Risk-Sharing within Firms: Worldwide Evidence

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Preliminary Draft

18 March 2013

Abstract

We investigate the determinants of employment and wage insurance that firms offer to their employees, by looking at characteristics that enable firms to provide more insurance to them and at country characteristics that affect workers' need for insurance, chiefly the provision of unemployment insurance by the social security system. We find that family firms provide more employment protection but less wage stability than non-family ones, and supply less employment protection in countries where this protection is more generously provided by the social security system. Moreover, the employment protection provided by firms is priced: in particular, family firms pay a 15% lower average wage, controlling for country, industry and time effects. Finally, state-owned firms provide more employment stability than privately owned ones, and the same applies to business groups relative to standalone companies, and to multinationals relative to domestic companies.

JEL Classification: G31, G32, G38, H25, H26, M40.

Keywords: risk-sharing, social insurance, unemployment, wages, family firms.

Acknowledgements: We thank Yaniv Grinstein, Nandini Gupta, Beni Lauterbach, Amir Licht, Colin Mayer, Ernst Maug, Merih Sevilir, Yishay Yafeh, and participants at the 2012 Ackerman Conference on Corporate Governance (Bar-Ilan University), Hebrew University Finance Conference, and at a seminar at Indiana University. This research has been sponsored by grants from the ERC (FINLAB project no. 295709) and the Italian Ministry for University and Research.

"The family business in Warroad, Minnesota that didn't lay off a single one of their four thousand employees during this recession, even when their competitors shut down dozens of plants, even when it meant the owners gave up some perks and pay – because they understood their biggest asset was the community and the workers who helped build that business…" (President Obama, 2012)[1]

"In 1976 I faced Gianni Agnelli with a drastic choice: here at FIAT we must lay off 25,000 employees, I told him. He thought about it for two days, then replied: it cannot be done. That reply contained the moral heritage of his grandfather, his Savoy spirit, a sense of a commitment towards the country and Turin and also his respect for workers' dignity. I could not remain at FIAT and watch the company's coffers bleed empty, so I quit. In retrospect, I was right from the company's viewpoint, but from a broader, historical and social viewpoint, he was right." (Carlo De Benedetti, 2013)[2]

The idea that entrepreneurs insure workers against risk by providing them stable wages dates at least back to Knight (1921): "the system under which the confident and venturesome assume the risk and insure the doubtful and timid by guaranteeing to the latter a specified income in return for an assignment of the actual results ... is the enterprise and wage system of industry" (269-70). This idea was formalized in the implicit contract model of Baily (1974) and Azariadis (1975), where risk-neutral entrepreneurs provide insurance to risk-averse workers by insulating their salaries from adverse shocks to production. The assumption that entrepreneurs are less risk-averse than workers may not be rooted in their preferences, but stem from their differential access to capital markets: if entrepreneurs can diversify idiosyncratic risk away better than workers, they behave "as if" they were less risk averse, and therefore insure workers. Indeed, as highlighted by Berk and Walden (2009), capital markets allow firms to offload the risk they assume from workers by giving them a lifetime contract that pays a wage completely insensitive to idiosyncratic risk, so that even if workers could hedge against employment risk, in equilibrium they would not want to do so, being already insured by firms.

[1] The Baltimore Sun, "Obama's full remarks", 6 September 2012.

[2] *La Repubblica*, "Agnelli, Intervista a De Benedetti", 13 February 2013.

However, in practice, we often observe distressed firms laying off workers and imposing wage cuts on them, even in response to purely firm-specific shocks. Hence, the interesting issue is to understand which factors limit the insurance that firms offer to their employees below the level predicted by the theory. This is the topic of this paper. We start by recognizing that the extent of risk-sharing between firms and workers may be affected by two groups of determinants: those that affect the *supply* of insurance by firms and those that affect its *demand* by workers. Then we try to disentangle their role empirically in a large panel of firm-level data, exploiting their variation across firms, between countries, and over time.

First, firms may differ in their ability to *supply* insurance to workers. This may be due to differences in their ability to diversify risk: firms that can access more developed financial markets can offer better insurance to their employees; multiproduct firms and multinational companies can offer more insurance to their employees, being able to hedged better against sector- or country-specific risks. Moreover, firms should be better placed to insulate their employees against temporary shocks to sales than against persistent ones, being unable to survive persistent losses (Gamber, 1988). Apart from differences in exposure to shocks and hedging capacity, firms also differ in their credibility as providers of insurance: family firms are less likely to breach implicit contracts with their employees than non-family firms, because the reputation of the controlling family is at stake, and also because typically they are immune from the risk of hostile takeovers.[3] The same applies to state-owned firms, which are unlikely to breach implicit contracts with their employees, in order to avoid the political fall-out from the resulting layoffs.

Second, workers are less likely to *demand* insurance from firms in countries where social security arrangements such as unemployment insurance or retraining schemes of unemployed workers make firm-level insurance superfluous or at least less important. They are also less likely to demand insurance against the loss of employment in countries and periods in which they expect to find easily a new job upon being fired, i.e. in tight labor markets.

[3] A firm's implicit contracts with its employees may lack credibility if corporate control is contestable, because the firm may be taken over by an entrepreneur who is not bound by this commitment, as noted by Shleifer and Summers (1988). Indeed, a takeover raider may be enticed precisely by the short-run gain from breaching such contracts, for instance from firing workers when the company is hit by a drop in sales, or by cutting wages once employees' investment in firm-specific human capital is sunk.

In most of our empirical analysis, we rely on the difference between family and non-family firms as our supply-side determinant of workers' insurance. The main reason for this choice is not obvious on a-priori grounds whether family firms should be regarded as better providers of insurance to their employees or not: they have better incentives to provide such insurance, because of the controlling family's concern for its reputation and for its local community (as shown by the two quotes in the epigraph); but often they are less diversified and smaller than non-family firms, hence with less deep pockets and more limited capital market access. In other words, they have better incentives but lower ability to provide insurance to their employees: so whether they actually provide better employment insurance is an empirical issue. We find that in most countries they do, and that their insurance provision is greater in countries where the public sector provides less of it, so that workers demand more of it from their firms. Instead, the degree of financial development appear neither to affect the typical firm's ability to provide employment insurance to workers nor to make a difference to the insurance provided by family firms compared to non-family ones.

We also inquire whether firms differ in their provision of wage insurance. Surprisingly, we find that family firms provide *less* wage insurance than non-family ones: they appear to offer more secure jobs, but in exchange for this to require their workers to accept greater wage flexibility in response to fluctuations in sales. Moreover, the employment security provided by the public sector appears to have no significant effect on the provision of wage insurance by firms, and more specifically by family firms. However, it should be noticed that these results are obtained on a considerably smaller sample than those for employment insurance, since wage data are unavailable for over 60% of the firms for which we have employment data.

We also find evidence that family firms manage to get compensated for their more stable employment provision by paying lower wages, as predicted by the implicit contract theory of Baily (1974) and Azariadis (1975), and that they are better able at providing insurance to their employees when faced by transitory rather than permanent shocks, as predicted by Gamber (1988). Finally, we explore whether they achieve this stabilization of employment by accepting greater variability in profits and dividends or in leverage.

Beside the difference between family and non-family firms, we consider other differences between firms that should affect their supply of insurance to workers in a more obvious direction: we compare (i) state-owned companies with privately-owned ones, (ii) business

groups with standalone companies, and (iii) multinational firms with national ones. The electoral concerns of politicians suggest that state-owned companies should be more generous providers of insurance to their employees than privately-owned firms. The diversification of business groups and multinationals, along product and geographic lines respectively, should enable them to provide more insurance to their employees. All three predictions are supported by the evidence.

All previous studies on risk-sharing within firms focus on individual countries, so that – unlike our study – they cannot control for country-level characteristics such as the provision of employment insurance by the government. As a result, these studies focus on how differences in firm characteristics (ownership, control or capital structure) on in the type of shocks hitting them affect their risk sharing with employees.

Several papers focus on the difference between family and non-family firms in France, where listed family firms appear to provide more employment insurance to their employees than non-family ones in the late 1990s: Sraer and Thesmar (2007) and Bassanini et al. (2011) document that in heir-managed firms employment is less sensitive to industry sales shocks, average wages are lower and profits larger, in line with implicit contract theory. Employment insurance also seems to buy social peace: family firms have not only lower job turnover but less wage renegotiation (Bach and Serrano-Velarde, 2010), are less likely to face strikes and unionized workers, inflict sanctions and experience disputes ending in court (Müller and Philippon, 2007; Waxin, 2009). For Italy, D'Aurizio and Romano (2011) show that family firms reacted to the 2008 crisis by safeguarding more than non-family firms workplaces close to the firm's headquarters, compared to other plants. For U.S. listed companies, the evidence is weaker: in family-managed firms downsizing is less likely, but more severe; in family-owned firms, job cuts exceeding 6% of the workforce are less likely (Block, 2008).

Kim, Maug and Schneider (2011) investigate whether risk sharing within firms is affected by workers' role in corporate governance. Using establishment-level panel data for German companies, they inquire whether Germany's mandated 50% labor representation on supervisory boards is associated with greater employment and wage insurance against industry shocks. They find that white-collar and skilled blue-collar workers of firms with parity codetermination are protected against layoffs and wage cuts, while no such protection appears to be in place for unskilled workers. Moreover, only white collar workers pay a 3% insurance premium in the form of lower wages for this benefit.

There is also evidence that firms' ability to access credit affects their ability to provide risk-sharing benefits to their employees. Sharpe (1994) documents that employment in more levered U.S. firms responds more to fluctuations in aggregate output. Caggese and Cuñat (2008) build and calibrate a dynamic model showing that financially constrained firms tend to use temporary workers more intensively, and make them absorb a larger fraction of the total employment volatility than financially unconstrained firms do. These predictions are confirmed by their estimates, obtained using a panel for small and medium-size Italian manufacturing firms in 1995-2000.

Another strand of research investigates the wage insurance that firms offer against temporary and permanent shocks. Guiso, Pistaferri and Schivardi (2005) show that Italian workers' earnings are consistent with full insurance of transitory shocks to firm value added, and considerable insurance of transitory shocks: the standard deviation of wage growth shocks is 12%, while under no insurance the standard deviation would be 40%. Broadly similar results are reported for Portugal by Cardoso and Portela (2009), for Hungary by Kàtai, and for Germany by Guertzgen (2013).

The rest of the paper is as follows. Section 1 presents the data. Section 2 lays out our empirical strategy. Section 3 presents the estimates obtained with reference to the comparison between family and non-family firms, while Section 4 reports those obtained for the comparison between state-owned companies and privately-owned ones, between business groups and standalone companies, and between multinational firms and domestic ones. Section 5 concludes.

1. Data

To test the ability of firms to provide employment and wage insurance in different countries with different institutional arrangements of unemployment insurance, we bring together three types of data: (i) firm-level data for measures of employment, wages and sales and other firm characteristics such as total assets, leverage, asset tangibility and profitability; (ii) firm ownership data, that allows us to classify firms into family and non-family, state-owned and privately-owned, business groups and standalone firms, multinational and domestic firms, and (iii) measures of country-level government-mandated unemployment security, and financial development.

1.1 Sources and definitions

Employment, wage and financial data are drawn from Worldscope (for non-U.S. firms) and Compustat (for U.S. firms), which contains historical data from the financial reports of publicly listed firms. We collect data for firms incorporated and listed in 41 countries over the period 1988-2011, applying two screens to the data: first, we remove financial institutions; second, we include firms only if employment data (total number of employees at the firm-level) are available for at least 7 consecutive years, thus allowing us to compute employment insurance over an extended period of time. This leaves us with 6,298 firms and 89,815 firm-year observations. However, we have wage data (total staff costs at the firm-level) for at least 5 consecutive years only for 2,485 of these firms. Thus the employment regressions will be based on data for 6,298 firms, while wage regressions will be based on data for 2,485 firms.

The ownership data comes from Ellul et al. (2010). Following Ellul et al. (2010), we identify family firms as those where a family blockholder is the ultimate blockholder and has at least 20% of the firm's cash flow rights. The same data source allows us to identify firms belonging to a business group (defined as those sharing the same ultimate blockholder), state-owned companies (defined as those where the domestic government is the ultimate blockholder), and multinational firms (defined as firms with international sales, using sales data drawn from Worldscope).

Country-level data on government-mandated unemployment insurance come from Botero et al. (2004) and OECD datasets. From Botero et al. (2004) we obtain a measure of the protection offered by social security legislation, calculated as the average of the following four variables, each normalized to range from 0 to 1: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law, redefined so that where higher values mean less contribution; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits, redefined so that higher values mean lower deductions; (3) the waiting period for unemployment benefits, redefined so that higher values mean lower waiting periods; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell. The second measure of unemployment security is the labor average unemployment duration calculated as the share of total unemployment which

persists for one year or more, drawn from the OECD (2010). Also in this case we redefine the variable so that higher values of it correspond to lower unemployment duration, and therefore greater security for workers. However, instead of capturing the quality of the safety net provided by social security to fired workers, this variable captures the likelihood of finding a new job after being fired, and therefore the extent to which the state of the labor market itself mitigates unemployment hardship.

Finally, we also draw from Botero et al. (2004) a measure of employment protection legislation (EPL) against dismissal. This measure is the average of the following seven dummy variables which equal one: (1) if the employer must notify a third party before dismissing more than one worker; (2) if the employer needs the approval of a third party prior to dismissing more than one worker; (3) if the employer must notify a third party before dismissing one redundant worker; (4) if the employer needs the approval of a third party to dismiss one redundant worker; (5) if the employer must provide relocation or retraining alternatives for redundant employees prior to dismissal; (6) if there are priority rules applying to dismissal or lay-offs; and (7) if there are priority rules applying to re-employment. Despite its apparent similarity with the two measures of employment security described above, EPL differs from them because it makes it more difficult for firms to fire, and therefore it induces a "forced supply" of employment insurance by firms, rather than by reducing workers' demand for such insurance. Moreover, insofar as it makes firms less willing to hire, stringent EPL may make it more difficult for fired workers to find a new job, so that it may result in greater hardship for those workers that firms manage to fire. Hence, its effects on risk-sharing within firms may differ from those of measures of employment security. Finally, and quite importantly for our estimates, a stringent EPL should reduce (or even eliminate) the differences in the provision of employment insurance by different firms, e.g. both to family and non-family ones, insofar as EPL applies to all of them.

1.2 Descriptive statistics

Table 1 reports the number of firms for each of the 41 countries in our sample. As expected, there is a significant variation in the number of firms in each country, with the U.S., Japan, the United Kingdom, Germany, France and Australia being the countries with the larger number of firms.

[Insert Table 1]

Column 1 and 2 provide information on the number of non-family and family firms in each country showing a significant dispersion of each type of firm across countries. Countries like the United Kingdom, Canada, South Africa, Japan and Australia have a relatively low presence of family firms whereas countries like Argentina, Brazil, Germany, France, Hong Kong, Singapore and Taiwan have a larger presence of family firms. In some countries, such as Brazil, Israel, India, Chile and Hong Kong the number of listed family firms is larger than non-family firms. Columns 3 and 4 provide information about the average firm-level sales growth for non-family and family firms respectively. Broadly speaking, firms in emerging markets have higher annual sales growth than firms in developed countries. However, there is also significant dispersion in the sales growth of family firms and non-family firms: in some countries, the annual sales growth of family firms is larger than that of non-family firms (for example in countries such as Brazil, Singapore, Hong Kong and Czech Republic) while in others the opposite is true (such as in India, Mexico, Canada and Italy). Columns 5 and 6 show the average total firm-level employment in non-family and family firms. In almost all countries family firms have a lower number of workers compared to non-family firms, consistent with the findings of existing literature that shows that family firms are in general smaller than non-family firms.

Finally columns 7, 8 and 9 show country-level measures of government-mandated unemployment benefits (column 7), employment protection legislation against dismissal (column 8), both drawn from Botero et al. (2004), and labor average unemployment duration calculated as the share of total unemployment that persists for one year or more.

2. Empirical methodology

Our primary aim is to assess how the extent of risk-sharing within firms differs depends on (i) "a priori" relevant firm characteristics (e.g., family or non-family owned), (ii) the degree of public insurance offered by social security arrangements, and (iii) the degree of financial development of the relevant country. Firms may offer insurance to their employees either by stabilizing their employment level and/or their wages when faced with changes in the demand for their output – for example, by not firing them and/or requiring a wage cut when the firm or the industry faces a decline in sales. Our

methodology is based on estimating the elasticity of employment or wages to "shocks" in sales, and exploring how this elasticity changes depending on the three factors described before – for instance, how it differs between family and non-family firms, and how it varies depending on social security arrangements. In different specifications of our regressions, we use different definitions of what is a "shock" in sales: in most specifications, it is simply the percentage changes in the sales of the relevant industry; in others it is the unexpected component of the change in sales of the relevant firm; yet in others, we break down the change in sales in its positive and negative components, or we estimate its transitory and persistent components.

Our methodology is best illustrated by considering the specification of one of the employment regressions that we use to investigate how family and non-family firms differ in the provision of employment insurance:

$$n_{ijct} = \beta_1 \varepsilon_{ijct} + \beta_2 F_{it} + \beta_3 \varepsilon_{ijct} F_{it} + \beta_4 \varepsilon_{ijct} S_c + \beta_5 F_{it} S_c \varepsilon_{ijct} + \gamma' X_{ijct-1} + \mu_{cj} + \mu_t + u_{ijct}, \quad (1)$$

where the subscripts i, j, c and t index firms, industries, countries and years respectively, n_{ijct} is the growth rate in the employment of firm i in year t, ε_{ijct} is a shock to the sales of firm i or of its industry in year t, F_{it} is a family-firm dummy variable (equal to 1 if the firm is a family firm, and 0 otherwise), S_c is a measure of the effectiveness of the public employment insurance system in country c, and X_{ijct-1} is a vector of company-specific variables measured as of year $t-1$, namely firm size (measured as the log of market capitalization), asset tangibility (ratio of plant, property and equipment to total assets), profitability (return on total assets), and leverage (ratio of total debt to total assets). Finally, μ_{cj} is a country-industry effect, μ_t is a year effect, and u_{ijct} is the error term. Growth rates are computed as the yearly changes of the logs of the corresponding variables.

The coefficient β_1 measures the elasticity of employment to the sales shock, β_2 controls for the difference in the rate of employment growth between family and non-family firms, β_3 measures the difference in the elasticity of employment to shocks between family and non-family firms, β_4 captures the effect of public insurance on risk-sharing within firms, and β_5 captures the differential effect of public insurance on the risk-sharing provided by family firms. Hence, $\beta_3 < 0$ would indicate that family firms offer more employment

insurance than non-family ones, $\beta_4 > 0$ that better public insurance is associated with less employment insurance by firms, and $\beta_5 > 0$ that it is associated with a stronger reduction in the provision of employment insurance by family firms than by non-family ones.

In other specifications of the employment equation, we replace (or complement) the S_c country-level variable with a measure of the development of financial markets. In principle, the interaction between this variable and the shock ε_{ijct} might have either a negative or a positive coefficient, since the degree of financial market development may affect both the supply of employment insurance by firms and the demand for it by workers: the coefficient should be negative if a more developed financial market increases mainly the supply of employment insurance by firms, by allowing them to better diversify the risk from insuring workers; it should positive if instead more developed capital markets mainly reduce the demand for employment insurance by workers, as they enable them to shoulder the negative effects of unemployment either by borrowing or via private insurance. We also include a triple interaction between financial development, the shock ε_{ijct} and the family firm dummy, whose coefficient should capture the differential effect of financial development on the insurance provided by family firms – a positive coefficient here indicating that less developed financial markets are associated with a comparative disadvantage of family firms in the provision of insurance to their employees.

We use a similar approach to inquire whether firms differ in their propensity to stabilize wages, and whether this type of insurance varies across different types of companies and across countries featuring different levels of public employment insurance and different degree of financial development. To do so, we estimate an equation analogous to (1), the only difference being that the dependent variable is the growth rate of the average real wage:

$$w_{ijct} = \delta_1 \varepsilon_{ijct} + \delta_2 F_{it} + \delta_3 \varepsilon_{ijct} F_{it} + \delta_4 \varepsilon_{ijct} S_c + \delta_5 F_{it} S_c \varepsilon_{ijct} + \phi' X_{ijct-1} + \mu_{cj} + \mu_t + \xi_{ijct}. \quad (2)$$

Unfortunately, as already mentioned, we are able to estimate this regression on a considerably smaller sample than employment equation (1), as wage data are not available for over 60% of the firms for which employment data are available.

Our approach also allows us to test an important prediction of implicit contract theory, namely that the employment or wage insurance provided by companies to their employees

should be "priced" in the wages that they pay, in the sense that companies that offer more stable employment or wages are able to pay less for their workers' services. We test this hypothesis in two ways. First, since the estimates of equation (1) and of its variants indicates that family firms offer greater employment security, we test whether the average wage paid by family firms is lower than that paid by non-family ones, controlling for various firm and country characteristics. Second, we test whether the firm-level average wage is positively correlated with the firm-level elasticity of employment to sales shocks (an inverse measure of employment insurance), estimated as the coefficient θ_{1i} in the following regression for each firm *i*:

$$n_{it} = \beta_{0i} + \beta_{1i}\varepsilon_{it} + \gamma_i' X_{it-1} + \mu_t + \eta_{it}, \quad (3)$$

where θ_{0i} is the firm-specific constant, ε_{it} is a measure of firm-specific unexpected sales shock, X_{ijct-1} is a vector of firm-specific variables measured as of year $t-1$, μ_t is a year effect, and η_{it} is the error term.

So far, for concreteness our methodology has been presented with reference to regressions that investigate the difference between family and non-family firms in the provision of employment and wage insurance. But we use the same regressions – i.e. specifications like (1) and (2) – also to compare state- and privately-owned firms, business groups and standalone companies, multinational and domestic companies: the only difference is that we replace the family-firm dummy variable F_{it} with dummy variables for business groups, state-owned firms or multinational firms, respectively.

3. Employment insurance in family and non-family firms

In this section we investigate the regression results regarding the extent to which family and non-family firms provide employment insurance, controlling for the employment insurance provided by the social security system and for the financial development of the relevant country.

3.1 Employment insurance: industry and firm-level shocks to sales

Table 3 shows the results from estimating various specifications of the employment growth equation (1), where the sales shock variable for each firm-year observation is the contemporaneous growth in sales in the corresponding industry (excluding the firm itself) and country. The regressions shown in columns 1 to 4 include country-industry fixed effects, while that shown in column 5 includes firm-level fixed effects.

[Insert Table 2]

The baseline elasticity of employment to industry sales (shown in the top row of the table) is positive and significant ($\beta_1 > 0$): it ranges between 10% and 14% depending on the specification. The rate of employment growth does not appear to differ significantly between family and non-family firms ($\beta_2 = 0$).

More interestingly, family firms offer significantly more employment insurance than non-family ones ($\beta_3 < 0$): in fact, their employment level does not respond at all to industry sales shocks, since the coefficient of the interaction between the sales shock and the family-firm dummy (third row) completely offsets the baseline elasticity of employment to sales (first row). Indeed, the hypothesis $\beta_3 = -\beta_1$ cannot be rejected in any of the specifications (2) to (5).

Turning to the effect of social security on the demand for employment insurance, the estimates in columns 3 to 5 show that better public insurance (measured using the variable computed by Botero et al., 2004) is not associated with a significantly different degree of employment insurance by non-family firms (the hypothesis that $\beta_4 = 0$ cannot be rejected), but is associated with a significant reduction in the provision of employment insurance by family firms ($\beta_5 > 0$).

Finally, as one would expect, employment growth is significantly lower in larger companies and significantly higher in companies with a greater ROA: more mature companies grow less, while more profitable ones invest and grow more. Instead, leverage and asset tangibility are not significantly correlated with employment growth.

Table 3 repeats the estimation with a different definition of the sales shock variable: rather than at the industry level, we now measure it at the firm level, to capture more closely idiosyncratic shocks to sales. Specifically, we estimate the sales shock as the residual

from a first-stage predictive equation for the growth rate of sales. In this first-stage regression, the growth rate of sales of firm *i* in year *t* is regressed on its lagged value, the same set of firm-level control variables as in specification (1), country-industry effects and time effects. Due to the inclusion of the lagged dependent and of fixed effects, this predictive equation is estimated via the generalized method of moments (GMM) approach of Arellano and Bond (1991) to obtain consistent estimates. The residual from this regression is then included as the ε_{ijct} variable in the estimation of equation (1) and its variants. The results obtained from this second-stage estimation are consistent with those emerging from Table 2, the only difference being that in Table 3 the significant coefficients are larger in absolute value and more precisely estimated than in Table 2: firm-level idiosyncratic shocks in sales appear to impact employment more severely than industry shocks, although the offset in family firms is equally complete (again, the hypothesis $\beta_3 = -\beta_1$ cannot be rejected).

The estimates in Table 3 also confirm the substitutability relationship between the public provision of employment insurance and its private provision by family firms. To illustrate this relationship, we re-estimate the regression in column (3) for each of the 41 countries in our sample, and for each we compute the coefficient ratio $-\beta_5 / \beta_1$, which measures the extent to which family firms stabilize employment relative to the typical firm in their country. (Technically, the ratio is the reduction in the estimated elasticity of employment to firm sales innovations associated with family firms, as a fraction of its value for all the firms in the same country.) In Figure 1 we plot this country-level measure of employment insurance provided by family firms (on the vertical axis) against the measure of the protection offered by social security legislation (on the horizontal axis): the substitutability relationship between the two forms of employment insurance is visually conveyed by the negative slope of the regression line in the figure.

[Insert Figure 1]

3.2 Employment insurance: positive and negative shocks to sales

Clearly, workers are concerned with the danger of being fired when their employer experiences a drop in sales: hence, if indeed the coefficients of the interaction variables involving the family-frim dummy are to capture greater provision of employment

insurance to their employees, their explanatory power should stem from the observations where there is a negative shock in sales. To investigate this point, in Table 4 the employment regressions of Table 2 are re-estimated separately for country-years in which there are negative sales shocks (Panel A) and for those in which these shocks are positive (Panel B).

[Insert Table 4]

Comparing the estimates in the two panels, first of all even the baseline elasticity of employment to industry-level shocks appears to differ in response to negative and positive shocks: on average, firms tend to adjust employment less to drops than to increases in sales, which suggests that on average they try to provide some degree of employment insurance – or alternatively engage in some labor hoarding to save on the cost of re-hiring workers that may be needed when their sales recover.

Even more notably, the extent to which family firms engage in stabilizing employment is about twice as large in response to drops in sales as in response to positive ones. And also the degree of substitutability between their supply of employment insurance and its public provision by the social security system is much more evident in response to drops than to surges in industry sales: the estimate of the relevant coefficient in Panel A is between 5.5 and 6 times as large as in Panel B, depending on the specification.

3.3 Employment insurance: persistent and temporary shocks

As mentioned in the introduction, it is reasonable to expect firms to be better positioned to insure their employees in response to transitory rather than permanent shocks. This prediction was first proved and tested by Gamber (1988) with reference to wage insurance, and then confirmed with more sophisticated empirical methodologies by Guiso, Pistaferri and Schivardi (2005) for Italy, by Cardoso and Portela (2009) for Portugal, by Kàtai for Hungary, and by Guertzgen (2013) for Germany. However, to the best of our knowledge, this prediction has not been tested for employment insurance.

In this section, we investigate whether permanent and transitory shocks to sales are associated with a different degree of risk-sharing within firms, and also whether this different response varies across family and non-family firms. To do so, we adapt to the analysis of employment insurance the approach proposed by Guiso, Pistaferri and

Schivardi (2005) to analyze wage insurance, and simplify some of their assumptions. For brevity, in the following derivation we disregard the cross-country component, and initially also the distinction between family- and non-family firms.

We assume the following stochastic process for firm-level sales:

$$s_{ijt} = \mu_i + \mu_{cjt} + \lambda X_{ijt} + \varepsilon_{ijt}, \tag{4}$$

where s_{ijt} is the logarithm of sales of firm *i* belonging to industry *j* in year *t*, μ_i is a firm fixed effect, μ_{cjt} is a country-industry-year dummy, X_{ijt} are other controls and ε_{ijt} is an innovation to firm *i*'s sales, which we can decompose into a persistent and a transitory component as follows:

$$\varepsilon_{ijt} = \zeta_{ijt} + v_{ijt}, \tag{5}$$

$$\zeta_{ijt} = \zeta_{ijt-1} + u_{ijt}, \tag{6}$$

where ζ_{ijt} is the persistent component, modeled as a random walk, and v_{ijt} the transitory component of sales innovations. This is a simplified version of Guiso, Pistaferri and Schivardi (2005), where s_{ijt} and v_{ijt} are respectively modeled as AR(1) and MA(1) processes.

The process of employment is assumed to respond to persistent and transitory shocks with different sensitivities α and β:

$$n_{ijt} = \mu_i + \alpha\zeta_{ijt} + \beta v_{ijt} + \gamma W_{ijt} + \psi_{ijt}, \tag{7}$$

where μ_i is a firm fixed effect, W_{ijt} are other controls, and ψ_{ijt} is an idiosyncratic shock to employment uncorrelated with ζ_{ijt} and v_{ijt}.

To estimate the sensitivities α and β, we proceed in three steps. First, we compute the first differences of (4) and estimate the resulting sales growth regression:

$$\Delta s_{ijt} = \Delta\mu_{jct} + \lambda\Delta X_{ijt} + \Delta\varepsilon_{ijt}, \tag{8}$$

so as to recover an estimate of $\Delta\varepsilon_{ijt}$, without directly identifying the persistent and the transitory shocks. Second, we compute the first differences of (7) and estimate the resulting employment growth regression:

$$\Delta n_{ijt} = \gamma \Delta W_{ijt} + \alpha u_{ijt} + \beta \Delta v_{ijt} + \Delta \psi_{ijt} = \gamma \Delta W_{ijt} + \Delta \omega_{ijt}, \qquad (9)$$

where we have used $\Delta \zeta_{ijt} = u_{ijt}$ from (6) , and then we have re-defined the error term as $\Delta \omega_{ijt} \equiv \alpha u_{ijt} + \beta \Delta v_{ijt} + \Delta \psi_{ijt}$.

Finally, since $\Delta \varepsilon_{ijt} = u_{ijt} + \Delta v_{ijt}$, we recover the coefficients α and β by estimating two separate IV regressions of $\Delta \omega_{ijt}$ on $\Delta \varepsilon_{ijt}$. Specifically, as shown by Guiso, Pistaferri and Schivardi (2005), a regression of $\Delta \omega_{ijt}$ on $\Delta \varepsilon_{ijt}$ with the latter instrumented by $\Delta \varepsilon_{ijt+1}$ and its powers identifies the temporary shock coefficient β, while a regression of $\Delta \omega_{ijt}$ on $\Delta \varepsilon_{ijt}$ with the latter instrumented by $\Delta \varepsilon_{ijt+1} + \Delta \varepsilon_{ijt} + \Delta \varepsilon_{ijt-1}$ and its powers identifies the persistent shock coefficient α.

To estimate a different coefficient for family firms, we just include in the regression the interaction between the family-firm dummy F_i and in the instruments the interaction between the original instruments just described and the F_i dummy.

[Insert Table 5]

The results of the estimation are presented in Table 5: Panel A shows the estimates obtained from the IV regression where transitory shocks are identified, and Panel B those obtained from the IV regression where persistent shocks are identified. First, as expected, generally firms insure workers more against transitory than against persistent shocks, as shown by the fact that the coefficients in the top row of Panel A are smaller than the corresponding coefficients in the top row of panel B.

Consistently with this result, family firms offer complete insurance to their employees against transitory shocks (the coefficients in the second row of Panel A completely offsetting those in the top row), but insure only 60% to 68% of the persistent shocks (computing the ratio between the absolute value of the coefficients in the second row of Panel B and the corresponding coefficients in the top row of that panel). Moreover, in the latter case the estimates are quite imprecise: in the first two specifications, the coefficients in the second row of Panel B are significant only at the 10% level, and in the other two they are not significantly different from zero.

Again consistently with the overall picture, there is substitutability between the employment insurance provided by family firms and by social security against transitory shocks, but there is none with reference to persistent shocks: family firms do not reduce their insurance against these shocks in response to lower public provision of such insurance, because they hardly supply any of it in the first place!

3.4 Wage insurance

In Table 6, we investigate the provision of wage insurance in the subsample of companies for which at least 5 consecutive years of wage data are available, estimating equation (2) and variants of it. The dependent variable is the real average wage in the corresponding firm-year. On the whole, the results for wage insurance are quite different from those shown in the previous tables for employment insurance.

[Insert Table 6]

First, the coefficient estimates in the top row are considerably smaller than those shown in the top row of Table 2, suggesting the presence of real wage stickiness: when faced by a sales shock in their industry, apparently firms tend to adjust more the number of their employees than their real wage.

Second, rather than providing better wage insurance than non-family ones, family firms appear to amplify real wage fluctuations: the coefficients of the third row are positive and significantly different from zero, at the 5% or at the 10% level depending on the specification. Family firms appear to require their workers to accept more flexible real wages in response to fluctuations in sales, even though they stand ready to save their jobs in downturns.

Finally, almost all interactions with country-level variables appear with insignificant coefficients in Table 6: neither the employment insurance provided by social security nor the degree of financial development appears to affect significantly the firm-level provision of wage insurance.

3.5 Do wages price employment insurance?

A central prediction of the implicit wage theory is that the insurance provided by firms to their employees should be "priced", namely that in exchange for more stable employment and/or wages, firms should be able to pay lower real wages. Using French data, Sraer and Thesmar (2007) and Bassanini et al. (2011) find evidence consistent with this prediction, in that they find that family firms not only stabilize employment but also pay lower wages. However, this prediction has not been tested for other countries, to the best of our knowledge.

In Table 7, we show that that the prediction that family firms pay lower wages, controlling for other factors, holds more generally around the world. The table shows regressions of the real average wage paid by a firm in a given year on the family-firm dummy and its interactions with public unemployment security and financial development, on the usual set of firm-level controls, and country-industry fixed effects. In the specification of column 4, instead, we include firm-level fixed effects, and therefore we drop the family-firm dummy to avoid perfect collinearity.

The coefficient of the family-firm dummy is negative and significant, and implies that the average real wage paid by family firms is 15% lower than the average wage in the sample. The coefficient of the interaction of this dummy with the unemployment security indicates that this effect is considerably smaller when the social security system provides a good protection against unemployment, which is perfectly consistent with our earlier finding that in this case family firms refrain from providing much employment insurance themselves: they insure their workers less, hence they get a lower discount on the wage bill that they pay. Instead, as in all previous estimates,

[Insert Table 7]

More generally, in our sample firms that provide less employment insurance pay higher real wages: the finding is not limited to the comparison between family and non-family firms. This is illustrated by Figure 2, which shows a cross-sectional plot of the elasticity of employment to firm-level sale shocks against the average real wage that they pay. More precisely, the measure reported on the horizontal axis is a firm-level estimate of the elasticity of employment to the unexpected component of firm-level sales, controlling for country-industry and time fixed effects and for firm-level variables, while the variable shown on the vertical axis is the residual of a cross-sectional regression of the average real wage on fixed country, time and industry fixed effects (in order to control for the

country-, time- and industry-related variability in the level of real wages). The relationship is clearly positive, indicating that firms whose employment responds more to shocks in their sales must compensate their employees with higher real wages.

4. Employment insurance: are state-owned firms, business groups or multinationals different?

Family ownership is only one of the firm characteristics that may be expected to be associated with greater risk sharing with employees. In this section we consider three other distinctions that may play a similar role.

First, we inquire whether state-owned firms provide more stable employment than privately owned ones, by estimating regressions with the same specification used in Table 2 with the only difference that the family-firm dummy is replaced by a state-owned-firm dummy, which equals 1 for companies where the ultimate blockholder is the government, and 0 otherwise. As expected, state-owned companies provide completely stable employment: the coefficients in the third row of the table completely offset those in the first row, exactly as for family firms in Table 2. However, differently from family firms, state-owned firms do not reduce their provision of employment insurance in countries where workers enjoy good protection from the social security system. This suggests that the reason why state-owned and family firms provide such insurance is a different one: a possible explanation is that state-owned firms do so because of political constraints, which are insensitive to the demand for security expressed by their employees, and therefore by their willingness to accept lower wages in exchange for it.

[Insert Table 8]

The evidence in Table 9 shows that business groups provide more employment insurance than standalone firms. This likely reflects the fact that they have a more diversified product structure, so that they can compensate the drop in profits arising from drops in sales shocks in one line of business with the rise in profits arising from increases in sales in other lines of business. In other words, by their very nature, they are better hedged against industry-specific shocks, and therefore can provide more stable employment.

[Insert Table 9]

Finally, Table 10 investigates whether also multinational firms deploy their cross-country diversification to provide better employment protection against industry-specific sales shocks. This appears indeed to be the case: like family-owned and state-owned companies, multinational companies provide stable employment: the coefficients in the third row of the table precisely offset those in the first row of Table 10.

[Insert Table 10]

5. Conclusions

This paper investigates investigate the determinants of employment and wage insurance that firms offer to their employees, by looking at characteristics that enable firms to provide more insurance to them and at country characteristics that affect workers' need for insurance, chiefly the provision of unemployment insurance by the social security system.

We find that family firms provide more employment protection but less wage stability than non-family ones, and supply less employment protection in countries where this protection is more generously provided by the social security system. Moreover, the employment protection provided by firms is priced: in particular, family firms pay a 15% lower average wage, controlling for country, industry and time effects.

Finally, state-owned firms provide more employment stability than privately owned ones, and the same applies to business groups relative to standalone companies, and to multinationals relative to domestic companies.

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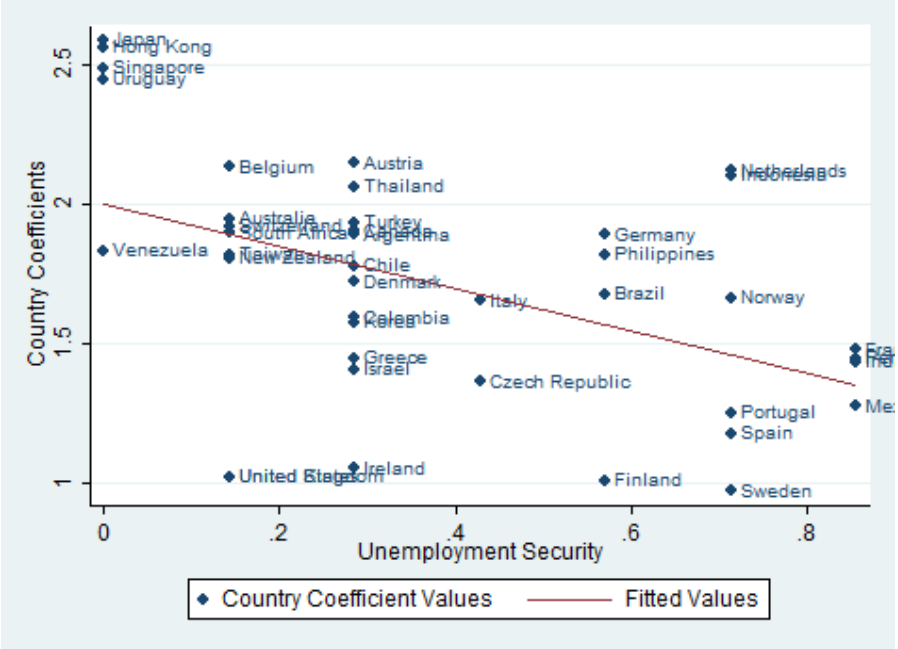

Figure 1. Employment Insurance in Family Firms and Public Provision of Unemployment Security. The variable shown on the horizontal axis is the measure of the protection offered by social security legislation provided by Botero et al. (2004) and described in Section 1.1. The measure reported on the vertical axis is a country-level measure of employment insurance provided by family firms, estimated as the percentage reduction that family firms induce in the elasticity of employment to the unexpected component of firm-level sales.

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Figure 2. Employment Sensitivity to Firm-Level Sale Shocks and Average Real Wage. The measure reported on the horizontal axis is a firm-level estimate of the elasticity of employment to the unexpected component of firm-level sales, controlling for country-industry and time fixed effects and for firm-level variables. The variable shown on the vertical axis is the residual of a cross-sectional regression of the average real wage on fixed country, time and industry fixed effects.

Table 1. Descriptive Statistics

Column 1 reports the number of Non-Family Firms in each country in our sample. Column 2 reports the number of Family Firms in each country in our sample. Columns 3 and 4 report the average annual sales growth of Non-Family Firms and Family Firms respectively over the sample period from 1988 to 2011. Columns 5 and 6 report the average total employment at the firm-level of Non-Family Firms and Family Firms respectively over the sample period from 1988 to 2011. Column 7 reports the index of unemployment benefits from Botero et al. (2004) and is calculated as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell. Column 8 reports a measure of worker protection granted by law or mandatory collective agreements against dismissal obtained from Botero et al. (2004) and it is the average of the following seven dummy variables which equal one: (1) if the employer must notify a third party before dismissing more than one worker; (2) if the employer needs the approval of a third party prior to dismissing more than one worker; (3) if the employer must notify a third party before dismissing one redundant worker; (4) if the employer needs the approval of a third party to dismiss one redundant worker; (5) if the employer must provide relocation or retraining alternatives for redundant employees prior to dismissal; (6) if there are priority rules applying to dismissal or lay-offs; and (7) if there are priority rules applying to re-employment. Column 9 reports the unemployment duration which is measured as the percentage of total unemployment which persists for one year or longer.

	Number of Non-Family Firms	Number of Family Firms	Sales Growth of Non-Family Firms	Sales Growth of Family Firms	Employment of Non-Family Firms	Employment of Family Firms	Unemployment Benefit Index	Dismissal Index	Unemployment Duration
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Argentina	9	18	0.08	0.10	3,859	2,109	0.8372	0.2857	-
Australia	227	92	0.09	0.11	5,240	3,127	0.8419	0.1429	21.22
Austria	32	28	0.10	0.09	4,843	2,881	0.6618	0.2857	24.48
Belgium	29	22	0.08	0.10	5,073	3,048	0.7990	0.1429	48.89
Brazil	28	59	0.10	0.12	9,135	4,557	0.5634	0.5714	-
Canada	162	51	0.07	0.06	8,671	4,781	0.7035	0.2857	9.84
Chile	9	12	0.12	0.13	3,601	2,209	0.7818	0.2857	-
Colombia	7	15	0.11	0.14	3,102	1,922	0.9972	0.2857	-
Czech Republic	10	12	0.11	0.14	3,218	1,926	0.7513	0.4286	48.45
Denmark	30	24	0.08	0.07	4,929	2,186	0.7850	0.2857	19.26
Finland	54	46	0.09	0.10	6,011	3,277	0.8060	0.5714	25.67
France	207	204	0.10	0.07	12,155	8,768	0.8793	0.8571	39.80
Germany	249	220	0.09	0.06	12,862	8,942	0.7941	0.5714	48.11
Greece	8	19	0.04	0.05	3,214	2,209	0.7385	0.2857	44.05
Hong Kong	29	85	0.12	0.15	9,078	6,085	0.6910	0.0000	-
India	45	81	0.14	0.13	9,217	6,149	0.0000	0.8571	-
Indonesia	9	21	0.08	0.10	3,218	3,207	0.0000	0.7143	-

Ireland	45	11	0.07	0.06	5,045	2,110	0.8123	0.2857	37.52
Israel	37	42	0.09	0.08	4,379	2,815	0.8613	0.2857	27.33
Italy	51	85	0.07	0.06	9,729	7,522	0.7432	0.4286	51.42
Japan	448	195	0.09	0.08	11,006	4,335	0.7470	0.0000	38.25
Malaysia	15	28	0.07	0.05	3,745	2,497	0.0000	0.0000	-
Mexico	15	34	0.09	0.05	9,441	8,627	0.0000	0.8571	2.19
Netherlands	32	23	0.08	0.06	10,624	9,287	0.6855	0.7143	34.98
New Zealand	16	8	0.11	0.07	2,724	1,244	0.5629	0.1429	13.16
Norway	74	31	0.09	0.09	3,598	1,655	0.7958	0.7143	9.09
Peru	6	11	0.08	0.09	1,605	982	0.0000	0.8571	-
Philippines	28	38	0.09	0.07	3,072	1,805	0.0000	0.5714	-
Portugal	22	28	0.07	0.05	3,833	1,788	0.9050	0.7143	42.79
Singapore	21	34	0.14	0.15	7,314	6,211	0.0000	0.0000	-
South Africa	20	11	0.12	0.09	6,221	2,519	0.7198	0.1429	-
South Korea	54	135	0.12	0.13	7,438	6,082	0.7726	0.2857	2.05
Spain	163	147	0.10	0.07	9,771	5,209	0.8073	0.7143	29.41
Sweden	84	58	0.09	0.06	10,283	7,081	0.8556	0.7143	19.62
Switzerland	74	51	0.10	0.07	11,409	7,108	0.9082	0.1429	28.50
Taiwan	32	54	0.14	0.12	5,740	4,911	0.8204	0.1429	-
Thailand	24	71	0.10	0.13	4,976	3,192	0.0000	0.2857	-
Turkey	12	30	0.09	0.12	4,287	2,210	0.0000	0.2857	26.52
United Kingdom	632	104	0.07	0.09	8,407	1,922	0.7643	0.1429	27.67
United States	887	105	0.06	0.07	14,195	1,107	0.6898	0.1429	11.42
Uruguay	5	14	0.08	0.10	1,091	822	0.7842	0.0000	-

Table 2. Employment Insurance in Family and non-Family Firms in Response to Shocks in Industry Sales

This table presents the estimates of a pooled regression model for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The independent variables are as follows: Δ Industry Sales is the yearly change of log sales of each industry *j* in year *t* excluding the log sales of firm *i* from the calculation; Family Firm is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is a family blockholder and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Δ Industry Sales	0.1402***	0.1383**	0.1106**	0.1004**	0.1263**
	(2.72)	(2.50)	(2.27)	(2.19)	(2.39)
Family Firms	0.0742	0.0653	0.0574	0.0514	-
	(1.44)	(1.27)	(1.21)	(1.18)	
Δ Industry Sales × Family Firms		-0.1621**	-0.1398**	-0.1287**	-0.1417**
		(-2.61)	(-2.49)	(-2.31)	(-2.40)
Δ Industry Sales × Unemployment Security			0.0324	0.0307	0.0359
			(1.56)	(1.42)	(1.57)
Δ Industry Sales × Family Firms × Unemployment Security			0.0928**	0.0754*	0.1104*
			(2.10)	(1.92)	(1.88)
Δ Industry Sales × Financial Development				0.0004	
				(0.92)	
Δ Industry Sales × Family Firms × Financial Development				-0.0003	
				(-1.04)	
Firm Size	-0.0009**	-0.0009**	-0.0008**	-0.0008**	-0.0009**
	(-2.60)	(-2.58)	(-2.49)	(-2.47)	(-2.39)
Asset Tangibility	0.0030	0.0028	0.0027	0.0026	0.0032
	(1.37)	(1.35)	(1.32)	(1.27)	(1.20)
Return on Assets	0.0032***	0.0029***	0.0028***	0.0027***	0.0035***
	(3.10)	(3.08)	(2.98)	(2.91)	(3.10)
Leverage	-0.0250	-0.0265	-0.0231	-0.0225	-0.0275
	(-1.02)	(-1.05)	(-0.97)	(-0.94)	(-0.91)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.41	0.45	0.49	0.50	0.56
Number of Observations	89,815	89,815	89,815	89,815	89,815

Table 3. Employment Insurance in Family and non-Family Firms in Response to Shocks in Firm-Level Sales

This table presents the estimates of a pooled regression model for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The independent variables are as follows: Idiosyncratic Shock is the residual from a first-stage GMM regression estimated with the Arellano-Bond method that explains the first difference of the log of sales of firm *i* in year *t*; Family Firm is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is a family blockholder and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Financial Development is the ratio of stock market capitalization to GDP; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; and Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Idiosyncratic Shock	0.1899***	0.1750***	0.1615***	0.1486**	0.1864**
	(2.99)	(2.78)	(2.51)	(2.35)	(2.60)
Family Firms	0.0185	0.0199	0.0134	0.0148	-
	(1.52)	(1.40)	(1.37)	(1.29)	
Idiosyncratic Shock × Family Firms		-0.2182***	-0.1983**	-0.1833**	-0.2142**
		(-2.82)	(-2.60)	(-2.45)	(2.59)
Idiosyncratic Shock × Unemployment Security			0.0424	0.0390	0.0463
			(1.59)	(1.44)	(1.61)
Idiosyncratic Shock × Family Firms × Unemployment Security			0.1133**	0.1018**	0.1102*
			(2.26)	(2.04)	(1.87)
Δ Industry Sales × Financial Development				0.0005	
				(0.91)	
Δ Industry Sales × Family Firms × Financial Development				-0.0004	
				(-1.10)	
Firm Size	-0.0011***	-0.0011***	-0.0010***	-0.0009**	-0.0011**
	(-2.93)	(-2.79)	(-2.71)	(-2.60)	(-2.52)
Asset Tangibility	0.0038	0.0034	0.0032	0.0030	0.0036
	(1.48)	(1.45)	(1.45)	(1.28)	(1.40)
Return on Assets	0.0040***	0.0039***	0.0037***	0.0034***	0.0040***
	(3.40)	(3.37)	(3.29)	(3.04)	(3.51)
Leverage	-0.0315	-0.0282	-0.0268	-0.0247	-0.0316
	(-1.12)	(-1.07)	(-1.04)	(-0.98)	(-1.01)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.15	0.18	0.20	0.21	0.27
Number of Observations	89,815	89,815	89,815	89,815	89,815

Table 4. Employment Insurance in Family and non-Family Firms in Response to Positive and Negative Shocks in Industry Sales

This table presents the estimates of a pooled regression model for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. In Panel A we show the results of the pooled regressions for years with negative industry-level shocks defined as the years when industry-level annual sales growth is negative. In Panel B we show the results of the pooled regressions for years with positive industry-level shocks defined as the years when industry-level annual sales growth is positive. The independent variables are as follows: Δ Industry Sales is the yearly change of log sales of each industry *j* in year *t* excluding the sales growth of firm *i* from the calculation; Family Firm is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is a family blockholder and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Financial Development is the ratio of stock market capitalization to GDP. Firm-level control variables are the following: Firm Size measured as the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility measured as the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets measured as the return on total assets of each firm *i* in year *t-1*; and Leverage measured as the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Panel A: Negative Shocks					
Δ Industry Sales	0.1114*** (3.06)	0.1065*** (2.76)	0.0995** (2.51)	0.0949** (2.44)	0.1136*** (2.79)
Family Firms	0.1012 (1.56)	0.1029 (1.41)	0.0912 (1.30)	0.0881 (1.19)	-
Δ Industry Sales × Family Firms		-0.1358*** (-2.89)	-0.1249*** (-2.80)	-0.1148** (-2.47)	-0.1507** (-2.64)
Δ Industry Sales × Unemployment Security			0.0130 (1.55)	0.0123 (1.48)	0.0144 (1.53)
Δ Industry Sales × Family Firms × Unemployment Security			0.1113** (2.21)	0.1045** (2.01)	0.1322* (2.20)
Δ Industry Sales × Financial Development				0.0004 (0.89)	
Δ Industry Sales × Family Firms × Financial Development				-0.0003 (-1.14)	
Firm-level Control Variables	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.28	0.28	0.29	0.30	0.32
Number of Observations	27,706	27,706	27,706	27,706	27,706

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Panel B: Positive Shocks

Δ Industry Sales	0.1609** (2.59)	0.1538** (2.44)	0.1438** (2.28)	0.1370** (2.10)	0.1642** (2.45)
Family Firms	0.0471 (1.31)	0.0476 (1.18)	0.0437 (1.11)	0.0394 (1.12)	-
Δ Industry Sales × Family Firms		-0.0728** (-2.02)	-0.0619* (-1.93)	-0.0583* (-1.90)	-0.0567* (-2.89)
Δ Industry Sales × Unemployment Security			0.0146 (1.41)	0.0138 (1.26)	0.0161 (1.50)
Δ Industry Sales × Family Firms × Unemployment Security			0.0186** (2.05)	0.0191* (1.88)	0.0221* (1.89)
Δ Industry Sales × Financial Development				0.0002 (0.88)	
Δ Industry Sales × Family Firms × Financial Development				-0.0003 (-1.09)	
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
$\boldsymbol{R^2}$	0.15	0.16	0.16	0.18	0.20
Number of Observations	62,109	62,109	62,109	62,109	62,109

Table 5. Employment Insurance in Family and non-Family Firms in Response to Transitory and Persistent Shocks in Industry Sales

This table presents the estimates of the sensitivity of employment to persistent and temporary shocks in sales for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The coefficient estimates are obtained by via two separate IV regressions, which identify the sensitivity to transitory shocks (Panel A) and to permanent ones (Panel B) respectively. Details about the specification of these two IV regressions are presented in the text. The independent variables are as follows: Transitory Shock is the transitory component of the sales of firm *i*; Family Firm is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is a family blockholder and 0 otherwise; Permanent Shock is the permanent component of the sales of firm *i*; Unemployment Security is the interaction measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)
Panel A: Transitory Shocks				
Transitory Shock	0.1851** (2.60)	0.1769** (2.51)	0.1654** (2.44)	0.1576** (2.29)
Transitory Shock × Family Firms	-0.2172*** (-2.92)	-0.1795*** (-2.78)	-0.1510** (-2.57)	-0.1408** (-2.30)
Transitory Shock × Unemployment Security			0.0254 (1.18)	0.0215 (1.12)
Transitory Shock × Family Firms × Unemployment Security			0.0980** (1.99)	0.0842* (1.80)
Firm-level Control Variables	No	Yes	Yes	Yes
Fixed Effects	Country-Industry-Year	Country-Industry-Year	Country-Industry-Year	Country-Industry-Year
F-test (p value)	<0.001	<0.001	<0.001	<0.001
Panel B: Permanent Shocks				
Permanent Shock	0.2173*** (3.05)	0.2077*** (2.98)	0.1941** (2.64)	0.1850** (2.47)
Permanent Shock × Family Firms	-0.1477* (-1.91)	-0.1256* (-1.84)	-0.1288 (-1.57)	-0.1085 (-1.40)
Permanent Shock × Unemployment Security			0.0190 (1.39)	0.0159 (1.24)
Permanent Shock × Family Firms × Unemployment Security			0.0260 (1.05)	0.0178 (1.01)
Firm-level Control Variables	No	Yes	Yes	Yes
Fixed Effects	Country-Industry-Year	Country-Industry-Year	Country-Industry-Year	Country-Industry-Year
F-test (p value)	<0.001	<0.001	<0.001	<0.001
Number of Observations	89,815	89,815	89,815	89,815

Table 6. Wage Insurance in Family and non-Family Firms in Response to Shocks in Industry Sales

This table presents the estimates of a pooled regression model for 2,485 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of the real average wage of firm *i* in year *t*. The independent variables are as follows: Δ Industry Sales is the yearly change of log sales of each industry *j* in year *t* excluding the log sales of firm *i* from the calculation; Family Firm is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is a family blockholder and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Δ Industry Sales	0.0426***	0.0391**	0.0340**	0.0295**	0.0427**
	(2.92)	(2.62)	(2.53)	(2.44)	(2.65)
Family Firms	-0.0209*	-0.0180*	-0.0051	-0.0048	
	(-1.88)	(-1.77)	(-1.72)	(-1.60)	-
Δ Industry Sales × Family Firms		0.0152**	0.0139*	0.0128*	0.0233**
		(2.21)	(1.92)	(1.87)	(2.35)
Δ Industry Sales × Unemployment			-0.0186*	-0.0178	-0.0212
Security			(-1.70)	(1.60)	(1.57)
Δ Industry Sales × Family Firms ×			0.0580*	0.0555	0.0662
Unemployment Security			(1.74)	(1.62)	(1.50)
Δ Industry Sales × Financial				-0.0002	
Development				(-1.05)	
Δ Industry Sales × Family Firms ×				0.0002	
Financial Development				(0.91)	
Firm Size	-0.0002**	-0.0002**	-0.0002**	-0.0002**	-0.0002***
	(-2.60)	(-2.54)	(-2.51)	(-2.49)	(-2.81)
Asset Tangibility	-0.0101	-0.0098	-0.0093	-0.0089	-0.0106
	(-1.19)	(-1.10)	(-1.09)	(-1.07)	(-0.91)
Return on Assets	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*
	(-1.88)	(-1.85)	(-1.77)	(-1.75)	(-1.83)
Leverage	0.0151*	0.0147*	0.0139*	0.0133*	0.0159
	(1.70)	(1.68)	(1.68)	(1.65)	(1.46)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.10	0.12	0.12	0.14	0.12
Number of Observations	25,409	25,409	25,409	25,409	25,409

Table 7. Price of Employment Insurance in Family Firms

This table presents the estimates of a pooled regression model for 2,485 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the log of the real average wage of firm *i* in year *t*. The independent variables are as follows: Family Firm is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is a family blockholder and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Financial Development is the ratio of stock market capitalization to GDP; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)
Family Firms	-1.1011** (-2.49)	-1.0350** (-2.28)	-1.0020** (-2.11)	-
Unemployment Security × Family Firms	0.4733** (2.07)	0.4449** (1.99)	0.4307* (1.87)	0.5896** (2.28)
Financial Development × Family Firms			0.0030 (0.92)	
Firm Size		1.0443** (2.41)	1.0110** (2.40)	1.2665** (2.56)
Asset Tangibility		0.0932* (1.87)	0.0902* (1.82)	0.1130* (1.80)
Return on Assets		1.7733*** (3.01)	1.7167*** (2.90)	2.1506*** (2.86)
Leverage		-0.5170 (1.22)	-0.5005 (1.19)	-0.6270 (1.25)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.08	0.09	0.11	0.14
Number of Observations	25,409	25,409	25,409	25,409

Table 8. Employment Insurance in State-Owned and Privately-Owned Firms in Response to Shocks in Industry Sales

This table presents the estimates of a pooled regression model for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The independent variables are as follows: Δ Industry Sales is the yearly change of log sales of each industry *j* in year *t* excluding the sales growth of firm *i* from the calculation; State-owned Firms is a dummy that takes the value of 1 if the firm *i*'s ultimate blockholder is the State and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Financial Development is the ratio of stock market capitalization to GDP; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; and Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Δ Industry Sales	0.1275***	0.1219**	0.1139**	0.1086**	0.1301**
	(2.78)	(2.58)	(2.51)	(2.49)	(2.21)
State-owned Firms	0.0970*	0.0981	0.0901	0.0811	-
	(1.80)	(1.62)	(1.53)	(1.47)	
Δ Industry Sales × State-owned Firms		-0.1360**	-0.1337**	-0.1243*	-0.1460*
		(-2.19)	(-2.05)	(-1.91)	(1.88)
Δ Industry Sales × Unemployment Security			0.0334	0.0316	0.0370
			(1.49)	(1.50)	(1.57)
Δ Industry Sales × State-owned Firms × Unemployment Security			0.0464	0.0477	0.0552
			(1.60)	(1.47)	(1.40)
Δ Industry Sales × Financial Development				0.0005	
				(0.96)	
Δ Industry Sales × State-owned Firms × Financial Development				-0.0003	
				(-1.11)	
Firm Size	-0.0009***	-0.0009***	-0.0009***	-0.0008***	-0.0009***
	(-2.81)	(-2.82)	(-2.77)	(-2.75)	(-2.74)
Asset Tangibility	0.0031	0.0028	0.0028	0.0027	0.0033
	(1.25)	(1.26)	(1.22)	(1.21)	(1.09)
Return on Assets	0.0033***	0.0030***	0.0029***	0.0028***	0.0036***
	(3.22)	(3.19)	(3.18)	(3.15)	(3.09)
Leverage	-0.0258	-0.0221	-0.0237	-0.0232	-0.0283
	(-1.03)	(-1.01)	(-0.97)	(-0.95)	(-1.10)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.22	0.25	0.26	0.28	0.30
Number of Observations	89,815	89,815	89,815	89,815	89,815

Table 9. Employment Insurance in Business Groups and Standalone Companies in Response to Shocks in Industry Sales

This table presents the estimates of a pooled regression model for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The independent variables are as follows: Δ Industry Sales is the yearly change of log sales of each industry *j* in year *t* excluding the sales growth of firm *i* from the calculation; Business Groups is a dummy that takes the value of 1 if the firm *i* forms part of a business group and 0 otherwise; Unemployment Security of country *c* where Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Financial Development is the ratio of stock market capitalization to GDP; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Δ Industry Sales	0.1300***	0.1242**	0.1161**	0.1107**	0.1326**
	(2.81)	(2.56)	(2.41)	(2.37)	(2.30)
Business Group	0.0989*	0.1009	0.0918	0.0827	-
	(1.72)	(1.64)	(1.59)	(1.54)	
Δ Industry Sales × Business Group		-0.1189**	-0.1168**	-0.1086**	-0.1276**
		(-2.47)	(-2.38)	(-2.21)	(-2.26)
Δ Industry Sales × Unemployment Security			0.0340	0.0322	0.0377
			(1.48)	(1.40)	(1.57)
Δ Industry Sales × Business Group × Unemployment Security			0.0557	0.0572	0.0662
			(1.60)	(1.61)	(1.48)
Δ Industry Sales × Financial Development				0.0005	
				(0.91)	
Δ Industry Sales × Business Group × Financial Development				-0.0003	
				(-1.10)	
Firm Size	-0.0009***	-0.0009***	-0.0009***	-0.0009***	-0.0010***
	(-2.81)	(-2.80)	(-2.81)	(-2.75)	(-2.99)
Asset Tangibility	0.0032	0.0029	0.0028	0.0027	0.0033
	(1.20)	(1.21)	(1.19)	(1.12)	(1.05)
Return on Assets	0.0034***	0.0031***	0.0029***	0.0028***	0.0036***
	(3.22)	(3.27)	(3.25)	(3.16)	(3.04)
Leverage	-0.0263	-0.0226	-0.0242	-0.0236	-0.0289
	(-0.98)	(-1.01)	(-0.97)	(-0.95)	(-0.91)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.29	0.31	0.32	0.34	0.37
Number of Observations	89,815	89,815	89,815	89,815	89,815

Table 10. Employment Insurance in Multinational and Domestic Firms in Response to Shocks in Industry Sales

This table presents the estimates of a pooled regression model for 6,298 firms from 41 countries over the period from 1988 to 2011. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The independent variables are as follows: Δ Industry Sales is the yearly change of log sales of each industry *j* in year *t* excluding the sales growth of firm *i* from the calculation; Multinational Firms is a dummy that takes the value of 1 if firm *i* is classified as a multinational and 0 otherwise; Unemployment Security measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law; (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits; (3) the waiting period for unemployment benefits; and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell; Financial Development is the ratio of stock market capitalization to GDP; Firm Size is the log of market capitalization of each firm *i* in year *t-1*; Asset Tangibility is the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t-1*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; and Leverage is the ratio of total debt to total assets of each firm *i* in year *t-1*. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)
Δ Industry Sales	0.1325**	0.1266**	0.1184**	0.1351**
	(2.60)	(2.55)	(2.42)	(2.38)
Multinational Firms	0.1007*	0.1019	0.0936	-
	(1.71)	(1.58)	(1.51)	
Δ Industry Sales × Multinational Firms		-0.1123**	-0.1103**	-0.1205**
		(2.64)	(-2.47)	(-2.51)
Firm Size	-0.0010***	-0.0009***	-0.0009***	-0.0010***
	(-2.91)	(-2.90)	(-2.80)	(-2.95)
Asset Tangibility	0.0032	0.0029	0.0029	0.0034
	(1.40)	(1.38)	(1.35)	(1.32)
Return on Assets	0.0034***	0.0031***	0.0030***	0.0037***
	(3.20)	(3.24)	(3.19)	(3.15)
Leverage	-0.0268	-0.0230	-0.0247	-0.0294
	(-0.97)	(-0.95)	(-0.96)	(-1.02)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.32	0.34	0.37	0.41
Number of Observations	89,815	89,815	89,815	89,815