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Abstract

We investigate the determinants of firms' implicit employment and wage insurance to employees against industry-level and idiosyncratic shocks. We rely on differences between family and non-family firms to identify the supply of insurance, and between national public insurance programs to gauge workers' demand for insurance. Using firm-level data from 41 countries, we find that family firms provide greater employment protection but less wage stability. Employment protection comes at a price: family firms pay 5 percent lower wages, controlling for country, industry and time effects. The additional protection afforded by family firms is greater, and the wage discount larger, the less generous the public unemployment insurance program, indicating that firm and government employment insurance are substitutes. The cross-country evidence is broadly confirmed by Italian employee-employer matched data, which also show that in family firms the adjustment to shocks occurs mostly through the hiring margin, while separations are not responsive to shocks.

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

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

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"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, former CEO of FIAT, 2013)[2]

The idea that entrepreneurs insure workers against risk by giving them a stable income dates back at least 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" (p. 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 and (under more restrictive conditions) employment from adverse shocks to production, in exchange for a lower average salary.[3] Entrepreneurs' lesser risk-aversion may not be rooted in their preferences but in 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 Berk and Walden (2013) observe, capital markets enable firms to offload the risk they assume from workers with firm-specific human capital by giving them a lifetime wage that is totally insensitive to firm-specific risk.

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

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

[3] Azariadis (1975) shows that firms offer full employment insurance only if the product price is not too variable and economy-wide labor demand is above average.

Implicit contract theory rests on two basic assumptions. First, since the contract is implicit it must be self-enforcing: in particular, the firm must be able to commit to honor its promises even in the event of a bad shock. We call this the *supply* determinant of insurance provision. Second, workers must value the insurance provided: this is a *demand* determinant of firm-level insurance. We exploit heterogeneity along these two dimensions to study the role of firms as providers of insurance to their employees in a panel of firms from 41 countries and in a matched employer-employee dataset for Italy. On the supply side, we follow the previous literature (for instance, Sraer and Thesmar, 2007), which views family firms as better positioned than non-family firms to sustain implicit insurance contracts. On the demand side, we use differences across countries and over time in the extent of public social insurance programs: where the government provides more insurance, workers can be expected to demand less from firms. Accordingly our baseline test addresses two questions: Do family firms actually provide more insurance? And does the difference depend on the amount of public insurance?

There is a good deal of anecdotal evidence that family and non-family firms differ in their credibility as providers of insurance, as the two epigraphs above illustrate. Family firms are less likely to breach implicit contracts with their employees, because the reputation of the controlling family is at stake. Long-term ownership and control, possibly over generations, enables them to win the trust of their employees, giving them a strong incentive, in order to retain it, to keep their promises. Their credibility is also buttressed by their characteristic invulnerability to hostile takeovers, and hence to unforeseen changes in control, as argued by Shleifer and Summers (1988).[4] In the context of implicit contract theory, this "commitment hypothesis" implies that family firms can credibly offer both more secure employment and more stable wages than non-family firms. Of course, to deliver on this commitment they must be able to access financial markets in order to smooth shocks. Therefore, when they are not threatened by financial distress they should be able to provide more insurance. In exchange for this security, they will be able to pay lower wages, effectively earning an "insurance premium".

[4] A firm's implicit contracts with its employees lack credibility where control is contestable, because the firm may be taken over by an entrepreneur who is not bound by this commitment. Shleifer and Summers (1988) argue that a corporate raider may be attracted precisely by the potential short-run gain from breaching such contracts, as by firing workers when sales diminish or cutting wages once employees' investment in firm-specific human capital is sunk.

Family firms are also known to feature more "paternalistic" and less confrontational labor relations, as Charles Heinz, vice-president of the Heinz company testifies: "I think the fact that I'm in the Heinz family helps make for a better climate in labor negotiations" (Mueller and Philippon, 2011, p. 218). Hence they may offer greater employment stability not only because of their commitment ability, but also because they can persuade their employees to accept wage reductions in the case of adverse events. In other words, insofar as they face less friction in ex-post wage bargaining, family firms can retain their employees even in bad times when this is efficient (as their marginal product still exceeds their reservation wage) by negotiating wage reductions. Under this "renegotiation hypothesis", family firms should be expected to provide more employment insurance at the cost of less wage insurance. This implication differs from the pure implicit contract model, which predicts that wages too are stabilized. By examining how wages react to shocks, therefore, one can assess the relative importance of these two mechanisms.

A second class of reasons why firms may differ in the provision of insurance to employees has to do with the extent of substitute social arrangements, which limit employees' *demand* for insurance from their employers. Workers are less likely to demand insurance from firms in countries where its value is diminished by the ample availability of public social security arrangements, such as unemployment insurance and job retraining programs. Empirically, we proxy the variation in workers' demand for insurance between countries and over time with the income replacement rate, i.e the ratio of unemployment benefits to previous salary. Since workers are also less likely to demand insurance against the loss of employment in countries and periods in which they expect to find a new job relatively quickly, we also explore whether the employment stability provided by firms depends on the tightness of the labor market. Clearly, where unemployment programs provide substantial insurance to workers, the potential advantage of family firms should vanish, whereas in countries where the government provides limited unemployment benefits it should be substantial. This suggests a natural differences-in-differences strategy, based on the interaction between family-firm status and national social security provision, to investigate whether family firms and social security actually are substitutes.

In our tests we rely on two different datasets: (i) a firm-level dataset comprising 7,108 firms in 41 countries, which allows us to exploit cross-country and temporal variations in social security arrangements and labor market characteristics; (ii) a matched firm-worker

dataset for Italy with information on firms' separation and hiring decisions and individual workers' wages and characteristics. We measure shocks to firms as fluctuations in industry-level sales or as the unanticipated component of the change in firm-level sales. We further decompose shocks into temporary and permanent components and assess employment and wage insurance by estimating the elasticity of employment changes (or, in the Italian data, separations and hires separately) to the shocks and to their temporary and permanent components.

The evidence from our international panel data is that family firms do in fact stabilize employment more than non-family firms, and that their insurance provision is greater in countries and periods where that of the public sector is less extensive, presumably making firm-level insurance more valuable to workers. There is also some evidence that family firms provide less employment insurance in situations where it is easy to get another job, i.e. where the long-term unemployment rate is low. Moreover, as predicted by Gamber (1988), family firms appear to be better able to provide employment insurance in response to transitory than to permanent shocks. Finally, their insurance capability depends on their financial soundness: family firms with very low *z*-scores are virtually indistinguishable from equally distressed non-family firms in providing insurance to their employees. In other words, if a family firm lacks access to the financial market, as distressed companies typically do, its superior ability to commit to insurance becomes irrelevant.

We then inquire whether firms differ in their provision of wage insurance. Both the international and the Italian data show that family firms actually provide *less* wage insurance than non-family firms. Since they also provide more employment insurance, this finding is consistent with the "renegotiation hypothesis" outlined above; with the idea, that is, that greater trust in industrial relations enables family firms to provide job security in exchange for wage flexibility. Further, the data suggest that the employment security provided by the public sector does not affect the provision of wage insurance by firms, and by family firms in particular.[5]

Besides accepting greater wage flexibility, family firms' employees also appear to be willing to accept lower wage levels. In our cross-country data, wages in family firms are 5 percent lower on average, controlling for country, industry and time effects. In principle,

[5]These results are obtained on a considerably smaller sample than those regarding employment insurance, since our international dataset excludes wage indications for over 50 percent of the firms for which we have employment data.

the wage differential may depend on differences in workforce skills. And in fact, in our more granular Italian dataset the differential is only 2 percent controlling for the observable characteristics of firms and workers. The effect persists when we also control for unobserved heterogeneity among workers by examining the workers who shift from family to non-family firms or vice-versa. The wage discount that family firms enjoy accords with the predictions of the implicit contract theory of Baily (1974) and Azariadis (1975) jointly with the "commitment hypothesis"; namely, with the idea that family firms are more credible in the provision of insurance. But, as noted, implicit contract theory alone cannot fully explain the empirical findings. Under that theory, workers should accept a lower average wage in exchange for wage stability, but our data suggest that instead they enjoy greater job stability but less wage stability.

We perform a series of robustness checks and tests for alternative explanations. One might argue that family firms provide more stable employment because they use different technologies, have a better match with their employees, or invest more in human capital and so have a stronger incentive to retain their workers. However, this explanation is hard to reconcile with the cross-country patterns detected. In fact, the substitutability between public and private employment insurance suggests that the comparative advantage of family firms in the provision of insurance to employees does not depend on technological differences with respect to non-family firms, which are unlikely to vary across countries or over time and all the more unlikely to correlate with social security arrangements. Instead, differences in social security shift the demand for insurance, controlling for supply characteristics. We also test the role of technological differences directly, repeating the estimation on a sample of family firms matched with similarly-sized non-family firms in the same industry and country; on this basis, we find that our results cannot be explained by industry- or size-related differences. We also control for the degree of financial development, which might affect both supply and demand for insurance, and find that it affects neither the typical firm's ability to provide employment insurance nor the difference in the insurance provision by type of firm. Finally, our results are robust to several other modifications of the empirical design and to alternative definitions of the variables, such as the way the shocks are constructed and family firms identified.

Our study differs from previous works on risk-sharing within firms, which focus on single countries and accordingly cannot explore how differences in public unemployment

insurance influence risk-sharing or disentangle demand from supply considerations. The previous literature deals exclusively with the way in which firms' characteristics (ownership, control or capital structure) and type of shock affect risk-sharing with employees.

Several papers examine the difference between family and non-family firms in France, where family firms appear to provide more employment insurance: Sraer and Thesmar (2007) and Bassanini et al. (2013) demonstrate that in heir-managed firms employment is less sensitive to industry-wide sales shocks, average wages are lower and profits higher, as implicit contract theory maintains. Employment insurance also seems to buy social peace: family firms not only have lower job turnover but less wage renegotiation (Bach and Serrano-Velarde, 2010), but also have fewer strikes and a less unionized work force, inflict sanctions less commonly and undergo litigation less frequently (Müller and Philippon, 2007; Waxin, 2009). For Italy, D'Aurizio and Romano (2013) 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, more distant 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 percent of the workforce are less common (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 seek to determine whether Germany's mandated 50 percent 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 in firms with parity codetermination are protected against layoffs and wage cuts, but not unskilled workers. And white collar workers alone pay for this benefit with an insurance premium (of 3 percent) in the form of lower wages.

There is also evidence that firms' ability to access credit affects their ability to provide risk-sharing benefits. Sharpe (1994) documents that, in the United States, employment responds more sharply to fluctuations in aggregate output in the more highly leveraged firms. Caggese and Cuñat (2008) build and calibrate a dynamic model in which financially constrained firms tend to have greater resort to temporary workers, who absorb a larger portion of overall employment volatility than in unconstrained firms. These

predictions are confirmed by their empirical estimates for a panel of small and medium-sized Italian manufacturing firms in 1995-2000.

Another strand of research investigates firms' wage insurance against temporary and permanent shocks. Guiso, Pistaferri and Schivardi (2005) show that Italian workers' earnings are consistent with full insurance against transitory shocks to the firm's value added, and considerable insurance even against permanent shocks: the standard deviation of wage growth shocks is 12 percent, compared with a hypothetical value of 40 percent in the case of no insurance. 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 organized as follows. Section 1 lays out the empirical methodology; Section 2 describes the data; Section 3 presents the evidence based on our international dataset, Section 4 that from the Italian data. Section 5 concludes.

1. The empirical methodology

Our main aim is to gauge how the extent of risk-sharing within firms depends on firms' ownership structure and other characteristics, and on relevant country characteristics, namely the extent of public social security insurance, the severity of unemployment hardship and the degree of financial development. Firms may offer insurance to their employees by stabilizing jobs and/or their wages in the face of falling demand – for example, by not dismissing workers or requiring wage cuts when the industry's or the firm's sales decline. Our methodology is to estimate the elasticity of employment or wages to "shocks" in sales and explore how it varies with the above factors– especially how it differs between family and non-family firms, and how it varies with social security arrangements, unemployment hardship and country-level financial development. In different specifications of our regressions, we adopt different definitions of a "shock" in sales: in most, it is the percentage change in the industry's sales; in some it is an idiosyncratic firm-level shock, measured as the unexpected component of the change in the firm's sales. In still other specifications, we break down the change in sales into positive and negative, or transitory and persistent components.

1.1 The basic setup

Our methodology is best illustrated by considering the baseline specification of the employment regression that we use to investigate how the provision of employment insurance differs between family and non-family firms in our international sample:

$$n_{it} = \beta_1 \varepsilon_{it} + \beta_2 \varepsilon_{it} F_{it} + \beta_3 \varepsilon_{it} S_{ct} + \beta_4 \varepsilon_{it} F_{it} S_{ct} + \beta_5 F_{it} + \beta_6 S_{ct} + \beta_7 F_{it} S_{ct} + \gamma' X_{it-1} + \mu_{cj} + \mu_t + u_{it}, \quad (1)$$

where the subscripts *i*, *j*, *c* and *t* index firms, industries, countries and years respectively, n_{it} is the log of the growth rate in employment of firm i in year *t*, ε_{it} is a shock to the sales of firm *i* (or of its industry *j* less firm *i*) in year *t*, F_{it} is a family-firm dummy equal to 1 for family-owned firms and 0 for non-family firms, S_{ct} is a measure of the income replacement rate (to gauge the effectiveness of public employment insurance) in country *c* and year *t*, and X_{it-1} is a vector of company-specific variables measured in year $t-1$: 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_{it} is the error term. In some specifications we also use firm fixed effects instead of country-industry effects.

The coefficient β_1 measures the elasticity of employment to the sales shock in non-family firms, β_2 measures the difference in that elasticity between family and non-family firms, β_3 captures the effect of public insurance on risk-sharing within firms, β_4 captures the differential effect of public insurance on risk-sharing in family firms, β_5 controls for potential differences in the rate of employment growth between family and non-family firms, β_6 controls for the baseline effect of public insurance on employment growth, and β_7 allows for family-owned firms to have different employment growth rates in countries with different public insurance systems. This means, for instance, that $\beta_2 < 0$ indicates that employment responds less to shocks in family than in non-family firms ($\beta_2 = -\beta_1$ being the case of full insurance by family firms), $\beta_3 > 0$ that better public insurance is associated with a greater response of employment to shocks (i.e. less employment insurance provision by firms), and $\beta_4 > 0$ that this effect is stronger for

family firms (i.e., the difference in insurance provision between family and non-family firms shrinks as public insurance increases).

In other specifications of the employment equation, we replace or complement the S_{ct} variable with a measure of labor market tightness and a measure of financial development. We expect that a tight labor market, where dismissed workers are unlikely to remain unemployed for long, should lower the demand for employment insurance from firms and so intensify the response of employment to shocks. Therefore, the interaction of labor market tightness with the shock (and possibly also that with the shock and the family-firm dummy) should have a positive coefficient. The coefficient of the double interaction between financial development and the shock ε_{it} is ambivalent, since financial development may enhance the supply of employment insurance by firms but may also serve workers' demand for it: the coefficient should be negative if a more highly developed financial market principally increases firms' supply of insurance by allowing them to better diversify the risk from insuring workers; but it should be positive if, instead, more highly developed capital markets have the principal effect of diminishing workers' demand for insurance from their employers by enabling them to deal with job loss either by borrowing or through private insurance. Finally, the coefficient of the triple interaction between financial development, the shock ε_{it} and the family-firm dummy should capture the differential effect of financial development on the insurance provided by family firms: a positive coefficient here would indicate that less developed financial markets are associated with a comparative disadvantage of family firms in insurance provision.

Firms should be better positioned to insure their employees against transitory than persistent shocks. This prediction was first tested and corroborated by Gamber (1988) with reference to wage insurance, and then with more sophisticated empirical methodologies by Guiso, Pistaferri and Schivardi (2005) for Italy, by Cardoso and Portela (2009) for Portugal, by Kàtai (2008) for Hungary, and by Guertzgen (2013) for Germany. As far as we know, however, the prediction has not been tested for employment insurance. In one of our specifications, we investigate whether employment responds differently to persistent and to transitory shocks to sales, and whether the extent of the difference varies between family and non-family firms. To this end we adapt the approach taken by Guiso, Pistaferri and Schivardi (2005) to the case of employment insurance, simplifying some of their assumptions (see the Appendix for details).

We also test whether firms differ in propensity to stabilize wages, and specifically whether this type of insurance differs between family and non-family firms and across countries with different levels of public employment insurance, labor market tightness and/or 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:

$$w_{it} = \delta_1\varepsilon_{it} + \delta_2\varepsilon_{it}F_{it} + \delta_3\varepsilon_{it}S_{ct} + \delta_4\varepsilon_{it}F_{it}S_{ct} + \delta_5F_{it} + \delta_6S_{ct} + \delta_7F_{it}S_{ct} + \phi' X_{it-1} + \mu_{cj} + \mu_t + u_{it}, \quad (2)$$

Unfortunately, as explained below, the sample for estimating this regression is considerably smaller than for employment equation (1), as wage data are available for only about 43 percent of the firms for which we have employment data.

Finally, we can test an important prediction of implicit contract theory, namely that the employment or wage insurance provided by companies to their employees will be "priced" in their wages, in the sense that companies that offer more stable employment or wages can pay less for their workers' services. We test this hypothesis in two ways. First, since the estimates of equation (1) and its variants indicate that family firms offer more job security, we test whether the average wage at family firms is lower than at non-family firms, controlling for various firm and country characteristics. Second, we test whether the average wage at firm level is correlated with the 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*:

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

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

1.2 The methodology for the Italian data

Our specifications for the Italian data closely resemble those shown in (1)-(3) and Section 1.2 for transitory and shocks, but with a few differences. First, since this is a country-specific dataset, we cannot include a variable that measures the relative effectiveness of

public employment insurance. Second, as will be explained in Section 3, the Italian data show not only total employment growth at firm level but also separations and hires, so we also estimate specification (1) separately for these two cases. This enables us to derive more precise conclusions about employment insurance – it should take the form of fewer dismissals rather than more hires, an effect that may be concealed by the overall employment growth rate. Third, the Italian data, at worker-firm level, specify a number of worker characteristics, including qualifications. This means that in estimating the wage equation (3) we can control for these characteristics or introduce worker fixed effects.

2. Evidence from the international data

To gauge the differential ability of firms to provide employment and wage insurance in different countries, with different unemployment insurance systems, we bring together three types of data: (i) firm-level measures of employment, wages and sales and other characteristics such as total assets, leverage, asset tangibility and profitability; (ii) firm ownership, to classify firms as family or non-family firms; and (iii) country-level measures of public unemployment insurance, labor market tightness and financial development.

2.1 Sources and definitions

Employment, wage and financial data for firms outside the U.S. are drawn from Worldscope and Osiris and for U.S. firms from Compustat, which contains historical data from the financial reports of listed companies. We collect data for firms incorporated and listed in 41 countries in the period 1988-2012, with two screens: we eliminate financial institutions and firms that do not have employment data (total number of employees at firm level) for at least seven consecutive years, so that we can compute employment insurance over a reasonably long period. This leaves 7,209 firms and 109,527 firm-year observations. However, wage data (total staff costs at the firm level) for at least seven consecutive years are available for only 3,110 firms.

Ownership data come from Ellul et al. (2010): family firms are defined as those where a family blockholder is the ultimate largest shareholder, has at least 20 percent of the firm's cash flow rights, and is present in the firm's management. This strict definition is

applied in all our baseline tests, but we then check robustness by relaxing it in two ways: (a) lowering the threshold for cash flow rights to 10 percent, or (b) retaining the 20 percent threshold but removing the requirement of presence in the firm's management.

Country-level data on government unemployment insurance come from various sources. First, from Aleksynska and Schindler (2011) we draw the gross replacement rate (GRR), calculated as the unemployment insurance benefits received by a worker over the first two years of unemployment as a fraction of last gross earnings.[6] Importantly, as we shall see below, this indicator of unemployment insurance varies considerably over time, not just across countries. In unreported regressions, we also use two other (time-invariant) measures of legal employment protection drawn from Botero et al. (2004), one gauging social security legislation[7] and the other determining employment protection legislation (EPL) against dismissal.[8]

Finally, we measure labor market tightness as the reciprocal of the share of long-term in total unemployment ("long-term" defined as 12 months or more), drawn from OECD (2012), higher values indicating shorter unemployment duration, hence greater security. While the previous three measures capture the quality of the public safety net for dismissed workers, labor market tightness captures the likelihood of finding a new job quickly, hence the extent to which the state of the labor market itself mitigates unemployment hardship. This variable therefore captures a different dimension of the demand for employment insurance. Since we have no strong a priori view about which of

[6] As Aleksynska and Schindler (2011) provide GRR data only up to 2005, we extend it to 2012 using public data sources: for the OECD countries, data from the OECD, and for non-OECD countries various sources, namely the "Social Security Programs Throughout the World" reports, the MISSOC reports and the LABREF reports.

[7] The measure of the protection offered by social security legislation is calculated by Botero at al. (2004) as the average of four variables, each normalized to between 0 and 1: (1) number of months of contributions or employment required to qualify for unemployment benefits, redefined so that where higher values mean less contributions; (2) the percentage of monthly salary deducted 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.

[8] This measure is the average of the following seven dummy variables, which take the value 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.

these matters most to firms' provision of job insurance, we allow for all four different measures in our specifications.

2.2 Descriptive statistics

Table 1 gives the number of firms for each of the 41 countries in our sample. As expected, there is significant variation, with the U.S., Japan, the United Kingdom, Germany, France and Australia having the largest samples of firms.

[Insert Table 1]

Columns 1 and 2 show the number of non-family and family firms in each country, with significant dispersion of both types across countries. The United Kingdom, Canada, South Africa, Japan and Australia have a relatively small number of family firms, while Argentina, Brazil, Germany, France, Hong Kong, Singapore, South Korea and Taiwan have relatively more. In some countries, such as Brazil, Israel, India, Chile and Hong Kong, listed family firms outnumber the non-family firms. Columns 3 and 4 report average sales growth for non-family and family firms respectively. Broadly speaking, firms in emerging markets have higher annual sales growth than in developed countries but there is also significant dispersion in sales growth of family and non-family firms: in some countries (e.g. Brazil, Singapore, Hong Kong and Czech Republic) the former is greater than the latter, while in others (e.g. India, Mexico, Canada and Italy) the opposite is true. Columns 5 and 6 show average total employment in non-family and family firms. In almost all countries family firms have fewer workers, which is consistent with the literature on the relative size of family and non-family firms.[9]

Column 7 shows the average gross income replacement rates for the countries in our sample. There are significant differences: for example, in Singapore, Mexico, Indonesia and Columbia the replacement rate is zero; in Canada it exceeds 0.50, and in the Netherlands, Norway, Portugal, Spain, Sweden and Switzerland it is over 0.60. In addition, the rates vary very significantly over time in a good many countries. For example, Japan's replacement rate was 0.29 until 1995, edged up to 0.32 in 1999, and then dropped down to 0.22 in 2005. Taiwan had replacement rates equal to zero up to 1998 and then introduced unemployment insurance. Figure 1, which shows the time series

[9] The median number of workers is smaller than the mean reported here for both family and non-family firms. Even using medians, however, we find that family firms have a smaller workforce.

of the average gross replacement rates by continent (Asia, Oceania, Europe, North America, and South America), confirms the considerable variability over our sample period.

[Insert Figure 1]

Finally, column 8 shows country-level measures of public unemployment benefits, drawn from Botero et al. (2004), and column 9 reports unemployment duration (i.e. the share of long-term joblessness of 12 months or more) for OECD countries.[10] There are also differences across countries in each of these two measures, albeit less significant than for the GRR measure. For example, in Mexico and South Korea long-term unemployment is around 2 percent of total unemployment, whereas in Italy and Belgium it is around 50 percent. These statistics show that the variability across countries and over time is wide enough to investigate the demand side of employment and wage insurance. Interestingly, the GRR measure shows a significant positive correlation with the social security legislation measure from Botero et al. (2004) but a weak correlation with the unemployment duration measure. This suggests that the two indicators capture different dimensions of publicly provided employment security.

3. Employment insurance in family and non-family firms

Here we investigate the regression results on the extent to which family and non-family firms provide employment insurance, controlling for that furnished by the social security system, for labor market tightness, and for the country's level of financial development.

3.1 Employment insurance: sales shocks at industry and firm level

Table 2 shows the estimates of various specifications of the employment growth equation (1), where the sales shock for each firm-year observation is the contemporaneous growth in sales in the rest of the firm's industry and in the country. The regressions in columns 1-5 include country-industry fixed effects, while column 6 includes firm fixed effects to

[10] The table shows the average share of long-term unemployment, *not* its reciprocal, the variable we define as "labor market tightness" and use in our empirical analysis.

control for any time-invariant unobserved heterogeneity at the firm level. The standard errors are clustered at firm level.[11]

[Insert Table 2]

The baseline elasticity of employment to industry sales (top row) is positive and significant ($\beta_1 > 0$): it ranges between 11% and 16% depending on the specification. The rate of employment growth does not appear to differ significantly between family and non-family firms ($\beta_5 = 0$).

More interestingly, in family firms the response of employment to sales is considerably milder than in non-family ones ($\beta_2 < 0$). In fact, it does not respond at all to industry sales shocks, as the coefficient of the interaction between the shock and the family-firm dummy (third row) completely offsets the baseline elasticity (first row): the hypothesis $\beta_2 = -\beta_1$ cannot be rejected in any of the specifications (1) to (6).

Turning to the effect of social security, the estimates in columns 2-6 indicate that better public insurance (measured by gross replacement rates)[12] is not associated with a significantly different degree of employment insurance by non-family firms (the hypothesis that $\beta_3 = 0$ cannot be rejected); but it is associated with significantly lower provision of insurance by family firms, i.e. a greater sensitivity in their employment to sales shocks ($\beta_4 > 0$). Specifically, testing the effect of the GRR measure in column 2, we find that the estimated coefficient of the interaction between the industry shock, the family-firm dummy and GRR is statistically significant at the 1 percent confidence level and strongly economically significant. In column 3, we replace this interaction variable with that between the shock, the family-firm dummy and labor market tightness (in addition to that between the shock and labor market tightness): the coefficient indicates that family firms provide less employment insurance when the labor market is tight. Then, in column 4, we test the effect of the GRR measure jointly with labor market tightness: again, family firms in countries with extensive social security coverage appear to provide less employment insurance, but the estimate is less significant (a confidence level of 5 percent). The coefficient of the interaction between the shock, the family-firm dummy and

[11] We also cluster standard errors at the country level. Results, not reported for brevity, are qualitatively similar to those shown in Tables 2-8.

[12] In unreported regressions we obtain a similar result by measuring social security with the index computed by Botero et al. (2004).

labor market tightness is not significant, but it is positive, suggesting that in countries with tighter labor markets family firms may provide less employment insurance. Finally, column 5 shows the estimated joint effect of social security coverage and financial development. As in column 4, family firms in countries with generous social security provide less employment insurance, but the magnitude and significance of the coefficient are both lower than in column 2. The coefficient of the interaction between shock, family-firm dummy and financial development is negative, implying that family firms in financially developed countries provide more employment insurance. But the coefficient is not precisely estimated. Column 6 shows that the result that family firms provide more insurance is robust to the inclusion of fixed firm-level effects. We have experimented with different definitions of family firm. All these results remain qualitatively unchanged, although they are statistically and economically more significant with our strict definition.

Regarding firm-level controls, as one would expect, there is significantly less employment growth in larger companies and more in companies with higher ROA – more mature companies grow less, more profitable ones invest and grow more. By contrast, leverage and asset tangibility (not reported) are not significantly correlated with employment growth.

These results – based on industry-level shocks – may give a biased measure of firms' employment insurance, insofar as they compound two elements that are actually distinct: namely, how much insurance a firm offers when hit by a shock and how exposed the firm is to industry shocks. As Michelacci and Schivardi (2012) argue, family firms might select low-risk-low-return, and possibly less cyclically sensitive, projects. If so, then employment in family firms might respond less to industry shocks because these firms are less exposed to them. In fact, when we regress firm sales growth on industry sales growth, including the same controls as in Table 2, we find that the coefficient for non-family firms is 0.68, while the coefficient of the interaction between industry shocks and the family dummy is -0.35, significant at the 5 percent level. Although this still implies lower employment risk in family firms, the underlying economic mechanism is very different from the firm's sheltering workers from actual shocks.

[Insert Table 3]

To address this concern, Table 3 repeats the estimation with a different definition of the sales shock variable, now measured at the firm level, to capture idiosyncratic

variations in sales. Specifically, we estimate the sales shock as the residual from a first-stage predictive equation for the growth rate of sales: 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. Since the lagged dependent variable and fixed effects are included, this equation is estimated via the generalized method of moments (GMM) 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. To correct for the generated regressor problem, in all the specifications shown in Table 3 we use bootstrapped standard errors calculated using 100 repetitions. The results of this second-stage estimation are consistent with Table 2, save that in Table 3 the significant coefficients are larger in absolute value and more precisely estimated. That is, idiosyncratic shocks to firm-level sales affect employment more severely than industry shocks, although the offset in family firms is equally complete (again, the hypothesis $\beta_2 = -\beta_1$ cannot be rejected).

The estimates reported in Table 3 also confirm the substitutability between the public provision of employment insurance and provision by family firms. To illustrate this relationship, we re-estimate the regression in column (3) for each of the 41 sample countries (obviously dropping all country-specific explanatory variables), and compute for each the coefficient ratio $-\beta_2 / \beta_1$, which measures the extent to which family firms stabilize employment relative to the typical firm in their country. (Technically, this ratio is the reduction in the estimated elasticity of employment to changes in firm sales associated with family firms, as a fraction of its value for all firms in the country.) In Figure 2 we plot this country-level measure of the employment insurance provided by family firms against the GRR measure of the protection afforded by social security. The substitutability between them is conveyed visually by the negative slope of the regression line.[13]

[Insert Figure 2]

[13] Measuring social security legislation by the index from Botero et al. (2004), the result is similar.

3.2 Employment insurance: positive and negative shocks to sales

Clearly, workers are worried about being let go if their employer experiences a drop in sales. So if the coefficients of the interaction variables involving the family-firm dummy actually do capture greater provision of job insurance, their explanatory power should stem from the observations of declines in sales. Table 4 re-estimates the employment regressions of Table 2 separately for the country-years with negative industry sales shocks (Panel A) and those with positive shocks (Panel B).

[Insert Table 4]

The first thing to note in comparing the two panels is that even the baseline elasticity of employment to industry-level shocks appears to differ. That is, on average firms adjust their work force less to losses than to gains in sales, which suggests that they tend to provide some degree of employment insurance – or perhaps to engage in labor hoarding to save on the cost of recruiting workers again when sales turn back up.

Second, and more important, family firms appear to stabilize employment about twice as intensely in response to declines as to increases in sales. And the substitutability between family-firm employment insurance and public insurance via the social security system is much more evident in decreases than to increases in industry sales: depending on the specification adopted, the estimate in Panel A is between 2 and 3 times greater than in Panel B.

3.3 Employment insurance: transitory vs. persistent shocks to sales

Gamber (1988) predicts that firms protect workers more against transitory than persistent shocks. Accordingly, in Table 5 we investigate whether persistent and transitory shocks to sales are associated with different degrees of risk-sharing, whether this different response varies between family and non-family firms, and whether for both types of shocks there is substitutability between the insurance provided by family firms and that supplied by social security.

[Insert Table 5]

Panels A and B of Table 5 show the estimates respectively obtained with transitory and persistent shocks (identified from the respective IV regression, as explained in the

Appendix). As expected, firms insure more against transitory than against shocks (the top row coefficients are higher in panel A than in panel B).

In particular, family firms provide full insurance against transitory shocks (the coefficients in the second row of Panel A practically offset those in the top row), but insure only between 32 and 41 percent of persistent shocks (this is computed as the ratio between the absolute value of the coefficients in the second and top rows of Panel B). Moreover, in the case of persistent shocks 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 percent level, and in the other they are not significantly different from zero.

Consistently with the overall picture, there is substitutability between the employment insurance provided by family firms and by social security against transitory shocks, but not against persistent shocks: family firms do not reduce their insurance against these shocks in response to more public provision of such insurance, because they provide hardly any in the first place!

3.4 Employment insurance and firms' access to finance

We argued above that the level of insurance provided by firms depends not only on the credibility of their commitment to implicit contracts but also on their access to finance. Berk and Walden (2013) contend that access to capital markets enables firms to offload the risk they assume from workers. This has two implications. First, firms that can easily access financial markets should provide more job insurance than those that cannot. And second, family firms should provide more insurance than non-family firms only when both groups have comparably easy access to financial markets: when neither type of firm can access external finance, their insurance provision should be the same.

Typically, as firms approach a state of distress, they have a harder time getting financing. Hence, we take a firm's "distance" from financial distress as an inverse measure of access to finance. We compute each firm's Altman's *z*-score (see Altman, 1968) in the first three years of their presence in the sample and rank firms in *z*-score quintiles. We then investigate the employment insurance provided in subsequent years by family and non-family firms in the top and bottom quintiles. If our previous results are driven both by family firms' commitment and by their ability to provide insurance, we should find that our results are stronger in the top and weaker or nil in the bottom quintile.

[Insert Table 6]

Table 6 presents estimates of specification (1) with firm fixed effects, separately for the top quintile (columns 1, 3 and 5) and the bottom quintile (columns 2, 4 and 6). The specifications differ depending on the definition of the shock: industry sales in columns 1 and 2, idiosyncratic shocks in columns 3 and 4, and negative industry-level shocks in columns 5 and 6.

The data appear to corroborate both of the above predictions. First, the coefficient of the shock (β_1) is consistently lower in the regressions for firms in the top than in the bottom *z*-score quintile (e.g., column 1 vs. column 2). In other words, the firms with good financial market access attenuate the effect of sales shocks on employment by about one third more than firms with poor access. Second, and more interestingly, family firms stabilize employment much more strongly than non-family firms when they enjoy financial markets access, whereas distressed family firms behave just like non-family firms: in the upper quintile (columns 1, 3, and 5), the employment response to shocks is considerably smaller for the former than for the latter ($\beta_2 < 0$), and family firm employment does not actually respond at all to industry, idiosyncratic and negative shocks (the hypothesis $\beta_2 = -\beta_1$ cannot be rejected in any of the specifications for these firms). However, the family firms with the least access to finance (columns 2, 4 and 6) provide no more employment stability than non-family firms ($\beta_2 = 0$).

These results further corroborate the implicit contract hypothesis. Not only there is evidence that on average family firms provide more employment insurance, but we can also see that this reflects the different behavior of family and non-family firms *that can access* financial markets, after controlling for observed and unobserved heterogeneity. This indicates that the credibility of family firms' commitment hinges on their ability to deliver employment stability, and so requires them to be financially sound: when they are not, they behave no differently from their non-family analogues, offering little job security.

3.5 Employment insurance or industry-level differences?

So far, we have interpreted the stability of employment in the face of sales shocks in family firms as a sign of greater willingness and/or ability to provide job insurance to

staff. But there is an alternative explanation, namely that family and non-family firms tend to operate in different industries, with significantly different technologies and/or demand variability. That is, family firms may be disproportionately present in sectors where it is technically easier to smooth the impact of sales shocks on employment (because, say, inventories have lower storage costs) or where demand shocks are less frequent or less severe (note that this critique does not apply to our measure of idiosyncratic shocks). Another possibility is that family firms may employ more skilled workers or invest more in human capital (via on-the-job training), so that they have a greater disincentive to fire workers in a downturn and try to hire them back in the subsequent upturn; the result is more stable employment.

One problem with these alternative explanations is that they cannot account for the international differences in insurance provided by family firms as a function of the degree of public employment insurance. If family firms have distinctive characteristics that are at the root of their different employment policies, it is hard to see why such characteristics should correlate systematically with the national features of social protection systems.

To shield us from the confounding effect of these alternative hypotheses, however, we repeat our estimation using a balanced sample, matching each family firm with the non-family firm with the closest stock market capitalization from the same country and industry. The definition of non-family firms used here excludes firms in which family blockholders hold 5 percent of the cash-flow rights or more.[14]

[Insert Table 7]

The results obtained from this matched sample are shown in Table 7. We estimate specification (1) with country-industry or firm fixed effects to identify employment insurance vis-à-vis industry-wide sales shocks (columns 1 and 2), idiosyncratic shocks (columns 3 and 4), and negative shocks (columns 5 and 6). The results from Tables 2, 3 and 4 continue to hold, even when firm fixed effects are included. First, the response of employment to shocks is considerably smaller in family than non-family firms ($\beta_2 < 0$), and this goes for all three types of shock considered; second, better public insurance corresponds to significantly less employment insurance by family firms ($\beta_4 > 0$). This

[14] In some instances we cannot find an appropriate non-family firm match for each family firm. Thus the dataset used for the specifications shown in Table 7 shrinks from 109,527 firm-year observations (used in Tables 2 and 3) to 79,811 firm-year observations.

indicates that our results are not driven by the unequal distribution of family firms in industries with different technology or demand characteristics.[15]

Finally, we conduct additional tests to address other sample selection problems stemming from firm characteristics implying differential ability to provide insurance and correlated with ownership structure. For example, small firms may not be able to provide as much insurance because they have less access to finance, so the fact that family firms tend to be smaller could bias our results (though against our findings). We address this problem by estimating an expanded specification that includes not only the explanatory variables in equation (1) but also interaction terms between the shock and each firm characteristic included in our specification (e.g., size). The results (not reported for brevity) confirm the robustness of the finding that family firms offer more stable employment.

3.6 Wage insurance

In Table 8 we investigate wage insurance in the subsample of companies for which at least seven consecutive years of wage data are available, estimating equation (2) and variants of it. The dependent variable is the percentage change of the average real wage in the corresponding firm-year. The standard errors are clustered at the firm level. The results differ markedly from our earlier findings concerning employment insurance.

[Insert Table 8]

First, the coefficient estimates in the top row of Table 8 are considerably lower than those in the top row of Table 2, suggesting the presence of wage stickiness: faced by a sales shock, firms apparently adjust the number of employees more substantially than real wages.

Second, rather than providing more insurance, as in the case of employment, family firms display wider wage fluctuations: the coefficients of the third row are positive and significantly different from zero, at the 1 percent or at the 5 percent level depending on the specification. In line with the "renegotiation hypothesis" mentioned in the

[15] In particular, they are not driven by family firms being disproportionately present in industries with high-skill workers, as labor hoarding implies. This alternative explanation also contrasts with our finding (see Section 3.6) that family firms pay lower wages: since skilled workers typically earn more than unskilled, the labor hoarding hypothesis would require family firms to pay more than non-family firms.

introduction, family firms seem to be able to get wage concessions from their employees in response to drops in sales and are ready to raise wages in the case of sales gains. Thanks to this flexibility, they manage to save jobs in downturns.

Finally, almost all the coefficients of almost all the interactions with country-level variables are insignificant. That is, neither the employment insurance provided by social security nor the degree of financial development significantly affects firm-level wage insurance.

3.7 Is employment insurance priced by wages?

A central prediction of implicit contract theory is that the insurance provided by firms to their employees should be "priced", i.e. that in exchange for more stable employment and/or wages firms should be able to pay lower salaries. Using French data, Sraer and Thesmar (2007) and Bassanini et al. (2013) confirm that family firms not only stabilize employment but also pay lower wages, but as far as we know, this hypothesis has not been tested for other countries.

[Insert Table 9]

Table 9 indicates that the thesis that family firms pay lower wages is valid more generally around the world. We have regressed the average real wage paid by a firm in a given year on the family-firm dummy and its interactions with public employment security provisions and financial development, on the usual set of firm-level controls, and country-industry fixed effects. In column 4 we also include firm-level fixed effects, and thus drop the family-firm dummy to avoid perfect collinearity.

The coefficient of the family-firm dummy is negative and significant, implying that the average real wage paid by family firms is approximately 6 to 9 percent lower than the average for the entire sample. The coefficient of the interaction of this dummy with employment security provisions shows that this effect is considerably smaller when the social security system provides strong protection against unemployment, which is perfectly consistent with our earlier finding that in these circumstances family firms tend not to offer much employment insurance themselves: they insure their workers less and so get a smaller wage discount.

In general, in our sample firms that furnish less employment insurance pay higher real wages. The finding is not restricted to the comparison between family and non-family firms. This is illustrated by Figure 3, which plots the elasticity of employment to firm-level sale shocks against average real wages. To be precise, 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 effects and for firm-level variables; the vertical axis gives the residual of a cross-sectional regression of the average real wage on country, time and industry fixed effects (in order to control for country-, time- and industry-related variability in real wages). The relationship is clearly positive, suggesting that firms whose employment responds more sharply to sales shocks must compensate their employees with higher wages. The fitted regression line is obtained by regressing the firm-level wage regression residuals (on the vertical axis) on a constant and on the firm-level coefficient of employment sensitivity to industry shocks (on the horizontal axis). The t-statistic of the slope coefficient estimate of this regression is 26.07.

[Insert Figure 3]

4. Employment and wage insurance in the Italian data

The cross-country data used above reveal the extent of employment and wage insurance provided by firms differing in ownership structure and the impact of country characteristics, such as public unemployment insurance, labor market tightness and level of financial development. But these data suffer from two limitations. First, they only show net changes in the firm's work force and fail to distinguish between separations and hires. But two firms with the same net employment change might have very different hiring and dismissal policies: for instance, no hires and no separations in one, an equal number of each in the other. In the terms of interest to us here, then, the former but not the latter may offer perfect insurance against employment shocks. Yet in our international data they would appear identical, thus potentially overestimating job insurance. Second, our international wage data consist in average labor costs derived from companies' income statements, which do not allow us to control for the composition of the labor force. This is a particularly serious shortcoming in the wage regressions to determine whether employment insurance comes at a price in wages, where it is essential to observe

individual characteristics that could affect wage levels. For instance, family firms may have less skilled workers, and this could be the effective cause of the wage discount.[16]

Both of these problems can be solved where matched firm-employee data are available, which we do have for Italian firms and workers. The firm data are drawn from the Bank of Italy's annual survey of manufacturing firms (INVIND), an open panel of around 1,200 firms per year, which is representative of manufacturing firms with at least 50 employees. It provides detailed information on firms' characteristics, including industrial sector, year of foundation, number of employees, sales, value of exports and investment. The data span the period 1984-2009 for a total of 3,763 firms. The survey specifies whether the controlling shareholder is an individual, a family, a conglomerate (i.e. a firm belonging to an industrial conglomerate), a financial institution or a foreign institution. The controlling shareholder is defined as "the person who, typically by voting in board meetings, has a decisive influence on the decisions regarding the medium to long-run objectives of the firm". Note that this definition differs from that used in our international data: in particular, where the controlling party is a conglomerate or an institution, we cannot trace the ultimate controller by following the control chain, as the question only concerns the institution directly in control. This means that if a family controls a firm via a financial institution or a conglomerate, we still classify it as a non-family firm: a possible source of Type-II classification error that is not present in our international data. Another problem is that the exact wording of the questionnaire has changed over the years.[17] Although we have tried to minimize the effect of the changes on the determination of ownership, we cannot be sure that they do not induce some measurement error.

From the responses to these questions we construct a dummy variable equal to 1 for firms controlled by an individual or a family and 0 for firms controlled by a conglomerate, an institution (a bank or an insurance company, say) or foreign owners. Approximately 40 percent of the firms surveyed are classified as "family" firms. As discussed above, this is clearly lower than if the proportion were based on ultimate control.[18] We drop the few

[16] Bandiera et al. (2009) find evidence that the managers hired by Italian family firms have lower average ability.

[17] In particular, starting in 2006 the question refers to the "first" shareholder, not the "controlling" shareholder.

[18] In 2006 and 2007 there is a separate question, asking directly whether the firm is controlled by an individual or a family. By this standard the share of family firms rises to 55 percent, indicating that Type-II error is indeed present, although most of the firms that we classify as non-family remain so. In the empirical

government-controlled firms, whose employment policies are likely to be dictated by political concerns. We completed the dataset with balance-sheet data from the Company Accounts Data Service, from which we construct the financial indicators (leverage, ROA, and asset tangibility).

Starting in 1995, the data also contain each firm's prediction of sales in the next year, so that idiosyncratic shocks to sales can be computed directly as the deviation of actual sales from the previous year's forecast, capturing the unforeseen component of sales. For the years before 1995, we use an imputation procedure. We first model firms' process of expectation formation in 1995-2009 by regressing predicted log sales on the previous year's actual log sales, the firm's self-reported expected variation in production capacity, expected investments, and year, sector, and area dummies (firms are classed into ten industrial sectors and four geographical areas: North-West, North-East, Center and South, including the island regions of Sicily and Sardinia). We then use the coefficients from this regression to impute the firms' sales forecasts for the years before 1995.

Individual workers' records come from the Social Security Institute (INPS), which was asked to provide the complete work histories of *all* workers ever employed in a firm present in the INVIND database between 1981 and 1997. The data on workers include age, gender, area where the employee works, occupational status (blue collar, white collar, executive), gross earnings, number of weeks worked in the year, and the firm identifier. We have approximately 3 million observations for almost 800,000 workers. The average age is 39.7 years; 77 percent are male, 67 percent are blue-collar and 31 percent white-collar workers. The matched dataset covers a shorter time span than that for firms alone (1984-97 vs. 1984-2009). Therefore, while the firm-level regressions are estimated for the entire period, those based on workers' records cover only the sub-period 1984-97.[19]

As this dataset is for Italian firms with more than 50 employees, there are no cross-sectional differences in public unemployment insurance: the wage supplementation program (*Cassa Integrazione Guadagni*) applies to all distressed firms with at least 20 employees, providing an unemployment subsidy in case of temporary closure normally up

analysis, we have experimented with different definitions of family firms, finding that our results are generally robust.

[19] For a detailed description of the firm level dataset see Pozzi and Schivardi (2012); for the matched employer-employee dataset, Iranzo, Schivardi and Tosetti (2008).

to a 12-month period. Hence, unlike the international data, the Italian data do not allow controls for differences in public employment security.

4.1 Employment regressions

Table 10 reports the results for employment growth using industry shocks to sales in the first three columns and idiosyncratic shocks in the last three.

[Insert Table 10]

The regressions include a family-firm dummy, the logarithm of lagged total assets, return on assets, and asset tangibility, plus year, sector, and area dummies. As in the international estimates, employment growth is far less sensitive to industry shocks in family than in non-family firms, although the extent to which family firms offset the baseline elasticity is slightly smaller. In the second and third columns, we re-estimate the regression separately on transitory and persistent shocks in industry sales, decomposing them as in the cross-country data. Employment appears to be insulated from transient shocks in all firms, not just family firms, but protected significantly against persistent shocks only in family firms. This result diverges substantially from our findings on the international data, namely that family firms provide job insurance against transitory but not persistent shocks, while non-family firms offer no insurance in either case.

As was observed in Section 3.1, the results based on industry-level shocks may overstate the employment insurance offered by family firms. In fact, when firm sales growth is regressed on industry sales growth, with the same controls as in Table 10, the coefficient for non-family firms is 0.45 and that for the interaction between industry shocks and the family dummy is -0.18, significant at the 1 percent level. The estimates in the last three columns of Table 10 address this concern, because they are based on the sales shocks to individual firms.[20] Here, there is no longer any evidence of a differential response of family firms: all firms appear to offer insurance against transitory shocks and no insurance against persistent ones.

But the picture changes again when we distinguish between separations and hires. The first three columns of Table 11 (with the same controls as in Table 10) show the effect of idiosyncratic shocks on separations, the last three on hires.

[20] In the specification shown in column 4 we use bootstrapped standard errors calculated using 100 repetitions.

[Insert Table 11]

Separations are correlated with firm-level shocks in sales (i.e. a decline in sales results in more separations), but in family firms this effect is almost nil. In fact, the hypothesis of zero response in family firms cannot be rejected. Distinguishing transitory from persistent shock components, we find again that transitory shocks are completely offset in all firms, while persistent shocks are offset only in family firms. Conversely, hiring does respond to changes in sales, as one would expect. Interestingly, there is some evidence that family firms vary their hiring more significantly than non-family firms. The coefficient of the interaction between the family-firm dummy and shocks is positive, although not statistically different from zero (*p*-value of 17 percent). The difference is statistically significant for persistent shocks, which implies that family firms reduce their hiring more sharply in the face of sales declines and increase it more given a sustained increase in sales.

The overall picture, then, indicates that family firms do provide greater job security, even in the face of persistent drops in sales (insofar as their separations are less sensitive to shocks). But this means they must adjust the size of their work force mostly by operating on the hiring side: following a negative shock, they increase separations less but decrease hiring more than non-family firms. They avoid letting employees go even in the face of a drop in sales precisely by reducing new hires more sharply.

4.2 Wage regressions

In regressions based on individual workers' wages, given that the main explanatory variable, i.e. the sales shock, changes only at the firm-year level we cluster the standard errors accordingly (the estimates are much more significant if we use the robust Huber-White robust standard error correction). The explanatory variables include idiosyncratic firm-level shocks to sales, the same firm-level controls and dummy variables as in Tables 10 and 11, and also some worker-level controls: age, age squared, gender, and dummies for occupational status.

[Insert Table 12]

Column 1 of Table 12, measuring the shock at industry level, shows that as in the cross-country data, wages in non-family firms respond to shocks. The coefficient on the

interaction with the family-firm dummy is negative but not statistically different from zero. This result jibes with the idea that family firms are less exposed to aggregate shocks. Column 2 shows that that individual workers' wage growth is correlated with idiosyncratic shocks to sales, but that their response is stronger in family firms, as in the international data. Moreover, the estimates in columns 3 and 4 indicate that the differential wage response in family firms applies only to transitory sales shocks; for persistent shocks, the two types of firm react in the same fashion. As in the cross-country data, family firms moderate the response of employment – more specifically separations – to sales shocks, at the cost of accentuating the wage response.

Table 13 takes up the question of the price of job insurance: regressions of real wages are estimated controlling for individual characteristics of firms and workers. Specifically, we include a worker fixed effect, which accounts for any fixed unobserved heterogeneity in workers' productivity.

[Insert Table 13]

Controlling only for sector, industry and geographical area, we find that the real wage in family firms is 16.7 percent lower than in non-family firms (column 1). Interestingly, however, controlling for the observable characteristics of workers (column 2), firms (column 3) or both (column 4), the difference narrows sharply – to just 2 percent in the latter case. And when worker fixed effects are included as well (column 5) the difference, surprisingly, disappears altogether. This might be interpreted as evidence that the wage gap actually depends on firm and worker characteristics, not job insurance pricing.

Since this result contrasts with the previous literature (Sraer and Thesmar, 2007; Bach and Serrano-Velarde, 2010; Bassanini et al., 2013), as well as with our own results using international data, further inquiry appears warranted. In the fixed-effects regressions, the family-firm effect is identified only by observations on workers who in the course of their careers have worked in both types of firm. This can happen for two different reasons: either the firm changes status or the worker moves to a firm with different status. These are distinct events, which might have different consequences on wages. Specifically, when it changes status a firm may be slow to change its job security and wage policies, given the fairly rigid collective bargaining system in Italy. Moreover, measurement error in the definition of the firm status might be a more severe problem for the firms that report changes of status: for instance, those whose status is more ambiguous – say,

controlled by a family but through a financial institution – might report one status in some years and another in others, especially considering that the wording of the question used to determine ownership status has changed slightly over the years. This could induce spurious changes. On the other hand, workers shifting to a new firm are more likely to be immediately influenced by the differing wage policy of the new employer. Finally, both events are clearly endogenous, but unfortunately it is exceedingly difficult to find instruments for either.[21]

These considerations suggest that distinguishing between the two types of event would produce a better treatment-control sample. For example, restricting the sample to movers will prevent the estimates from being affected by differences involving workers whose firms change status.

It turns out that in our sample most of the changes in the status of workers' employers are due to changes in the status of the firms. Of the 2.2 million observations in the fixed-effects regression, just over 10 percent refer to workers who worked in firms that changed status and not even 0.2 percent (5,000 worker-year observations) to workers who moved from a non-family to a family firm or vice versa. That is, the fixed-effects results in Table 13 depend almost exclusively on firms' changes of status.

To investigate the potential differences in the wage effects of the two types of status change, we follow Bassanini et al. (2013). We eliminate worker fixed effects by taking first differences of both the wage dummy and a status-change dummy, $\Delta F_{it} = F_{it} - F_{it-1}$, which takes the value of 1 if the worker's employer *i* changes from non-family to family status between year $t-1$ and *t*, -1 if the reverse, and 0 otherwise. To isolate the role of status changes, we first select stayers, i.e. workers who work for the same firm both in $t-1$ and *t*. In this sample, therefore, changes in wage growth when a firm changes status can only stem from changed wage policies, as we keep the composition of workers fixed at the year of change.

[Insert Table 14]

[21] Bassanini et al. (2013) discuss endogeneity in a dataset similar to ours, but with some additional information on ownership changes. They conclude that while endogeneity is a concern, it does not invalidate their findings.

The results (first column of Table 14) show that there is no significant difference in wage growth upon a change in a firm's status, consistently with the fixed-effects results of the previous table.

A potential problem with this approach is the assumption, implicit in taking first differences of the family-firm dummy, that the effects of changes in the two directions are symmetrical. In column (2) we relax this assumption and introduce separate dummies for the two shifts. Again we find that wage growth is unaffected. Finally, changes in status might take time to affect wages. In columns (3) and (4) we replicate the regressions of the first two columns, but the variables over a three-year period; that is, ΔF_{it} is set equal to 1 in the three years after the status switch status, not only the first year. Again, we find no evidence of changes in wage growth.

We then turn to the sample of movers, checking whether wage changes for workers shifting between firms of different status differ significantly from those of workers moving between firms of the same status. We consider only workers who move between two firms in consecutive years, which most likely signals job-to-job transitions. The sample shrinks dramatically, as we are left with only some 3,000 observations for workers moving between INVIND firms in two consecutive years. Even so, the coefficient of the change in ownership now carries a significant and negative estimate of –0.03: with a move from a non-family to a family firm, the worker's wage grows by 3 percent less than with a move between firms of the same status, and with a move in the opposite direction, it grows by 3 percent more. Note that this is the difference in wages between family and non-family firms estimated in columns (2)-(4) of Table 13, i.e., without fixed effects. When the ΔF_{it} variable is split into two separate dummies for the two directions of transition, the assumption of symmetry is broadly borne out: movers from family to non-family firms record higher growth of 2.6 percent, and those moving the other way a reduction of 3.3 percent. Further regressions, not reported here, showed that the differences in wage growth did not continue after the year of the move. That is, the evidence indicates that unlike workers who move between same-status firms, those moving from non-family to family firms record a wage drop and those moving the other way an increase. This is consistent with the thesis that workers are willing to accept a wage cut in family firms, possibly in exchange for better employment protection, and must be compensated with a wage increase when they move to a non-family firm.

Our conclusion is that the reason for the disappearance, in the fixed effects regression, of the family-firm wage discount is that it is estimated mostly from firms' status transitions, which are problematic to define. Using the more reliable movements of workers between firms of different status, the 3 percent wage discount survives even after controlling for workers' invariant characteristics (i.e. recording individual wage changes).

4.3 Summary and comparison with cross-country results

Overall these Italian panel data indicate that firms, especially family firms, do provide employment insurance, in exchange for lower wages and less wage insurance. When the firms suffers a drop in sales, family-firm employees appear more willing than others to accept wage cuts, in exchange for a better chance of not losing their jobs.

These findings for Italy partly corroborate and partly contradict the international evidence set forth above. Both datasets are consistent with the hypothesis that firms provide some employment insurance and that family firms offer more (although this result only emerges for idiosyncratic shocks in Italy if hires and dismissals are treated separately). Another shared finding is that firms provide wage insurance, and that family firms provide less of it than non-family ones.

However, the two datasets differ with regard to the response of employment to transitory and persistent shocks: in the international data, both types of shock influence employment; only family firms appear to insure their employees completely against transitory shocks but not against persistent ones. In the Italian data, by contrast, family firms appear to insure even against persistent shocks; that is, they do not increase dismissals in response to shocks but they do adapt their hirings more sharply than non-family firms.

In terms of wage levels, both datasets indicate that family firms pay lower wages. In the Italian data, however, when workers' unobserved heterogeneity is controlled for, the effect emerges only for the sample of workers who change firms; changes of firms' status do not appear to have a significant impact on wages.

5. Conclusion

This paper investigates the extent of employment and wage insurance offered by firms to their employees and its determinants. We examine the characteristics of the firms that provide more insurance and country characteristics that affect the need for insurance, essentially the degree of public unemployment insurance.

We use two different datasets to investigate employment and wage insurance. The evidence from our international panel data indicates that family firms provide more employment protection than non-family firms, especially in the face of transitory drops in sales, but less wage stability. And they offer less job protection in countries where the social security system is more generous in this regard. Finally, the employment protection provided by family firms is priced: their employees earn 5 percent less on average, controlling for country, industry and time effects. The evidence from the Italian panel data is consistent with the international findings on several scores. When firms suffer a shock to sales, family-firm employees appear to be more willing to accept wage cuts, and they also enjoy a lower probability of being dismissed. An important finding is that Italian family firms, unlike non-family firms, appear to insure their employees even against persistent shocks; their dismissals are less sensitive to sales shocks, but their hiring is more responsive. The Italian data also confirm that the employment insurance supplied by family firms comes at a price, namely both lower wages and greater wage variability.

Appendix: Estimating the persistent and transitory components of sales shocks

This appendix shows how the persistent and transitory components of sales shocks are obtained, disregarding – initially – the cross-country component and also the distinction between family and non-family firms.

We assume the following stochastic process for firm sales:

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

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

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

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

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

Employment is assumed to respond to persistent and transitory shocks with different sensitivities α and β:

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

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

Sensitivities α and β are estimated in three steps. First, the first differences of (4) are computed and the resulting sales growth regression is estimated:

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

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

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

using $\Delta \zeta_{it} = u_{it}$ from (6), and re-defining the error term as $\Delta \omega_{it} \equiv \alpha u_{it} + \beta \Delta v_{it} + \Delta \psi_{it}$.

Finally, since $\Delta \varepsilon_{it} = u_{it} + \Delta v_{it}$, the coefficients α and β are recovered by estimating two separate IV regressions of $\Delta \omega_{it}$ on $\Delta \varepsilon_{it}$. Specifically, as shown by Guiso, Pistaferri and Schivardi (2005), a regression of $\Delta \omega_{it}$ on $\Delta \varepsilon_{it}$ with the latter instrumented by $\Delta \varepsilon_{it+1}$ and its powers identifies the transitory shock coefficient β, while a regression of $\Delta \omega_{it}$ on $\Delta \varepsilon_{it}$ with the latter instrumented by $\Delta \varepsilon_{it+1} + \Delta \varepsilon_{it} + \Delta \varepsilon_{it-1}$ 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 the shocks, and, among the instruments, the interaction between the original instruments just described and the F_i dummy.

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Figure 1. Time Series of Gross Replacement Rates: Averages by Continents

The figure shows the time series of average gross replacement rates in the countries included in our sample, grouped by continents. Gross replacement rates are calculated as the ratio between the unemployment insurance benefits received by a worker in the first year of unemployment and the worker's gross earnings in the previous year of employment.

Figure 2. Employment Insurance in Family Firms and Public Provision of Unemployment Security

The variable shown on the horizontal axis is the measure of the generosity of the unemployment benefit system in each country measured by the gross replacement rate (GRR), calculated as the ratio between the unemployment insurance benefits received by a worker in the first two years of unemployment relative and the worker's last gross earning, as described in Section 2.1. The measure reported on the vertical axis is a country-level measure of employment insurance provided by family firms relative to non-family ones, estimated as the percentage reduction that family firms induce in the elasticity of employment to the unexpected component of firm-level sales.

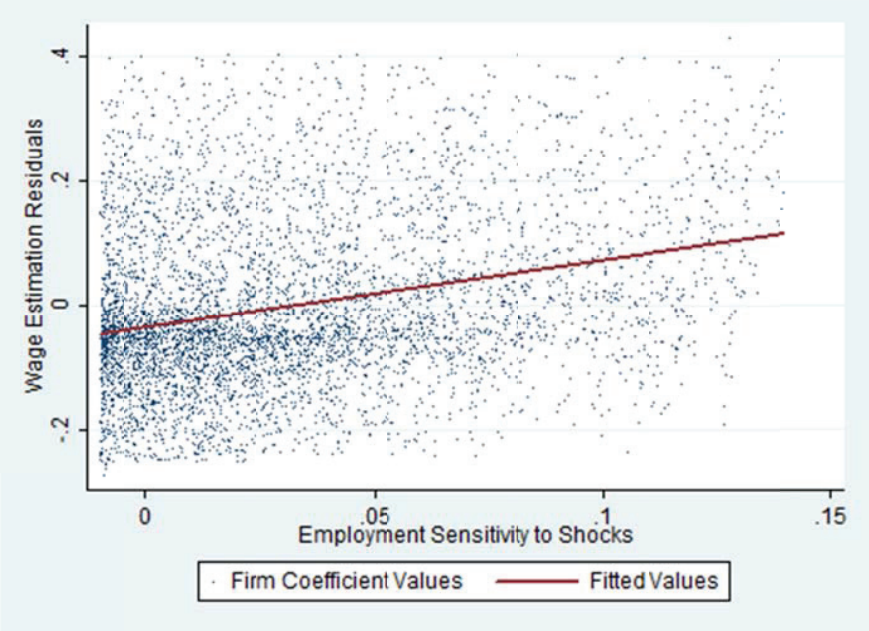

Figure 3. Employment Sensitivity to Firm-Level Sale Shocks and Average Real Wage

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 and family firms respectively over the sample period from 1988 to 2012. Columns 5 and 6 report the average total firm-level employment of non-family and family firms respectively over the same sample period. Column 7 reports the the gross replacement rate (GRR), calculated as the ratio of the unemployment insurance benefits received by a worker in the first year of unemployment relative to the worker's last gross earning in each country of he sample, drawn from Aleksynska and Schindler (2011). Column 8 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 9 reports the ratio of long term unemployment (persisting for one year or longer) to total unemployment for the OECD countries.

	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**	**Gross Replacement Rates**	**Unemployment Benefit Index**	**Fraction of Long Term Unemployed**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Argentina	9	18	0.07	0.09	3,859	2,207	0.2877	0.8372	-
Australia	290	122	0.09	0.12	5,240	3,127	0.2122	0.8419	0.2122
Austria	34	32	0.10	0.09	4,843	2,881	0.3928	0.6618	0.2448
Belgium	29	22	0.08	0.10	5,073	2,948	0.3877	0.7990	0.4889
Brazil	32	77	0.10	0.14	9,135	3,122	0.1252	0.5634	-
Canada	218	54	0.07	0.08	8,671	4,781	0.5059	0.7035	0.0984
Chile	11	20	0.12	0.13	3,601	2,209	0.1120	0.7818	-
Colombia	7	15	0.10	0.14	3,102	1,922	0.0000	0.9972	-
Czech Republic	10	19	0.10	0.12	3,218	1,926	0.2590	0.7513	0.4845
Denmark	39	26	0.08	0.07	4,929	2,186	0.5527	0.7850	0.1926
Finland	62	54	0.09	0.10	6,011	2,108	0.5173	0.8060	0.2567
France	277	204	0.10	0.08	12,011	8,170	0.5318	0.8793	0.3980
Germany	304	225	0.11	0.09	12,957	7,221	0.3526	0.7941	0.4811
Greece	8	19	0.04	0.05	3,214	1,879	0.2874	0.7385	0.4405
Hong Kong	27	89	0.12	0.15	7,180	8,085	0.3453	0.6910	-
India	62	97	0.14	0.14	8,217	6,149	0.2500	0.0000	-
Indonesia	9	21	0.08	0.10	3,218	3,409	0.0000	0.0000	-
Ireland	45	11	0.06	0.05	5,045	2,110	0.2751	0.8123	0.3752
Israel	44	62	0.09	0.08	4,379	2,815	0.3070	0.8613	0.2733
Italy	61	95	0.07	0.07	9,729	6,128	0.2819	0.7432	0.5142

Japan	462	225	0.09	0.08	10,006	4,335	0.2781	0.7470	0.3825
Malaysia	15	35	0.07	0.05	3,745	2,497	0.0000	0.0000	-
Mexico	18	39	0.09	0.05	9,441	8,627	0.0000	0.0000	0.0219
Netherlands	45	28	0.08	0.06	9,624	7,280	0.7000	0.6855	0.3498
New Zealand	16	9	0.11	0.07	2,724	1,244	0.2589	0.5629	0.1316
Norway	79	41	0.09	0.09	3,598	1,655	0.6240	0.7958	0.0909
Peru	6	12	0.08	0.09	1,605	982	0.0000	0.0000	-
Philippines	28	41	0.09	0.10	3,072	1,805	0.0000	0.0000	-
Portugal	22	30	0.05	0.06	3,833	1,788	0.6528	0.9050	0.4279
Singapore	21	34	0.14	0.15	7,314	6,211	0.0000	0.0000	-
South Africa	29	15	0.12	0.09	6,221	2,519	0.6000	0.7198	-
South Korea	58	164	0.12	0.13	6,512	8,912	0.1250	0.7726	0.0205
Spain	181	157	0.10	0.07	9,771	5,209	0.6439	0.8073	0.2941
Sweden	89	57	0.09	0.08	9,283	7,081	0.7589	0.8556	0.1962
Switzerland	114	59	0.10	0.08	11,409	7,108	0.6726	0.9082	0.2850
Taiwan	35	76	0.14	0.12	5,740	4,911	0.1500	0.8204	-
Thailand	24	87	0.10	0.13	4,976	3,192	0.0278	0.0000	-
Turkey	12	42	0.10	0.12	4,287	2,210	0.0843	0.0000	0.2652
United Kingdom	638	126	0.07	0.09	8,407	1,781	0.1854	0.7643	0.2767
United States	1,040	121	0.07	0.08	13,672	1,580	0.2569	0.6898	0.1142
Uruguay	5	14	0.08	0.10	1,091	822	0.2500	0.7842	-

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

The table presents estimates of a pooled regression for 7,209 firms from 41 countries over the period 1988-2012. The dependent variable is the yearly change in logarithm of total employment of firm *i* in year *t*. 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 who is present in the firm's management, and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; Labor Market Tightness is measured as the reciprocal of the ratio of long term unemployment (persisting for one year or longer) to total unemployment (only for the OECD countries); 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; Return on Assets is the return on total assets of each firm *i* in year *t*-1; Other Firm-level Control Variables are Asset Tangibility (the ratio of Plant, Property and Equipment to Total Assets of each firm *i* in year *t*-1) and Leverage (the ratio of total debt to total assets of each firm *i* in year *t*-1). The specification shown in column 5 also includes the variables Financial Development, and Family Firms × Financial Development (not reported). T-statistics are reported in parenthesis. Standard errors are clustered at the firm level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)	(6)
Δ Industry Sales	0.1596***	0.1423***	0.1233***	0.1100***	0.1085***	0.1497***
	(3.61)	(3.06)	(3.30)	(2.89)	(2.95)	(3.50)
Family Firms	0.0045	0.0034	0.0032	0.0028	0.0030	
	(1.40)	(1.03)	(0.98)	(0.85)	(0.97)	
Δ Industry Sales × Family Firms	-0.1427***	-0.1272***	-0.1121***	-0.0989***	-0.1079***	-0.1407***
	(-3.90)	(-3.34)	(-3.22)	(-3.02)	(-3.11)	(-3.58)
Δ Industry Sales × Unemployment Security		0.0324		0.0373	0.0387	0.0383
		(1.52)		(1.38)	(1.18)	(1.08)
Δ Industry Sales × Family Firms × Unemployment Security		0.1203***		0.0831**	0.0868**	0.1074**
		(2.80)		(2.49)	(2.58)	(2.16)
Family Firms × Unemployment Security		0.0081		0.0072	-0.0009	-0.0022
		(1.16)		(0.72)	(-0.40)	(-0.55)
Δ Industry Sales × Labor Market Tightness			0.0060	0.0041		
			(1.08)	(1.05)		
Δ Industry Sales × Family Firms × Labor Market Tightness			0.0215**	0.0127		
			(2.02)	(1.30)		
Family Firms × Labor Market Tightness			0.0009	0.0008		
			(1.19)	(1.12)		
Δ Industry Sales × Financial Development					0.0007	
					(1.01)	
Δ Industry Sales × Family Firms × Financial Development					-0.0005	
					(-1.09)	
Unemployment Security		0.0148		0.0102	0.0182	-0.0081
		(1.26)		(1.07)	(1.04)	(-0.86)
Labor Market Tightness			0.0005	-0.0002		
			(1.08)	(-0.47)		
Firm Size	-0.0015***	-0.0011***	-0.0011***	-0.0010**	-0.0011**	-0.0014**
	(-3.01)	(-2.87)	(-2.84)	(-2.57)	(-2.56)	(-2.42)
Return on Assets	0.0051***	0.0031***	0.0037***	0.0038***	0.0036***	0.0042***
	(4.31)	(4.02)	(4.32)	(4.16)	(3.92)	(4.58)
Other Firm-level Control	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.21	0.22	0.18	0.24	0.21	0.25
Number of Observations	109,527	109,527	89,980	89,980	109,527	109,527

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

The table presents estimates of a pooled regression for 7,209 firms from 41 countries over the period 1988-2012. The dependent variable is the yearly change in logarithm of total employment of firm *i* in year *t*. 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 who is present in the firm's management, and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; Labor Market Tightness is the reciprocal of the ratio of long term unemployment (which persists for one year or longer) over total unemployment (only for OECD countries); 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*; Return on Assets is the return on total assets of each firm *i* in year *t-1*; Other Firm-level Control Variables are Asset Tangibility (ratio of Plant, Property and Equipment to Total Assets) and Leverage (ratio of total debt to total assets). The specification in column 5 also includes the variables Financial Development, and Family Firms × Financial Development (not reported). Bootstrapped standard errors are used in each specification. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)	(6)
Idiosyncratic Shock	0.2503***	0.2407***	0.2301***	0.2237***	0.2165***	0.2813***
	(4.62)	(4.63)	(4.82)	(3.94)	(3.79)	(4.80)
Family Firms	0.0031	0.0028	0.0025	0.0024	0.0029	
	(1.01)	(0.92)	(0.87)	(0.82)	(0.91)	
Idiosyncratic Shock × Family Firms	-0.2709***	-0.2560***	-0.2433***	-0.2302***	-0.2317***	-0.2962***
	(-3.98)	(-3.77)	(-3.74)	(-3.52)	(-3.46)	(-3.98)
Idiosyncratic Shock × Unemployment Security		0.0660*		0.0506*	0.0496	0.0517
		(1.91)		(1.74)	(1.60)	(1.44)
Idiosyncratic Shock × Family Firms × Unemployment Security		0.1603***		0.1475***	0.1372**	0.1208**
		(3.05)		(2.80)	(2.49)	(2.40)
Family Firms × Unemployment Security		0.0064		0.0055	0.0052	-0.0024
		(0.38)		(0.26)	(0.27)	(-0.31)
Idiosyncratic Shock × Labor Market Tightness			-0.0052	-0.0045		
			(-1.06)	(-1.47)		
Idiosyncratic Shock × Family Firms × Labor Market Tightness			0.0276**	0.0121*		
			(2.24)	(1.71)		
Family Firms × Labor Market Tightness			0.0012	0.0009		
			(0.98)	(0.82)		
Idiosyncratic Shock × Financial Development					0.0007	
					(0.95)	
Idiosyncratic Shock × Family Firms × Financial Development					-0.0008	
					(-1.39)	
Unemployment Security		0.0101		0.0084	0.0080	0.0042
		(1.53)		(0.76)	(0.81)	(0.51)
Labor Market Tightness			-0.0001	-0.0002		
			(-0.67)	(-0.70)		
Firm Size	-0.0018***	-0.0018***	-0.0017***	-0.0017***	-0.0018***	-0.0019***
	(-3.59)	(-3.47)	(-3.41)	(-3.35)	(-3.32)	(-3.61)
Return on Assets	0.0051***	0.0050***	0.0051***	0.0047***	0.0048***	0.0060***
	(4.88)	(4.77)	(4.64)	(4.62)	(4.40)	(5.54)
Other Firm-level Control	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.15	0.16	0.12	0.18	0.19	0.22
Number of Observations	109,527	109,527	89,980	89,980	109,527	109,527

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

The table presents estimates of a pooled regression model for 7,209 firms from 41 countries over the period from 1988 to 2012. 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 who is present in the firm's management, and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; 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*. The specification shown in column 3 also includes the variables Financial Development, and Family Firms × Financial Development (not reported). Standard errors are clustered at the firm level. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

Panel A: Negative Shocks	**(1)**	**(2)**	**(3)**	**(4)**
Δ Industry Sales	0.1951*** (3.56)	0.1805*** (2.99)	0.1641** (2.51)	0.2001*** (2.89)
Family Firms	0.0024 (1.30)	0.0021 (1.29)	0.0019 (1.15)	-
Δ Industry Sales × Family Firms	-0.2098*** (-3.21)	-0.1972*** (-3.02)	-0.1901*** (-2.70)	-0.2120** (-2.61)
Δ Industry Sales × Unemployment Security		0.0124 (1.47)	0.0119 (1.32)	0.0104 (1.04)
Δ Industry Sales × Family Firms × Unemployment Security		0.1109** (2.60)	0.1081** (2.41)	0.1245*** (2.78)
Family Firms × Unemployment Security		0.0070 (0.96)	0.0068 (0.95)	0.0041 (0.83)
Δ Industry Sales × Financial Development			0.0004 (0.80)	
Δ Industry Sales × Family Firms × Financial Development			-0.0003 (-1.06)	
Unemployment Security	0.0197** (2.41)	0.0162* (1.82)	0.0107 (1.55)	-0.0071 (-0.82)
Firm-level Control Variables	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.12	0.13	0.14	0.18
Number of Observations	29,436	29,436	29,436	29,436

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Panel B: Positive Shocks

Δ Industry Sales	0.2381***	0.2205**	0.2092**	0.2349***
	(2.82)	(2.60)	(2.41)	(2.81)
Family Firms	0.0031	0.0024	0.0021	-
	(0.91)	(0.80)	(0.68)	
Δ Industry Sales × Family Firms	-0.1004**	-0.0984*	-0.0953	-0.1161*
	(-2.49)	(-1.90)	(-1.61)	(-1.86)
Δ Industry Sales × Unemployment Security		0.0131	0.0139	0.0130
		(1.20)	(1.21)	(1.42)
Δ Industry Sales × Family Firms × Unemployment Security		0.0530**	0.0509*	0.0421*
		(2.57)	(1.90)	(1.74)
Family Firms × Unemployment Security		0.0072	0.0071	0.0058
		(1.14)	(1.15)	(0.92)
Δ Industry Sales × Financial Development			0.0002	
			(0.80)	
Δ Industry Sales × Family Firms × Financial Development			-0.0002	
			(-0.91)	
Unemployment Security	0.0187	0.0142	0.0110	-0.0108
	(1.54)	(1.22)	(1.21)	(-1.02)
Firm-level Control Variables	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.10	0.11	0.11	0.14
Number of Observations	80,091	80,091	80,091	80,091

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

This table presents the estimates of the sensitivity of employment to persistent and temporary shocks in sales for 7,209 firms from 41 countries over the period from 1988 to 2012. The dependent variable is the yearly change in logarithm of total employment of firm *i* in year *t*. The coefficient estimates are obtained via two separate IV regressions, which identify the sensitivity to transitory shocks (Panel A) and to persistent ones (Panel B) respectively (see the appendix for details). The independent variables are as follows: Transitory Shock is the transitory component of the change in sales of firm *i*; Persistent Shock is the persistent component of the change in 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 who is present in the firm's management, and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; 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)
Panel A: Transitory Shocks			
Transitory Shock	0.2282*** (3.95)	0.2051*** (3.26)	0.1822*** (2.90)
Transitory Shock × Family Firms	-0.2447*** (-4.45)	-0.2308*** (-4.20)	-0.2112*** (-3.28)
Transitory Shock × Unemployment Security			0.0397 (1.07)
Transitory Shock × Family Firms × Unemployment Security			0.1052** (2.58)
Unemployment Security	0.0381** (2.42)	0.0257** (2.09)	0.0180* (1.77)
Firm-level Control Variables	No	Yes	Yes
Fixed Effects	Country-Industry-Year	Country-Industry-Year	Country-Industry-Year
F-test (p value)	<0.001	<0.001	<0.001
Panel B: Persistent Shocks			
Persistent Shock	0.2891*** (4.37)	0.2621*** (3.60)	0.2541** (3.10)
Persistent Shock × Family Firms	-0.1189* (-1.89)	-0.1043* (-1.71)	-0.0815 (-1.31)
Persistent Shock × Unemployment Security			0.0291 (1.27)
Persistent Shock × Family Firms × Unemployment Security			0.0242 (0.94)
Unemployment Security	0.0324** (2.11)	0.0256* (1.81)	0.0161 (1.50)
Firm-level Control Variables	No	Yes	Yes
Fixed Effects	Country-Industry-Year	Country-Industry-Year	Country-Industry-Year
F-test (p value)	<0.001	<0.001	<0.001
Number of Observations	105,725	105,725	105,725

Table 6. Employment Insurance in Family and non-Family Firms with High and Low Financial Distress Risk in Response to Shocks: International Data

The table presents estimates of a pooled regression for family and non-family firms with low financial distress risk (those in the top quintile of firms ranked by the Altman's z-score) in columns 1, 3, and 5, and for firms with high financial distress risk (those in the bottom quintile of firms ranked by the Altman's z-score) in columns 2, 4 and 6. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The shocks used are as follows: in columns 1 and 2 we use the yearly change of log sales of each industry *j* in year *t* excluding the sales of firm *i* from the calculation; in columns 3 and 4 we use Idiosyncratic Shock defined as 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*; and in columns 5 and 6 we use negative industry-level shocks defined as the years when industry-level annual sales growth is negative. The other 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 which is present in the firm's management, and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; Firm Size is the log of market capitalization 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*; Other Firm-level Control Variables are Asset Tangibility (ratio of Plant, Property and Equipment to Total Assets) and Leverage (ratio of total debt to total assets). Standard errors in specifications shown in columns 1, 2, 5 and 6 are clustered at the firm level. Bootstrapped standard errors are used in the specifications shown in columns 3 and 4. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)	(6)
Shock	0.1583***	0.1857***	0.2125***	0.3009***	0.2382**	0.2705***
	(2.71)	(3.99)	(3.93)	(5.26)	(2.58)	(3.25)
Family Firms	0.0030	0.0043	-0.0015	0.0002	0.0028	0.0020
	(0.97)	(1.06)	(-0.39)	(0.20)	(1.10)	(0.92)
Shock × Family Firms	-0.1590***	-0.0411	-0.2418***	-0.0311	-0.2011***	-0.0480
	(-3.77)	(-1.56)	(-4.04)	(-0.74)	(-3.02)	(-1.44)
Shock × Unemployment Security	0.0216	0.0309*	0.0329*	0.0524*	-0.0070	-0.0028
	(1.37)	(1.75)	(1.85)	(1.90)	(-0.72)	(-0.49)
Shock × Family Firms × Unemployment Security	0.0909***	0.0422	0.1380***	-0.0215	0.1088*	-0.0071**
	(2.92)	(1.58)	(3.27)	(-1.11)	(1.84)	(-0.77)
Family Firms × Unemployment Security	0.0059	0.0041	0.0067	0.0065	0.0080	0.0089
	(1.07)	(0.78)	(0.69)	(0.87)	(1.38)	(1.51)
Unemployment Security	0.0130	0.0092	0.0211	0.0191	0.0087	-0.0029
	(1.26)	(1.03)	(1.19)	(1.21)	(0.73)	(-0.46)
Firm Size	-0.0015***	-0.0010**	-0.0018***	-0.0009**	-0.0014***	-0.0010**
	(-3.02)	(-2.61)	(-3.76)	(-2.41)	(-2.93)	(-2.55)
Return on Assets	0.0044***	0.0029**	0.0058***	0.0030**	0.0036***	0.0022**
	(3.76)	(2.26)	(5.08)	(2.12)	(3.89)	(2.18)
Other Firm-level Control	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Country-Industry
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.15	0.09	0.21	0.06	0.07	0.04
Number of Observations	25,489	22,211	24,727	21,562	7,011	6,209

Table 7. Employment Insurance in Family and non-Family Firms in Response to Shocks in a Matched Sample: International Data

The table presents estimates of a pooled regression model for family firms and their non-family matches from 41 countries over the period 1988-2012. We match each family firm with a non-family firm with the closest stock market capitalization from the same country and industry. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The shocks used are as follows: in columns 1 and 2 we use the yearly change of log sales of each industry *j* in year *t* excluding the log sales of firm *i* from the calculation; in columns 3 and 4 we use the idiosyncratic shock to sales, defined as 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*; and in columns 5 and 6 we use negative industry-level shocks defined as the years when industry-level annual sales growth is negative. The other 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 which is present in the firm's management and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; Firm Size is the log of market capitalization 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*; Other Firm-level Control Variables are Asset Tangibility (ratio of Plant, Property and Equipment to Total Assets) and Leverage (ratio of total debt to total assets). Standard errors in specifications shown in columns 1, 2, 5 and 6 are clustered at the firm level. Bootstrapped standard errors are used in the specifications shown in columns 3 and 4. T-statistics are reported in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)	(6)
Shock	0.2110***	0.1975***	0.2805***	0.2703***	0.1918**	0.2011**
	(4.01)	(3.70)	(5.19)	(4.64)	(2.51)	(2.16)
Family Firms	0.0035		0.0022		0.0027	
	(0.97)		(0.81)		(1.20)	
Shock × Family Firms	-0.2300***	-0.1825***	-0.2744***	-0.2512***	-0.2206**	-0.2209**
	(-3.25)	(-2.91)	(-4.05)	(-3.28)	(-2.19)	(-2.04)
Shock × Unemployment Security	0.0419	0.0388	0.0519	0.0528	0.0296	0.0221
	(1.48)	(1.32)	(1.07)	(1.12)	(1.48)	(1.36)
Shock × Family Firms × Unemployment Security	0.1291**	0.1141**	0.1182**	0.0944**	0.1229**	0.1014*
	(2.58)	(2.39)	(2.57)	(2.60)	(2.01)	(1.85)
Family Firms × Unemployment Security	0.0079	0.0070	0.0058	0.0049	0.0095	-0.0019
	(0.94)	(0.93)	(0.86)	(0.71)	(0.98)	(-0.22)
Unemployment Security	0.0167	0.0152	0.0087	0.0072	0.0080	0.0081
	(1.39)	(1.28)	(0.91)	(0.68)	(0.72)	(0.70)
Firm Size	-0.0015***	-0.0013***	-0.0019***	-0.0015***	-0.0016***	-0.0014***
	(-3.05)	(-2.84)	(-3.29)	(-2.96)	(-3.35)	(-3.02)
Return on Assets	0.0037***	0.0031***	0.0048***	0.0042***	0.0039***	0.0035***
	(4.01)	(3.56)	(4.57)	(3.92)	(4.00)	(3.62)
Other Firm-level Control	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Country-Industry	Firm	Country-Industry	Firm	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.26	0.28	0.12	0.12	0.12	0.14
Number of Observations	79,811	79,811	79,811	79,811	15,406	15,406

Table 8. Wage Insurance in Family and non-Family Firms in Response to Shocks in Industry Sales: International Data

This table presents the estimates of a pooled regression model for 3,110 firms from 41 countries over the period from 1988 to 2012. 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 who is present in the firm's management and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; 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*. In column 4 we also include the variables Financial Development, and Family Firms × Financial Development (not reported). Standard errors are clustered at the firm level. 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	0.0581***	0.0514***	0.0487**	0.0398**	0.0520***
	(3.15)	(2.80)	(2.71)	(2.50)	(2.78)
Family Firms	-0.0178*	-0.0097	-0.0052	-0.0029	
	(-1.88)	(-1.50)	(-1.31)	(-1.02)	-
Δ Industry Sales × Family Firms		0.0395**	0.0307**	0.0221*	0.0251**
		(2.57)	(2.04)	(1.75)	(2.49)
Δ Industry Sales × Unemployment Security			-0.0192*	-0.0161	-0.0205
			(-1.74)	(1.48)	(1.37)
Δ Industry Sales × Family Firms × Unemployment Security			0.0291*	0.0220	0.0115
			(1.80)	(1.54)	(1.22)
Family Firms × Unemployment Security			-0.0072	-0.0059	-0.0061
			(-0.91)	(-0.56)	(-0.62)
Δ Industry Sales × Financial Development				-0.0002	
				(-0.97)	
Δ Industry Sales × Family Firms × Financial Development				0.0002	
				(0.88)	
Unemployment Security	0.0121	0.0114	0.0102	0.0076	0.0098
	(1.09)	(1.02)	(0.92)	(0.81)	(1.01)
Firm Size	-0.0002***	-0.0002***	-0.0002***	-0.0002***	-0.0002***
	(-3.70)	(-3.47)	(-3.49)	(-3.35)	(-3.86)
Asset Tangibility	-0.0109	-0.0099	-0.0091	-0.0082	-0.0110
	(-1.21)	(-1.05)	(-1.00)	(-1.02)	(-0.89)
Return on Assets	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*
	(-1.82)	(-1.80)	(-1.75)	(-1.77)	(-1.85)
Leverage	0.0148*	0.0144	0.0138	0.0131	0.0136
	(1.71)	(1.57)	(1.56)	(1.59)	(1.27)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.08	0.09	0.09	0.11	0.12
Number of Observations	38,291	38,291	38,291	38,291	38,291

Table 9. Price of Employment Insurance in Family Firms: International Data

This table presents the estimates of a pooled regression model for 3,110 firms from 41 countries over the period from 1988 to 2012. 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 who is present in the firm's management and 0 otherwise; Unemployment Security is the gross replacement rate (GRR) in each country, calculated as the ratio of the unemployment insurance benefits received by a worker in the first two years of unemployment to the worker's last gross earnings; 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*. Standard errors are clustered at the firm level. 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	-0.0911*** (-3.28)	-0.0672** (-2.60)	-0.0547** (-2.45)	-
Unemployment Security × Family Firms	0.0052** (2.50)	0.0049** (2.31)	0.0046** (2.29)	0.0054** (2.59)
Financial Development × Family Firms			0.0031 (0.88)	
Unemployment Security	0.0087 (0.91)	0.0080 (0.91)	0.0075 (0.81)	0.0119 (1.14)
Firm Size		0.0491*** (2.72)	0.0411** (2.40)	0.0380** (2.57)
Asset Tangibility		0.0091* (1.84)	0.0088* (1.85)	0.0071 (1.52)
Return on Assets		0.0801*** (3.20)	0.0776*** (3.19)	0.0904*** (3.26)
Leverage		-0.0422 (1.04)	-0.0392 (1.05)	-0.0307 (0.95)
Fixed Effects	Country-Industry	Country-Industry	Country-Industry	Firm
Year Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.06	0.08	0.09	0.12
Number of Observations	38,291	38,291	38,291	38,291

Table 10. Employment Insurance in Family and non-Family Firms in Response to Industry-level and Firm-level Shocks: Italian Data

This table presents the estimates of a pooled regression model for 3,763 Italian firms over the period from 1984 to 2009. The dependent variable is the yearly change in log of total employment of firm *i* in year *t*. The independent variables are as follows: Shocks in columns 1-3 are defined at the industry level and measured as the yearly change of log sales of each industry *j* in year *t* excluding the log sales of firm *i* from the calculation whereas in columns 4-6 are defined at the firm level and directly computed as the deviation of actual firm sales (in logs) from the value predicted by the same firm as of the previous year to capture the unforeseen component of sales; Family Firm is a dummy that takes the value of 1 if the firm *i*'s controlling owner is a family blockholder and 0 otherwise (information obtained from the answer given by each firm to the survey question "What is the nature of the controlling shareholder?" from which we construct a dummy variable that is equal to 1 for firms reporting to be controlled by an individual or family and zero otherwise); Firm Size is the log of 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*; Asset Tangibility is the ratio of Plant, Property and Equipment to 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*. In column 1 (4) we report the results from the specification that uses the total industry-level (firm-level) shock; in column 2 (5) we report the results from the specification that uses the transitory component of the industry-level (firm-level) shock; in column 3 (6) we report the results from the specification that uses the permanent component of the industry-level (firm-level) shock. T-statistics are reported in parenthesis. Bootstrapped standard errors are used in the specification shown in in column 4. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	Industry-level Shocks			Firm-level Shocks		
	Total Shock (1)	**Transitory Component (2)**	**Permanent Component (3)**	**Total Shock (4)**	**Transitory Component (5)**	**Permanent Componen (6)**
Shocks	0.096***	0.051	0.189***	0.075***	0.013	0.159***
	(4.73)	(1.50)	(4.46)	(8.90)	(1.38)	(17.29)
Family Firms	0.007***	0.006***	0.008***	0.007***	0.006***	0.006***
	(4.96)	(3.85)	(4.65)	(4.39)	(3.49)	(3.68)
Shocks × Family Firms	-0.064**	-0.034	-0.130***	0.009	-0.021	0.023
	(-2.50)	(-0.82)	(-3.34)	(0.53)	(-1.29)	(1.60)
Firm Size	-0.001	-0.001**	-0.001**	-0.001	-0.001	-0.001
	(-1.57)	(-2.04)	(-2.26)	(-1.27)	(-1.46)	(-1.13)
Return on Assets	0.123***	0.111***	0.109***	0.112**	0.104***	0.081***
	(20.23)	(17.61)	(17.31)	(2.21)	(-2.01)	(12.08)
Leverage	-0.007**	-0.004	-0.003	-0.005	-0.005	-0.003
	(-1.99)	(-0.96)	(-0.84)	(-0.67)	(-1.11)	(-0.55)
Asset Tangibility	-0.000*	-0.000*	-0.000*	-0.000	-0.000**	-0.000***
	(-1.88)	(-1.88)	(-1.82)	(-0.34)	(-2.01)	(-3.00)
Fixed Effects	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Industry and Region
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.07	0.07	0.07	0.10	0.06	0.06
Number of Observations	14,586	12,606	12,469	13,664	11,529	9,157

Table 11. Separations and Hiring in Family and non-Family Firms in Response to Firm-level Shocks: Italian Data

This table presents the estimates of a pooled regression model for 3,763 Italian firms over the period from 1984 to 2009. The dependent variable in columns 1-3 is the number of separations of firm *i* in year *t* divided by total employment of firm *i* in year *t-1* while in columns 4-6 is the number of hires of firm *i* in year *t* divided by total employment of firm *i* in year *t-1*. The independent variables are as follows: Shocks in columns 1 and 4 are defined at the firm level and it is directly computed as the deviation of actual firm sales (in logs) from the value predicted by the same firm as of the previous year to capture the unforeseen component of sales, shocks in columns 2 and 5 are measured as the transitory component of the firm-level shock described above, and shocks in columns 3 and 6 are measured as the permanent component of the firm-level shock described above; Family Firm is a dummy that takes the value of 1 if the firm *i*'s controlling owner is a family blockholder and 0 otherwise (information obtained from the answer given by each firm to the survey question "What is the nature of the controlling shareholder?" from which we construct a dummy variable that is equal to 1 for firms reporting to be controlled by an individual or family and zero otherwise); Firm Size is the log of 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*; Asset Tangibility is the ratio of Plant, Property and Equipment to 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. Bootstrapped standard errors are used in the specifications shown in columns 1 and 4. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	Total Firm-level Separations			**Total Firm-level Hirings**		
	Total Shock	**Transitory Component**	**Persistent Component**	**Total Shock**	**Transitory Component**	**Persistent Component**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Shocks	-0.021*** (-3.63)	-0.006 (-0.56)	-0.042*** (-3.86)	0.068*** (9.18)	0.011 (0.81)	0.148*** (11.08)*
Family Firms	-0.004** (-2.05)	-0.004** (-2.12)	-0.005** (-2.16)	0.005** (2.50)	0.003 (1.12)	0.004 (1.56)
Shocks × Family Firms	0.017* (1.72)	0.008 (0.41)	0.045*** (2.65)	0.025 (1.29)	-0.033 (-1.39)	0.049** (2.30)
Firm Size	-0.003*** (-4.33)	-0.003*** (-4.08)	-0.003*** (-3.28)	-0.004*** (-5.03)	-0.004*** (-4.97)	-0.004*** (-3.68)
Return on Assets	-0.016 (-1.10)	-0.009 (-1.17)	-0.001 (-0.16)	0.114*** (2.36)	0.107*** (11.16)	0.085*** (8.64)
Leverage	0.023*** (4.10)	0.024*** (4.76)	0.028*** (5.16)	0.018** (2.01)	0.019*** (3.03)	0.020*** (2.86)
Asset Tangibility	-0.000 (-0.27)	-0.000** (-2.14)	-0.000 (-1.39)	-0.001 (-0.29)	-0.001*** (-3.26)	-0.001*** (-3.56)
Fixed Effects	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Industry and Region
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.04	0.05	0.04	0.09	0.07	0.07
Number of Observations	13,767	11,588	9,193	13,786	11,604	9,207

Table 12. Wage Insurance in Family and non-Family Firms in Response to Industry-level and Firm-level Shocks: Italian Data

This table presents the estimates of a pooled regression model for 3,763 Italian firms and almost 800,000 workers over the period from 1984 to 1997. The dependent variable is the yearly change in log of the real wage of worker *k* in firm *i* in year *t*. The independent variables are as follows: Shocks in column 1 are defined at the industry level and measured as the yearly change of log sales of each industry *j* in year *t* excluding the log sales of firm *i* from the calculation, in column 2 shocks are defined at the firm level and are directly computed as the deviation of actual firm sales (in logs) from the value predicted by the same firm as of the previous year to capture the unforeseen component of sales, shocks in column 3 are measured as the transitory component of the firm-level shock described above and shocks in columns 4 are measured as the persistent component of the firm-level shock described above; Family Firm is a dummy that takes the value of 1 if the firm *i*'s controlling owner is a family blockholder and 0 otherwise; Firm Size is the log of 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*; Asset Tangibility is the ratio of Plant, Property and Equipment to 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*; Workers' Age (Squared) is the age (squared value of age) of each worker *k* in year *t*; Workers' Gender is a dummy variable that takes the value of 1 if worker *k* is male and zero otherwise; White Collar Worker is a dummy variable that takes the value of 1 if worker *k* is classified as white collar and zero otherwise; Executive is a dummy variable that takes the value of 1 if worker *k* has an executive job and zero otherwise. T-statistics are reported in parenthesis. Standard errors are clustered at the level of the firm-year. Boostrapped standard errors are used in the specification shown in column 2. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	Industry-level Shock Total (1)	**Firm-level Shock Total (2)**	**Firm-level Shock Transitory (3)**	**Firm-level Shock Persistent (4)**
Shocks	0.068**	0.037***	-0.001	0.057***
	(2.38)	(4.40)	(-0.13)	(2.68)
Family Firms	-0.000	-0.001	-0.001	-0.001
	(-0.13)	(-0.46)	(-0.40)	(-0.6)
Shocks × Family Firms	-0.039	0.024*	0.042***	0.025
	(-1.44)	(1. 82)	(2.85)	(0.94)
Firm Size	0.000	-0.000	-0.000	0.000
	(0.22)	(-0.34)	(-0.36)	(0.36)
Return on Assets	0.011	0.010	0.016	0.007
	(1.11)	(1.05)	(1.40)	(0.58)
Leverage	-0.005	-0.001	-0.004	-0.009
	(-0.89)	(-0.11)	(-0.60)	(-1.04)
Asset Tangibility	0.000	0.001	0.001	0.002*
	(0.39)	(1.36)	(1.40)	(1.78)
Workers' Age	-0.005***	-0.005***	-0.005***	-0.005***
	(-22.95)	(-18.40)	(-18.23)	(-16.77)
Workers' Age Squared	0.000***	0.000***	0.000***	0.000***
	(20.98)	(16.83)	(16.24)	(14.88)
Workers' Gender	0.009***	0.010***	0.011***	0.011***
	(12.27)	(11.99)	(11.47)	(9.50)
White Collar	0.016***	0.016***	0.016***	0.016***
	(17.14)	(14.47)	(13.97)	(12.13)
Executive	0.037***	0.036***	0.035***	0.033***
	(20.66)	(17.67)	(15.12)	(12.56)
Fixed Effects	Industry and Region	Industry and Region	Industry and Region	Industry and Region
Year Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.05	0.05	0.05	0.05
Number of Observations	1,997,520	1,583,719	1,347,521	1,040,027

Table 13. Price of Employment Insurance in Family Firms: Italian Data

This table presents the estimates of a pooled regression model for 3,763 Italian firms and almost 800,000 workers over the period from 1984 to 1997. The dependent variable is the yearly change in log of the real wage of of worker *k* in 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 controlling owner is a family blockholder and 0 otherwise (information obtained from the answer given by each firm to the survey question "What is the nature of the controlling shareholder?" from which we construct a dummy variable that is equal to 1 for firms reporting to be controlled by an individual or family); Firm Size is the log of 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*; Asset Tangibility is the ratio of Plant, Property and Equipment to 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*; Workers' Age (Squared) is the age (squared value of age) of each worker *k* in year *t*; Workers' Gender is a dummy variable that takes the value of 1 if worker *k* is male and zero otherwise; White Collar Worker is a dummy variable that takes the value of 1 if worker *k* is classified as white collar and zero otherwise; Executive is a dummy variable that takes the value of 1 if worker *k* has an executive job and zero otherwise. T-statistics are reported in parenthesis. Standard errors are clustered at the level of the firm-year. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Family Firms	-0.166*** (-24.10)	-0.036*** (-8.58)	-0.026*** (-4.38)	-0.020*** (-4.87)	0.002 (0.39)
Firm Size			0.029*** (11.11)	0.018*** (12.24)	0.021*** (5.35)
Return on Assets			-0.061 (-1.33)	0.106*** (4.68)	0.081*** (3.72)
Leverage			-0.050*** (-2.99)	-0.009 (-0.82)	-0.040*** (-3.22)
Asset Tangibility			-0.005** (-2.26)	-0.004*** (-2.82)	-0.001 (-0.38)
Workers' Age		0.029*** (59.14)		0.029*** (59.59)	0.033*** (25.89)
Workers' Age Squared		-0.000*** (-48.39)		-0.000*** (48.73)	-0.000*** (-19.13)
Workers' Gender		0.184*** (88.57)		0.183*** (84.56)	
White Collar		0.338*** (126.91)		0.338*** (118.06)	0.064*** (14.51)
Executive		1.150*** (388.95)		1.152*** (352.76)	0.361*** (41.61)
Fixed Effects	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Workers
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
R^2	0.05	0.59	0.18	0.60	0.92
Number of Observations	2,685,569	2,685,569	2,232,696	2,232,696	2,232,696

Table 14. Price of Employment Insurance in Family Firms: stayers and movers

This table presents the estimates of a pooled regression model for 3,763 Italian firms and almost 800,000 workers over the period from 1984 to 1997. The dependent variable is the yearly change in the log of the real wage of of worker *k* in firm *i* in year *t*. Non Family minus Family is a variable which is equal to 1 if the status of the employer changes from a non-family firm to a family firm, -1 if it changes from family to non-family firm, and zero if it does not change. Dummy Family to Non-Family is a dummy equal to 1 if the status of the employer changes from family to non-family firm and zero otherwise, and similarly for Dummy Family to Non-Family. Specifications shown in columns 1-4 use stayers only, so that the change in the ownership status is due to a firm change. Specifications in columns 5-6 use movers only, so that the change in ownership status is due to the worker moving between family and non-family firms. Firm Size is the log of 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*; Asset Tangibility is the ratio of Plant, Property and Equipment to 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*; Workers' Age (Squared) is the age (squared value of age) of each worker *k* in year *t*; Workers' Gender is a dummy variable that takes the value of 1 if worker *k* is male and zero otherwise; White Collar Worker is a dummy variable that takes the value of 1 if worker *k* is classified as white collar and zero otherwise; Executive is a dummy variable that takes the value of 1 if worker *k* has an executive job and zero otherwise. T-statistics are reported in parenthesis. Standard errors are clustered at the level of the firm-year. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1) Stayers	(2) Stayers	(3) Stayers	(4) Stayers	(5) Movers	(6) Movers
Non-Family minus	0.001		-0.001		-0.029***	
Family	(0.33)		(-0.49)		(-3.48)	
Dummy Family to		-0.003		0.002		0.026**
Non-Family		(-0.91)		(0.58)		(2.04)
Dummy Non-Family		-0.003		0.000		-0.033**
to Family		(-0.51)		(0.04)		(-2.29)
Firm Size	0.000	0.000	0.000	0.000	0.009*	0.009*
	(0.33)	(0.29)	(0.33)	(0.35)	(1.74)	(1.75)
Return on Assets	0.013	0.013	0.013	0.013	-0.121	-0.120
	(1.33)	(1.36)	(1.33)	(1.32)	(-1.55)	(-1.55)
Leverage	-0.003	-0.003	-0.003	-0.003	0.040	0.041
	(-0.59)	(-0.55)	(-0.59)	(-0.60)	(1.01)	(1.04)
Asset Tangibility	0.000	0.000	0.000	0.000	0.006	0.006
	(0.28)	(0.27)	(0.29)	(0.29)	(1.27)	(1.24)
Workers' Age	-0.005***	-0.005***	-0.005***	-0.005***	0.003	0.003
	(-23.51)	(-23.50)	(-23.50)	(-23.50)	(1.00)	(0.98)
Workers' Age Squared	0.000***	0.000***	0.000***	0.000***	-0.000	-0.000
	(21.33)	(21.32)	(21.32)	(21.32)	(-0.87)	(-0.85)
Workers' Gender	0.008***	0.008***	0.008***	0.008***	-0.008	-0.008
	(11.13)	(11.14)	(11.13)	(11.17)	(-0.78)	(-0.78)
White Collar	0.016***	0.016***	0.015***	0.015***	0.049***	0.049***
	(16.30)	(16.29)	(16.30)	(16.31)	(4.71)	(4.62)
Executive	0.036***	0.036***	0.036***	0.036***	0.041**	0.040**
	(19.61)	(19.62)	(19.61)	(19.62)	(2.01)	(1.97)
Fixed effects	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Industry and Region	Industry and Region
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.05	0.05	0.05	0.05	0.07	0.07
Number of Observations	1,900,400	1,900,400	1,900,400	1,900,400	2,855	2,855