodwill, or even prevent government seizure, in the affiliate country.

B. *Empirical Framework*

Equation (5), or similar predictions from these other models, suggests the following regression equation for empirical analysis using panel data on affiliate wages:

$$w_{at} = \beta_1 \frac{\pi_{at}}{n_{at}} + \beta_2 \frac{\pi_{pt}}{n_{pt}} + \beta_3 Z_{at} + \varepsilon_{at}, \tag{6}$$

where subscripts a, p, and t index affiliates, parents, and time t; w is wages; π is profits; n is employment; Z is a set of other regressors that can vary by affiliate, time, country, and/or industry; ϵ is an error term we discuss below; and the β's are parameters to be estimated. Our innovation is to consider the role of profitability outside the country where wages are paid; that is, we are interested in estimating not just β_1 but in particular β_2 as well. Equation (6) forms the basis of our empirical analysis, with an analogous equation for parent wages. We next address some important specification, measurement, and endogeneity issues.

Important specification issues include how to indicate profitability and what controls to include as Z_{at} regressors. It is standard in the rent-sharing literature to normalize profitability in per-worker terms, a method which we follow

[9] In this simple form, the model does not prevent a corner solution in which the firm chooses to conduct all of its production in the country with the lower minimum utility level. We believe it is reasonable to consider the interior-solution cases with production in both countries. These cases can result from plausible reasons, including sunk fixed capital investment in each country, a desire to maintain entry to multiple markets, or access to materials and other primary factors. These cases also accord with the data set for our empirical analysis.

[10] Greenwald and Stiglitz (1993) support the plausibility of risk-averse firms; see also Dufey and Srinivasulu (1983). Examples of models with risk-averse firms include Hart (1983) for implicit contracts and Goldberg and Kolstad (1995) for multinational production decisions.

[11] This result, of course, depends on the firm's utility function $v(\pi^p, \pi^a)$ being a nonseparable function of both π^p and π^a. If the firm is risk-averse but $v(\pi^p, \pi^a)$ is separable, then the model predicts domestic but not international rent sharing. Also, the assumption that the demand shock τ affects domestic and foreign production equally is simply to keep the model straightforward. The key prediction of interest in equation (5) stems from $v(\pi^p, \pi^a)$, not the functional form of τ. We note that equation (5) permits other risk possibilities, such as risk-loving workers and/or firms. The case of risk aversion for both parties is standard, with substantial theoretical and empirical support (see footnote 10). We also note that our analysis will not consider affiliate employment, as opposed to wages as shown in equation (5). That issue lies beyond the scope of this paper.

here. In Z_{at} we include a full set of unobservable affiliate fixed effects. These allow for unobserved time-invariant affiliate heterogeneity that influences wages: worker quality, firm technology, or outside wage options. We also include a full set of time effects. These allow for unobserved heterogeneity over time common to all affiliates, such as skill-biased technological change. In Z_{at} we also experiment with affiliate time-varying measures of capital stock per worker and R&D expenditures per worker, as directly observable wage controls. We also try a full set of country-year effects, to allow for national influences such as unemployment rates and benefits, and of industry-year effects, to allow for industry influences such as bargaining institutions. Our baseline estimates will be for equation (6) using a standard fixed-effects estimator.

There may be issues of endogeneity and measurement that stem from the use of contemporaneous profits in equation (6). If wage outcomes affect profitability, then the use of current-period wages and profits can bias estimates in the fixed-effects regression. In terms of measurement, as discussed below, affiliate wages and affiliate profits are constructed using some of the same quantities, such as the total wage bill and employment. Measurement error in these quantities can introduce spurious correlation between the dependent and independent variables in equation (6). Note, however, that we are particularly interested in the relationship between affiliate wages and parent profits. These two quantities are constructed independently. Thus, although affiliate wages and affiliate profits may be affected by measurement error, this is not the case for affiliate wages and parent profits. Accordingly, there is less reason to expect spurious correlation between affiliate wages and parent profits because of measurement issues.[12]

To address these potential endogeneity and measurement issues, consider a first-differenced version of equation (6):

$$\Delta w_{at} = \beta_1 \Delta\left(\frac{\pi_{at}}{n_{at}}\right) + \beta_2 \Delta\left(\frac{\pi_{pt}}{n_{pt}}\right) + \beta_3 \Delta Z_{at} + \Delta\varepsilon_{at}. \quad (7)$$

First-differencing controls for affiliate fixed effects, and if there is no serial correlation, then lagged profits are not correlated with the differenced error term and are therefore valid instruments for current profits. Lack of serial correlation provides a moment restriction, so that equation (7) can be estimated using the generalized method of moments (GMM) (Arellano & Bond, 1991). Relative to conventional instrumental variables estimators, this moment restriction provides additional instruments, so this GMM estimator is more efficient (Arellano & Bond, 1991). For example, for 1998 profits in equation (7), valid instruments are the level of profits in 1996 and earlier years, because lagged profit levels are not correlated with the differenced error term between 1997 and 1998. As the panel progresses, an increasing number of instruments can be used, which increases the efficiency of the estimates.

To test the validity of these instruments we use a Sargan test of overidentifying restrictions, which asymptotically has a χ^2 distribution. Because the model is estimated in first differences, the equation will be characterized by the presence of first-order serial correlation. But the validity of the GMM estimator relies on the moment restriction stemming from the absence of second-order serial correlation. It is therefore important to test for second-order serial correlation, and we report Arellano and Bond's (1991) test, which asymptotically has a $N(0, 1)$ distribution. Because the model is estimated in first differences and because lagged values (dated at least $t - 2$ and before) of the endogenous variables are used, we need to observe affiliates for at least three consecutive time periods. In the empirical results, then, our sample sizes are smaller when we estimate equation (7) via GMM than when we estimate equation (6) as a standard fixed-effects regression.

III. Data Description and Sample Statistics

Our data are derived from a commercial database named Amadeus, collected by the consultancy Bureau van Dijck. The database consists of company accounts reported to national statistical offices for European companies for which at least one of the following criteria is satisfied: total turnover or assets of at least \$12 million, or total employment of at least 150. The database is organized by country with records for firms within each country. The company records include information on whether the company has an ownership stake in a foreign affiliate, and identify affiliates by name and a unique identification number. It is therefore possible to determine if a firm operates as part of a multinational group and to link parent firms to foreign affiliates anywhere in Europe via the unique identifiers.

Financial and operational information is available for 1993 through 1998, and we retrieve all companies for which unconsolidated accounts were available separately for the parent and its affiliates. Due to variation in national reporting requirements, all companies in some countries—in particular Great Britain, Greece, and Finland—lack basic information (e.g., wage bills) that are essential for our analysis. Otherwise, we include companies in the data set simply on the basis of data availability and the ability to link parents with foreign affiliates. Companies in all industries are included.

The available ownership information refers to the year 1998, and we assume that the parent-affiliate ownership structure for 1998 applies to the earlier years. Although we cannot follow ownership changes during the sample period, we do not believe that this is a serious problem. To the extent that we are potentially including a few affiliates that were not affiliated in earlier years, we are introducing measurement error that may bias our results towards 0.

Matching parent companies to foreign affiliates yields an unbalanced panel of 865 parents and 1,919 affiliates over 6

[12] This is an important measurement difference between our estimation and the domestic rent-sharing literature.

TABLE 1.—COUNTRY DISTRIBUTION OF PARENTS AND AFFILIATES

	Affiliates (1)	Parents (2)
Austria	60	16
Belgium	208	148
Bulgaria	5	0
Czech Republic	4	0
France	592	271
Germany	64	215
Hungary	17	0
Italy	284	155
Luxembourg	24	3
Netherlands	21	5
Poland	33	0
Portugal	64	2
Romania	33	0
Spain	510	50
Total	1,919	865

Sample of European multinational parents and affiliates, 1993 through 1998, taken from Amadeus database. See text for details.

years. Table 1 shows the country distribution of parents and affiliates in our panel, where each parent has an average of 2.2 affiliates. The parents are concentrated in western Europe, with significant numbers in France, Germany, Italy, and Belgium. Smaller numbers of parent firms are located in Austria, Luxembourg, the Netherlands, Portugal, and Spain. Affiliates are found in these countries as well as the eastern and central European countries of Bulgaria, the Czech Republic, Hungary, Poland, and Romania. The pattern of parent and affiliate locations looks broadly consistent with typical patterns of multinational investment. For example, high-wage Germany has relatively few affiliates, whereas low-wage Spain has a significant number of affiliates, which is consistent with "vertical" foreign direct investment (FDI) to take advantage of lower labor costs. But a significant amount of multinational investment is "horizontal" FDI in which companies seek to serve foreign markets without incurring trade costs via exporting. Table 1 also shows this type of investment: for example, France has even more affiliates than Spain.

Summary statistics for the data are presented in table 2. There are 5,758 affiliate-year observations, which represents the 1,919 affiliates appearing in the panel an average of approximately three times each. The key variables in table 2 are wages and profits. Again, with the unconsolidated accounts in Amadeus we can calculate wages and profits separately for parents and affiliates. Wages are constructed as the reported wage bill divided by total number of employees, which is standard for corporate data in the profit-sharing literature (e.g., Hildreth & Oswald, 1997). The wage bill includes wage and salary payments to employees as well as mandated employer contributions to government social-insurance funds. As discussed below, we also try log-level wages. Profits are constructed as value added (i.e., sales minus materials costs) minus the wage bill, all divided by total employment. This profit measure follows that of several other studies (e.g., Blanchflower et al., 1996), and corresponds to the economic concept of rents available for sharing with workers. We constructed the capital-to-labor ratio as reported capital stock divided by employment, and constructed R&D intensity as reported R&D expenditures divided by employment. All monetary measures are reported in Amadeus in home currencies; we converted to dollars using International Monetary Fund annual exchange rates.

The average wage for affiliates is $46,367, and for parents is $55,868. Unfortunately, Amadeus reports no skill indicators (e.g., occupation or educational attainment). But this average-wage difference accords with standard trade models of multinational firms in which parents concentrate on skill-intensive production of firm-wide knowledge assets (e.g., Carr, Markusen, & Maskus, 2001). Per-employee profits are higher, on average, in the affiliates than in their parents. Note that wages exhibit significantly less variability than profits. The standard deviations for wages are only 30% to 40% of the mean, whereas the standard deviations for profits are 2.8 to 4.4 times greater than the mean. Moreover, both wages and profits are more variable in the affiliates than in their parents. The correlation between parent and affiliate wages is 0.25, whereas the correlation between parent and affiliate profits is 0.05. The higher wage correlation than profit correlation is suggestive of cross-border rent sharing.

TABLE 2.—MULTINATIONAL PARENTS AND AFFILIATES: SUMMARY STATISTICS

Variable	Mean (1)	Standard Deviation (2)
Average wage, affiliates [= wage bill ÷ employment]	46.367	18.439
Average wage, parents [= wage bill ÷ employment]	55.868	16.710
Profits per employee, affiliates [= (sales − materials cost − wage bill) ÷ employment]	126.471	553.324
Profits per employee, parents [= (sales − materials cost − wage bill) ÷ employment]	108.203	307.223
Indicator of majority-owned affiliate	0.919	0.272
Indicator of fully owned affiliate	0.322	0.467
Capital-labor ratio, affiliates [= capital stock bill ÷ employment]	64.113	450.507
R&D intensity, affiliates [= R&D expenditures ÷ employment]	8.067	50.622
Sales, affiliates	110,826.2	432,223.5
Sales, parents	1,376,961	3,379,460
Employment, affiliates	382.868	1,701.407
Employment, parents	4,411.355	8,323.11

Summary statistics are calculated for the full sample of 5,758 affiliates. These cover all affiliates with sufficient data for the full 6 years of the sample, 1993 through 1998. All monetary variables are denominated in thousands of U.S. dollars. Employment is number of bodies. The two categorical variables are coded 1 if the ownership criterion is met and 0 otherwise. See text for details.

TABLE 3.—PROFIT SHARING WITH AFFILIATE WAGES: FIXED-EFFECTS ESTIMATES

	Majority-Owned Affiliates (1)	Fully Owned Affiliates (2)	Majority-Owned Affiliates (3)	Fully Owned Affiliates (4)
Affiliate profits	0.0031	0.0138	0.0030	0.0127
	(0.0008)	(0.0023)	(0.0008)	(0.0024)
[Implied wage-profit elasticity]	[0.0085]	[0.0310]	[0.0082]	[0.0291]
Parent profits	0.0033	0.0060	0.0023	0.0032
	(0.0012)	(0.0020)	(0.0013)	(0.0020)
[Implied wage-profit elasticity]	[0.0073]	[0.0124]	[0.0048]	[0.0066]
Affiliate capital intensity			−0.0005	0.0379
			(0.0003)	(0.0067)
Affiliate R&D intensity			0.0037	0.0231
			(0.0063)	(0.0118)
Additional controls	Year	Year	Year-country	Year-country
No. of observations	5,296	1,852	4,828	1,774
No. of affiliates	1,760	582	1,561	545
R^2 within	0.15	0.20	0.18	0.26
R^2 between	0.01	0.05	0.02	0.03

These are estimation results for equation (6) in the text. Dependent variable is affiliate average wage. Robust standard errors are reported in parentheses under coefficient estimates. The subsample of majority-owned affiliates consists of those affiliates in which the parent firm maintains at least a 50% controlling interest. The subsample of fully owned affiliates further narrows the majority-owned subsample to consist of those affiliates in which the parent firm maintains at least a 99% controlling interest. See text for details.

Over 90% of the observations involve affiliates that are majority-owned by the parents, and 32% are fully owned.[13] The last four rows of table 2 reveal that parents are, unsurprisingly, much larger than affiliates in terms of both sales and employment. Also, as the Amadeus data are limited to medium and large firms, average affiliate employment is 382.

IV. Estimation Results for Fixed-Effects and GMM Estimates

A. *Benchmark Results for Affiliate Wages*

Table 3 reports our fixed-effects estimates of equation (6), where in columns 1 and 2 Z_{at} includes a full set of affiliate and year fixed effects using two-digit NACE industries. As discussed earlier, these control for many time-constant determinants of wages (e.g., worker quality) and for time effects (e.g., technological change), respectively. For all fixed-effects specification, each column reports for each regressor a coefficient estimate and its standard error (robust to allowing for affiliates sharing the same parent). For each profits regressor, we also report the implied wage-profits elasticity (the coefficient estimate multiplied by that sample's mean ratio of profits to wages).

Before discussing the results in table 3, we should point out that we first estimated equation (6) on a sample of both minority- and majority-owned affiliates. Here the standard closed-economy rent-sharing result was evident, with affiliate wages significantly positively correlated with affiliate profits. But we found no significant correlation of affiliate wages with parent profits. That said, it seems reasonable to expect international rent sharing to be stronger for majority and fully owned affiliates. In our section II discussion of within-firm cross-border risk sharing, parents with only a minority ownership stake may play a negligible role in the multinational firm being considered. Alternatively, it may be that only the majority-owning parent engages in bargaining with affiliate workers. In this case the profitability of minority-owning parents may be irrelevant. Or in situations of fairness, in firms with multiple minority owners the identity of these minority parents may simply be unknown to affiliate workers during wage discussions. For all these reasons, it seems plausible to expect any profit sharing from parents to affiliates to be stronger the higher is the ownership stake in the affiliate.

Column 1 reports fixed-effects results for a sample of only majority-owned affiliates (which includes those fully owned). The affiliate-profit coefficient is virtually unchanged from the unreported minority- and majority-owned results, but there is now strong statistical support for international rent sharing within multinational firms. The parent-profit coefficient is 0.0033, with a t-statistic of 2.71 and a p-value of 0.007. The implied elasticity is 0.0073. Evidence of both standard within-country rent sharing and international rent sharing is even stronger in column 2, in which the sample is further restricted to fully owned affiliates. Despite a 65% reduction in the full-sample size, both the affiliate and parent profits estimates are now larger and more precisely estimated.

Columns 3 and 4 repeat the analyses of columns 1 and 2, but expand the set of Z_{at} controls from just affiliate and year effects to also include affiliate capital intensity, affiliate R&D intensity, and year-country effects. The qualitative pattern of profit sharing is the same, although the statistical significance of the international rent sharing effect is weaker.[14]

[13] There are a large number of missing values for the ownership shares in Amadeus. For U.S.-headquartered multinationals in recent years, approximately 80% of affiliates are majority-owned, so in our data we assume that an affiliate is majority-owned if its ownership share is missing. The results are robust to excluding these observations from the majority-owned analysis. We define fully owned affiliates as those owned at least 99% by the parent; this definition does not include affiliates with missing ownership-share information.

[14] There may be concern that the profits-wages correlation reflects unobserved worker characteristics, if high-quality workers tend to both

TABLE 4.—PROFIT SHARING WITH AFFILIATE WAGES: GMM ESTIMATES

	Majority-Owned Affiliates (1)	Fully Owned Affiliates (2)	Majority-Owned Affiliates (3)	Fully Owned Affiliates (4)	Majority-Owned Affiliates (5)	Fully Owned Affiliates (6)
Affiliate profits	0.0173	0.0202	0.0125	0.0303	0.0164	0.0246
	(0.0086)	(0.0093)	(0.0086)	(0.0126)	(0.0089)	(0.0100)
[Implied wage-profit elasticity]	[0.0404]	[0.0464]	[0.0291]	[0.0696]	[0.0382]	[0.0565]
Parent profits	0.0168	0.0187	0.0148	0.0180	0.0238	0.0228
	(0.0085)	(0.0048)	(0.0072)	(0.0045)	(0.0107)	(0.0048)
[Implied wage-profit elasticity]	[0.0352]	[0.0407]	[0.0310]	[0.0392]	[0.0498]	[0.0497]
Affiliate capital intensity			0.0006	0.0513	0.0006	0.0546
			(0.0005)	(0.0189)	(0.0006)	(0.0153)
Affiliate R&D intensity			−0.0071	0.0105	−0.0151	0.0084
			(0.0153)	(0.0091)	(0.0163)	(0.0098)
Additional controls	Year	Year	Year-industry	Year-industry	Year-country	Year-country
No. of observations	2,971	1,134	2,939	1,112	2,971	1,134
No. of affiliates	1,007	379	996	371	1,007	379
Sargan test statistic (10 dof)	12.44	18.42	14.62	18.73	12.99	16.72
Serial-correlation test statistic	−1.156	−1.668	−0.874	−1.254	−1.395	−1.378

These are estimation results for equation (7) in the text. Dependent variable is affiliate average wage. Standard errors are reported in parentheses under coefficient estimates. The subsample of majority-owned affiliates consists of those affiliates in which the parent firm maintains at least a 50% controlling interest. The subsample of fully owned affiliates further narrows the majority-owned subsample to consist of those affiliates in which the parent firm maintains at least a 99% controlling interest.

An important concern about table 3's fixed-effects results may be endogeneity or measurement issues stemming from the use of contemporaneous profits. As discussed in section II, to allow for possible endogeneity and measurement error, we use a generalized method of moments (GMM) estimator that instruments for current-period profits using lagged values of profits, all on time-differenced data to capture affiliate effects.

Column 1 of table 4 reports GMM results estimating equation (7) for majority-owned affiliates. This sample is narrowed further to only fully owned affiliates in column 2. These GMM estimates provide strong support for our international rent-sharing hypothesis. In both columns, parent rent sharing is evident and statistically significant at the 5% level. The implied elasticities are also larger than in the previous fixed-effects estimates, with the fully owned elasticity slightly larger than the majority-owned elasticity. The Sargan test of overidentification indicates that the instruments are valid, but the serial-correlation test fails to reject the hypothesis of no second-order serial correlation. These tests indicate that GMM estimation is appropriate.

Columns 3 through 6 of table 4 add to equation (7) the additional Z_{at} regressors of affiliate capital intensity, affiliate R&D intensity, and either industry-year or country-year effects.[15] Because these specifications include the largest set of controls and also instrument for profits, they are our preferred specifications. The international rent-sharing result is again evident at standard significance levels. The elasticities indicate that a 10% increase in parent profitability increases affiliate wages by between 0.3% and 0.5%.

Taken together, tables 3 and 4 show evidence that parent profits are shared across borders with majority-owned affiliates, and that this profit sharing may be even stronger among fully owned affiliates. The elasticities in these tables are all within the range commonly found in the literature on domestic rent sharing, between 0.006 (Christofides & Oswald, 1992) and approximately 0.05 (Blanchflower et al., 1996).

What is the economic meaning and significance of our elasticity estimates? Equation (5) from our model in section II implies that these elasticities equal the ratio of firms' risk aversion to workers' risk aversion. Thus, our estimates mean that workers are much more risk-averse than firms, which seems plausible. In terms of economic significance, by our estimates a doubling of parent profitability raises affiliate wages by somewhere between 1% and 5%. If we take our average elasticity to be 0.03, then Lester's (1952) "range of wages" calculation implies that the cross-section variability of parent profits explains approximately one-fifth of the cross-section variability in affiliate wages.[16] Thus, we think that cross-border profit sharing accounts for a substantial amount of observed affiliate-wage variation.

earn high wages and contribute to high firm profits. We have no worker-quality data to test this concern directly. Using Swedish data on workers matched with firm's balance-sheet reports, however, Arai (2003) finds that even when controlling for a wide range of worker and occupation characteristics, estimates indicate a profits-wages correlation of comparable magnitude to those of this and other studies.

[15] GMM estimation failed when using the full set of two-digit industries reported in the data. Accordingly, we aggregated up to 19 industries, a grouping that lies between the one-digit and two-digit NACE classifications.

[16] For Lester's (1952) range-of-wages calculation, we follow Blanchflower et al. (1996) and Hildreth and Oswald (1997). Assuming a distribution of profits that is 4 standard deviations wide, then the range of parent profits is roughly 1,200 (4 times 307.223 from table 2), or, relative to the mean of 108.203, a factor of 12 times the mean. Multiplying 12 by the elasticity of 0.03 yields a range of 36% of the mean wage stemming from international rent sharing. The mean and standard deviation of affiliate wages implies that the range of wages is approximately 1.6 times the mean, which implies that profit variability can explain 0.36/1.6, or approximately 20%, of the variability in wages.

B. Robustness Checks for Affiliate Wages

To verify the robustness of the evidence and our interpretation of tables 3 and 4, we checked a number of measurement and specification issues.

A first important issue is possible alternative explanations for the correlation between affiliate wages and parent profits. One such explanation might be intrafirm outsourcing. It has been documented that over our sample period of the 1990s, multinational firms expanded their vertical production networks in which parents and affiliates perform different activity stages linked by trade (e.g., Hanson, Mataloni, & Slaughter, 2001). In establishing these networks, multinationals may relocate marginal activities from the parents to affiliates on the basis, for example, of labor-cost differentials. This relocation is likely to boost parent profits. It may also boost affiliate wages, for example, if the skill mix of affiliates rises to attract the needed workers. Thus, our affiliate wage-parent profit correlation may reflect intrafirm outsourcing rather than profit sharing.

We checked this alternative explanation in three ways. First, we simply calculated correlations between parent and affiliate employment. If the outsourcing story predominates in our data, then parent and affiliate employment should be negatively correlated. Instead, in our data they are significantly positively correlated, both in levels (correlation of 0.06) and in changes (e.g., 1-year differences correlation of 0.04).

Second, we reestimated tables 3 and 4 adding to the Z_{at} regressors a direct measure of intrafirm outsourcing by parents: the share of total multinational sales accounted for by parent purchases of materials. Although our data cannot separate imported from domestically sourced materials, if outsourcing is very important, then this variable might attenuate our affiliate-wages–parent-profits correlation of interest. This was not the case, however: this regressor always had a coefficient estimate not significantly different from 0, and including it had no impact on our wages-profits correlations (and thus the results are not reported, for brevity).

Our third and final check on the outsourcing story was to reestimate tables 3 and 4 but on a subsample of affiliates in high-wage countries. If the outsourcing story predominates in our data, then our affiliate-wages–parent-profits correlation of interest should be weaker when our sample excludes affiliates in low-wage countries—that is, affiliates in countries where outsourcing is likely more profitable. These estimation results are reported in the Appendix, table A1, where our excluded countries are Bulgaria, the Czech Republic, Hungary, Poland, Portugal, Romania, and Spain. If anything, for this high-wage-country subsample our results are now stronger: all four affiliate-parent elasticities are higher than in the comparable specifications in tables 3 and 4.

Overall, we conclude from these three checks that intrafirm outsourcing does not explain our finding that affiliate wages positively covary with parent profits. Instead, we think that the evidence continues to favor our explanation of cross-border profit sharing.

To further substantiate this explanation, our second robustness check was to split our sample of affiliates by the competitiveness of parent industries. Our calculated profit-sharing elasticities should be lower the more competitive are the product markets. This is both because there may be less profits to share (in the extreme, with perfect competition there are simply no profits to share), and also because, for some given amount of profits, there is less marginal pass through to wages (e.g., because in more-profitable sectors workers have developed deeper institutions to facilitate profit sharing, such as union contracting). If profit sharing drives our affiliate-wages–parent-profits correlation, then this correlation should be weaker the more competitive are the parent industries.

To implement this test, we used data on industry five-firm concentration ratios. For each three-digit NACE industry in 1997, these data report the fraction of sales in the EU-15 region accounted for by the largest five firms. We then chose a critical concentration ratio of 0.15, and classified each affiliate's parent's industry as highly or lowly concentrated according as that industry's ratio was above or below this level. Classifying each parent's industry in this way yielded two subsamples of affiliates for analysis.[17]

Fixed-effects and GMM estimation results on these two affiliate subsamples are reported in the Appendix, table A2. Comparing columns 1 and 3 with columns 2 and 4, we see that the parent-profits–affiliate-wages elasticity is approximately 5 times larger for the highly concentrated subsample than for the lowly concentrated subsample. This difference is largely accounted for by differences in the estimated marginal pass-through of profits to wages, with the relevant GMM coefficient estimate in column 3 actually not significantly different from 0 (like the affiliate-profit coefficient estimate in that same column). These results are consistent with the idea that profit sharing from parents to affiliates is much stronger for highly profitable parents, and they lend further support to our cross-border profit-sharing explanation.

A third important consideration is whether parent and industry profits are sufficiently independent to allow identification of separate wage effects of each. This may be of particular concern for parents and affiliates classified in the same primary industry. To allow for this possibility, we repeated our analyses on a subsample that excluded any affiliate observation whose primary industry was the same

[17] This cutoff ratio was chosen both because it was close to the median across industries and because it yielded affiliate subsamples of comparable size; results are robust to slight variations in the cutoff. Our division of parent industries accords with plausible priors: lowly concentrated industries include a wide range of textiles and apparel, and highly concentrated industries include optical instruments and motor vehicles. For assistance with these concentration data we thank Rene Belderbos. These data are discussed in European Commission (2002).

as that of its parent. Table A3 in the Appendix reports fixed effects and GMM estimates on this subsample. The results are qualitatively unchanged from tables 3 and 4, with statistically significant estimates and with implied elasticities in the same range as before. If anything, on balance the parent-affiliate elasticity now looks larger.

We also performed a number of other robustness checks that, for brevity, are not reported. One was of how we measured profits. As discussed earlier, our profit measure follows that of several other studies, and corresponds to the economic concept of rents available for sharing with workers. In the underlying Amadeus data, firms in some countries report accounting measures of gross profits. These may vary across countries with differences in national accounting standards, or with any transfer-pricing considerations for firms.[18] The sample correlation between our profit measure and this accounting measure was over 0.9, and our estimation results were robust to using this alternative.

Another check we tried was to use lagged rather than contemporaneous profit measures in our fixed-effects estimates. Some rent-sharing studies use lagged profit measures to attempt to control for endogeneity concerns. We prefer our more-structural GMM estimation to address endogeneity (and also to allow the interpretation of current wages being affected by past profits), but we still tried fixed-effects estimates using profit measures lagged 1 year. We obtained results qualitatively similar to those reported here.

In addition to checking how we measure profits, we did the same with wages. We have measured wages in levels, but much of the domestic rent-sharing literature uses log wages. We use wage levels because the theoretical motivation in section II does not necessarily imply that log wages are related to profits, and also because the wage distribution in our data appears more normal than log normal (unlike the distribution of wages across people in individual-level data sets). Nevertheless, given the prevalence of log-wage analyses in the previous literature, we verified that we obtain very similar coefficient estimates and implied elasticities from specifications (both fixed-effects and GMM) using log wages as the regressand.

A final check was to interact profit measures with geographic distance between the parent and affiliate countries, and also with a dummy variable indicating adjacency of parent and affiliate countries. It might be the case that the extent to which multinationals share profits internally depends on information flows, for which physical location might be a proxy. We found no substantial variation in profit sharing from distance and/or adjacency.

C. *Results for Parent Wages*

Having established parent-to-affiliate rent sharing, we next reverse focus to look for evidence of affiliate-to-parent rent sharing. As discussed in section II, in principle the international aspects of wage setting could be symmetrical. Just as affiliate workers might risk-share over parent profitability, so, too, might parent workers risk-share over affiliate profitability.

To look for covariation in parent wages and affiliate profits, we reconfigure our panel from affiliate-year observations to parent-year observations. In this reconfigured panel, each parent in each year can have any number of foreign affiliates. One way to treat this multiaffiliate aspect of our data would be to treat each parent-affiliate-year combination as a separate observation. An alternative would be to average the profitability of all affiliates for each parent-year observation. We tried both methods and obtained qualitatively similar results either way. For brevity, we report results for just the latter approach, where profits per worker across all affiliates are averaged using affiliate sales as weights. Given the suggestive evidence in earlier tables that parents share profits more strongly with affiliates the larger the ownership stake, we also tried averaging affiliate profitability using only majority-owned and then only fully owned affiliates.

Table 5 reports baseline fixed-effects and GMM estimates of equations (6) and (7) for parent wages on both parent and affiliate profits per worker. Fixed-effects estimates are in columns 1 and 2. GMM estimates are in columns 3 and 4; as with the earlier GMM estimates, we instrument for parent and affiliate profits using their lagged values and other regressors. As indicated, each column uses a different set of affiliates for each parent-year observation for constructing affiliate profitability.[19] The standard domestic rent-sharing result is evident in the significantly positive correlation between parent profitability and parent wages, with the implied wage-profits elasticity of approximately 0.02. However, table 5 shows no evidence of international rent sharing: the coefficient estimates on affiliate profitability are all close to 0 with low t-statistics. We obtained very similar (unreported) results for specifications that added additional

[18] Transfer pricing is the practice whereby multinationals can manipulate reported profits of parents and affiliates by choosing the prices used to record intrafirm transfers of (e.g.) intellectual property. Many countries' tax laws explicitly try to minimize this practice, but to the extent that it occurs, the measured parent and affiliate profits may differ from the true values. Our constructed profit measure may be less prone to transfer-pricing concerns than are accounting profits, but it may still raise transfer-pricing issues, for example, if firms manipulate intrafirm input prices. In addition, our various fixed effects may control for important dimensions of transfer pricing: for example, affiliate effects capture firm strategies and time-invariant host-country tax laws, and year-country effects capture changes in tax laws. And our GMM specifications with instruments may remove any spurious profit variation due to transfer pricing. That said, we think this practice may bias us away from finding our link of interest between parent profits and affiliate wages. If positive shocks to affiliate wages lower true affiliate profits, then multinationals may have more scope to transfer true parent profits to the affiliate. This will tend to lower measured parent profits, and thus impart a negative correlation between affiliate wages and measured parent profits.

[19] GMM estimates are reported for calculations of affiliate profits using all affiliates and just majority-owned affiliates (similar calculations using just fully owned affiliates yielded less-reliable GMM estimates, due to the reduced number of observations). The diagnostics of the Sargan and serial-correlation tests indicate these GMM equations are well specified.

TABLE 5.—PROFIT SHARING WITH PARENT WAGES: FIXED EFFECTS AND GMM ESTIMATES

	Majority-Owned Affiliates (1)	Fully Owned Affiliates (2)	All Affiliates (3)	Majority-Owned Affiliates (4)
Affiliate profits	0.0002	−0.0019	−0.0004	−0.0014
	(0.0006)	(0.0034)	(0.0003)	(0.0016)
[Implied wage-profit elasticity]	[0.0006]	[−0.0041]	[−0.0006]	[−0.0010]
Parent profits	0.0107	0.0044	0.0084	0.0113
	(0.0018)	(0.0022)	(0.0041)	(0.0073)
[Implied wage-profit elasticity]	[0.0206]	[0.0083]	[0.0168]	[0.0214]
Year effects	Yes	Yes	Yes	Yes
No. of observations	2,340	1,233	1,822	1,641
No. of parents	736	389	593	534
R^2 within	0.17	0.17		
R^2 between	0.02	0.01		
Sargan test statistic (10/7 dof)			8.30	6.24
Serial-correlation test statistic			−1.171	−0.969

Columns 1 and 2 and columns 3 and 4, respectively, report estimation results for equations (6) and (7) in the text. Dependent variable is parent average wage. Standard errors are reported in parentheses under coefficient estimates (robust for columns 1 and 2). The subsample of majority-owned affiliates consists of those affiliates in which the parent firm maintains at least a 50% controlling interest. The subsample of fully owned affiliates further narrows the majority-owned subsample to consist of those affiliates in which the parent firm maintains at least a 99% controlling interest. See text for details.

regressors; that treated all parent-affiliate-year observations separately, as described above; or that dropped from the initial sample affiliates that were small relative to parents.

Based on the results in table 5, we find no evidence that affiliate profits are shared with parent workers. This lack of profit sharing from affiliates to parent workers may reflect a number of issues. For example, if affiliates are very small relative to parents, and/or are minority owned and thus perhaps not known, then wage setting in parents may simply ignore affiliate activity. We consider this to be an area for future research.

V. Conclusions

The large literature on profit sharing is almost exclusively focused within single countries. Against a backdrop of increased globalization, in this paper we construct and examine a unique firm-level panel to examine whether profits are shared across borders within multinational firms for a wide array of industries and countries.

Our central finding is a positive, statistically significant relationship between parent profits per worker and foreign wages in majority and fully owned affiliates. This relationship is robust to a number of specification and estimation choices, including using GMM estimation to address possible endogeneity and measurement issues. Our estimates of the profit elasticity of wages vary between approximately 0.01 and 0.05, which falls in the range estimated by the domestic profit-sharing literature. If we take our average elasticity to be 0.03, then the cross-section variability of parent profits explains approximately one-fifth of the cross-section variability in affiliate wages.

Our results are an important addition to the literature on rent sharing. Future work might try to establish similar results for different samples of multinationals—for example, those with greater geographic spread than our Europe-only data. Equally importantly, our results document important effects of globalization on local economic outcomes. This carries important implications for both policy and theory, and underscores the increasingly global nature of labor markets. For example, international rent sharing may help explain why multinational affiliates tend to pay higher wages than do purely domestic firms.

Finally, we believe our findings are relevant for the international macro literature on real business cycles and correlated international movements in macro aggregates. This literature has focused on the transmission of national income shocks through explicit risk sharing in international capital markets. Our findings suggest an additional linkage—international profit sharing between parents and affiliates in multinational firms—that can transmit economic conditions across national borders. In the labor literature, one standard explanation for rent sharing in a domestic context is implicit risk sharing between firms and workers. Our findings suggest that risk sharing across countries can also occur implicitly through multinational firms.

In our data, the average within-firm standard deviation of parent profits is 34.5. Within-firm profits therefore vary year to year by an average of 30%. Our central wage-parent profits elasticity of 0.03 then implies that average year-to-year variation in parent profits causes affiliate wages to vary by nearly 1% each year. Considering that average annual wage growth is often less than 5%, a 1% change that stems solely from variability in parent profitability in a foreign country is striking. This back-of-the-envelope calculation suggests that international rent sharing is sufficiently strong for its implications to extend beyond understanding individual wage outcomes. Future work in labor economics, international economics, and macroeconomics might benefit from incorporating this phenomenon.

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APPENDIX

TABLE A1.—PROFIT SHARING WITH AFFILIATE WAGES, AFFILIATES IN ONLY HIGH-WAGE COUNTRIES: FIXED EFFECTS AND GMM ESTIMATES

	Majority-Owned Affiliates (1)	Fully Owned Affiliates (2)	Majority-Owned Affiliates (3)	Fully Owned Affiliates (4)
Affiliate profits	0.0023	0.0210	0.0727	0.0226
	(0.0010)	(0.0040)	(0.0120)	(0.0040)
[Implied wage-profit elasticity]	[0.0063]	[0.0420]	[0.1600]	[0.0488]
Parent profits	0.0045	0.0100	0.0249	0.0212
	(0.0010)	(0.0030)	(0.0100)	(0.0029)
[Implied wage-profit elasticity]	[0.0087]	[0.0210]	[0.0447]	[0.0412]
Year effects	Yes	Yes	Yes	Yes
No. of observations	2,711	938	1,536	557
No. of affiliates	892	296	519	185
R^2 within	0.19	0.27		
R^2 between	0.01	0.03		
Sargan test statistic (10 dof)			12.03	12.74
Serial-correlation test statistic			−1.792	−1.777

Columns 1 and 2 and columns 3 and 4, respectively, report estimation results for equations (6) and (7) in the text. Dependent variable is affiliate average wage. Standard errors are reported in parentheses under coefficient estimates (robust for columns 1 and 2). The subsample of high-wage countries excludes affiliates in Bulgaria, the Czech Republic, Hungary, Poland, Portugal, Romania, and Spain. The subsample of majority-owned affiliates consists of those affiliates in which the parent firm maintains at least a 50% controlling interest. The subsample of fully owned affiliates further narrows the majority-owned subsample to consist of those affiliates in which the parent firm maintains at least a 99% controlling interest. See text for details.

TABLE A2.—PROFIT SHARING WITH AFFILIATE WAGES, PARENTS IN LOWLY VERSUS HIGHLY CONCENTRATED SECTORS: FIXED EFFECTS AND GMM ESTIMATES

	Lowly Concen. Sectors (1)	Highly Concen. Sectors (2)	Lowly Concen. Sectors (3)	Highly Concen. Sectors (4)
Affiliate profits	0.0047	0.0020	0.0007	0.0319
	(0.0010)	(0.0008)	(0.0090)	(0.0040)
[Implied wage-profit elasticity]	[0.0130]	[0.0050]	[0.0010]	[0.0700]
Parent profits	0.0024	0.0167	0.0040	0.0200
	(0.0010)	(0.0040)	(0.0100)	(0.0040)
[Implied wage-profit elasticity]	[0.0060]	[0.0320]	[0.0080]	[0.0400]
Year effects	Yes	Yes	Yes	Yes
No. of observations	2,910	2,386	1,675	1,505
No. of affiliates	1,003	757	574	500
R^2 within	0.15	0.15		
R^2 between	0.03	0.01		
Sargan test statistic (10 dof)			7.2	17.60
Serial-correlation test statistic			−0.282	−0.849

Columns 1 and 2 and columns 3 and 4, respectively, report estimation results for equations (6) and (7) in the text. Dependent variable is affiliate average wage. Standard errors are reported in parentheses under coefficient estimates (robust for columns 1 and 2). The two subsamples by industry concentration classify each affiliate based on the industry of its parent, using data on EU-wide industry sales. All columns are based on the subsample of majority-owned affiliates, which consists of those affiliates in which the parent firm maintains at least a 50% controlling interest. See text for details.

TABLE A3.—PROFIT SHARING WITH AFFILIATE WAGES, AFFILIATES AND PARENTS IN DIFFERENT INDUSTRIES: FIXED EFFECTS AND GMM ESTIMATES

	Majority-Owned Affiliates (1)	Fully Owned Affiliates (2)	Majority-Owned Affiliates (3)	Fully Owned Affiliates (4)
Affiliate profits	0.0023	0.0163	0.0168	0.0124
	(0.0008)	(0.0028)	(0.0066)	(0.0050)
[Implied wage-profit elasticity]	[0.0064]	[0.0331]	[0.0392]	[0.0285]
Parent profits	0.0041	0.0175	0.0122	0.0219
	(0.0017)	(0.0031)	(0.0055)	(0.0054)
[Implied wage-profit elasticity]	[0.0085]	[0.0325]	[0.0256]	[0.0477]
Year effects	Yes	Yes	Yes	Yes
No. of observations	3,711	1,251	1,643	722
No. of affiliates	1,261	409	557	241
R^2 within	0.16	0.27		
R^2 between	0.01	0.02		
Sargan test statistic (10 dof)			16.91	14.57
Serial-correlation test statistic			−1.123	−0.508

Columns 1 and 2 and columns 3 and 4, respectively, report estimation results for equations (6) and (7) in the text. Dependent variable is affiliate average wage. Standard errors are reported in parentheses under coefficient estimates (robust for columns 1 and 2). This subsample excludes any affiliate observation whose primary industry is the same as that of its parent. The subsample of majority-owned affiliates consists of those affiliates in which the parent firm maintains at least a 50% controlling interest. The subsample of fully owned affiliates further narrows the majority-owned subsample to consist of those affiliates in which the parent firm maintains at least a 99% controlling interest. See text for details.