

### Foundation owned firms: a comparative study of stakeholder approaches

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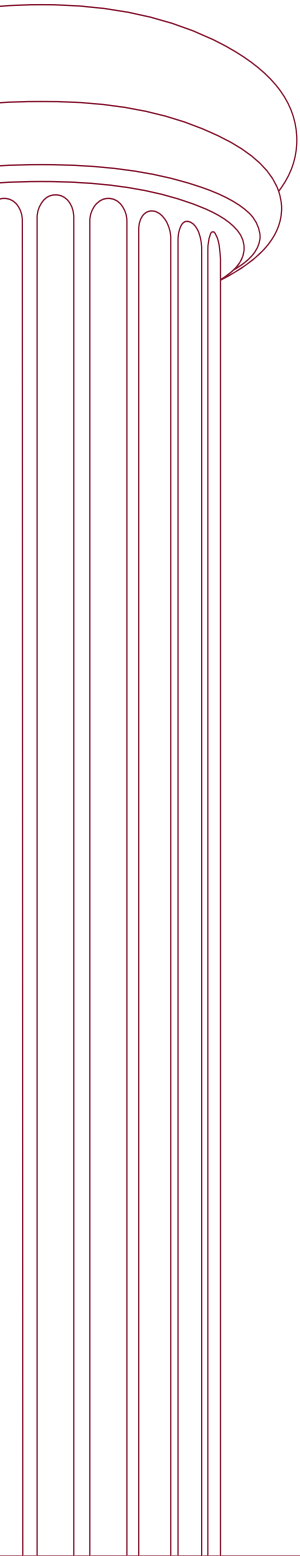
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Mathias Draheim and Günter Franke

## **Foundation owned firms**

A comparative study of stakeholder approaches

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## 1. Introduction

How do policy and performance of firms change with variations in the stakeholder approach? We compare foundation owned firms (FoFs) and family firms, with and without codetermination. As foundations have no owners, the impact on corporate governance of residual claimants might be weaker and the impact of other stakeholders stronger. We find that German foundation owned firms are more labor intensive relative to matching firms. But their wages and their hiring and firing policy are about the same. Their financing policy is more conservative. Their financial performance is slightly weaker. Apart from financing policy, codetermination has similar effects. These findings indicate a stronger impact on corporate governance of employees in FoFs, combined with long-term orientation.

Given various stakeholders with divergent interests, corporate governance of firms has to deal with conflicts of interests. Two approaches are widely discussed, the stakeholder and the shareholder value approach. The latter is criticised because shareholders can impose negative externalities on other stakeholders. This creates inefficiencies which may be partly resolved by a stakeholder approach (Mayer 2013, Magill et al 2015). Critics of the stakeholder approach argue that it provides no clear guidance for the managers of a firm as they can pursue various objectives (Jensen 1986, Tirole 2001). Many firms in Continental Europe are family firms whose owners appear to pay voluntarily more attention to the interests of other stakeholders, in particular employees (Bau and Chirico 2014, Bingham et al 2011). This informal power of employees is supplemented in some countries by formal power. Commercial law may entitle employees to set up workers' councils which decide together with management on working conditions. In Germany, given more than 500 (2000) employees, 1/3 (1/2) of the seats of the supervisory board are assigned to representatives of the employees.

An important theoretical and empirical issue is how variations in the stakeholder approach affect corporate governance and financial performance of firms. A specific variation is generated by an atypical ownership structure of the firm. Typically, a firm is owned by natural persons being residual claimholders, even in pyramid ownership structures. In a foundation owned firm (FoF) these owners are partially or fully replaced by a foundation which itself is not owned by anybody. The foundation may distribute the cash flows which it receives from the FoF to a set of beneficiaries as prescribed by the foundation charter. Given a charitable foundation, these beneficiaries must not interfere with the governance of the foundation or the FoF. The managers of the foundation may exercise the voting rights of the foundation in the FoF. As they are not residual claimholders, ownership and control are separated (Fama and Jensen 1983). Ideally speaking, the foundation managers should act in the spirit of the (deceased) founder, the initial principal. In the foundation charter, he codified the purposes

and objectives to be pursued by the foundation. But, given a lack of enforceability, the foundation managers may pursue their own objectives. For example, they might use their power to benefit friends or neglect their supervisory duties. This additional agency problem poses another challenge to the theory of corporate governance. Agency theory helps to better understand the associated problems (Fama 1980) and to develop contractual arrangements to harmonize the interests of the foundation managers (agents) and the foundation (principal) (Holmström 1979, Eisenhardt 1989).

The theory of corporate governance should answer the following questions. Given a lack of powerful residual claimants in a firm, how is the vacuum of power filled? Do employee representatives get a better access to the powerful managers of the firm and strengthen their informal power (Hill and Jones 1992, Rajan and Zingales 1998)? Do firm managers benefit? What are the implications for the firm's policy and its financial performance? What are the effects of mixed ownership structures in which non-residual and residual claimants coexist? Even more complex, what happens if corporate governance is also affected by codetermination?

This paper tries to provide some empirical evidence on these questions and fill some gaps in the theory of corporate governance. The effects of blockholdings of foundations and of codetermination are at the core of this paper. In line with Shleifer and Vishny 1997, blockholdings may safeguard the long-run existence of the FoF and, thus, of the foundation. They may help to monitor FoF-managers and to counterbalance claims of other stakeholders (Rajan and Zingales 1998, Stepanov and Suronov 2017). Also, they may facilitate the cooperation with labor representatives (van Essen et al 2013).

In this paper, we analyse German FoFs and compare them to appropriately chosen German matching firms. These are mostly firms with strong blockholders, in particular family firms (Franks and Mayer 1997). We conjecture that employees are more powerful in FoFs. To verify this conjecture, we test for differences in policies and financial performance of FoFs and matching firms. Moreover, we use the unique opportunity in Germany to analyse effects of codetermination. The similarities between the empirical findings of both tests provide strong support for our conjecture that employees are more powerful in FoFs. These findings broaden our knowledge on the effects on policies and financial performance of firms of various stakeholder approaches.

Foundation owned firms exist in various countries, in particular in European countries. FoFs also exist in the US, but foundation ownership is usually less than 20% to preserve tax privileges for charitable foundations. Big FoFs such as Bosch, ZF Friedrichshafen, Körber and Bertelsmann are located in Germany, in Denmark Maersk and Tuborg are among the big FoFs, in Sweden Ikea. As most German FoFs are not listed, we study annual statements, covering the years 2003 to 2012.

Our contributions to the theory of corporate governance are as follows. First, given weak residual claimholders, we hypothesize that managers and/or employees are more powerful and effectively promote their interests. We find that production in FoFs is more labour-intensive than in matching firms. Codetermination reinforces this effect. Labour intensity may be raised by producing more labour-intensive products and services or by vertical integration. But we neither find a higher average income of managers or employees in FoFs relative to matching firms nor in codetermined firms. We also do not find significant differences in the hiring and firing policy between FoFs and matching firms. Also, codetermination does not have a significant effect. However, employees in FoFs are protected against layoffs in takeovers as foundations usually are not allowed to sell their ownership stakes. Thus, FoFs cannot be taken over. Second, financing policy of FoFs is more conservative relative to matching firms. Profit payouts are lower in FoFs, perhaps because foundation managers are only mildly interested in profit payouts since they are not residual claimholders. Leverage is also lower in FoFs. A conservative financing policy mitigates vulnerability of FoFs to negative external shocks. This is also in the interest of FoF-managers and employees. Codetermination, however, has no significant effect on financing policy in our sample. This is in contrast to Fauver and Fuerst (2006) who find a higher leverage and a higher probability of dividend payments in codetermined corporations.

Third, the theory of corporate governance should relate variations in governance to variations in financial performance. Financial performance is measured by average returns on assets (RoA) and risk, proxied by the standard deviation of RoA,  $\sigma(\text{RoA})$ . In a panel analysis, we find that the average RoA is lower in FoFs when we linearly control for risk. Since codetermination has a similar effect on RoA as foundation ownership, FoFs likely attach a higher weight to employee interests. This conjecture is supported also by the observation that both, foundation-ownership and codetermination, lower risk to a similar extent. The RoA-findings suggest that more employee orientation weakens financial performance.

Fourth, joint ownership of a foundation and other owners appears to improve financial performance. Surprisingly, listing at a stock exchange weakens financial performance as does foundation ownership. But a positive interaction effect between listing and foundation ownership eliminates both negative effects. Apparently “capital market control” eliminates some weaknesses of foundation ownership in corporate governance, and vice versa. We also derive a Sharpe ratio for each firm, dividing the average (RoA minus risk-free rate) by  $\sigma(\text{RoA})$ . This ratio is neither significantly affected by foundation ownership nor by codetermination, controlling for other factors. This finding contrasts with the negative effects on financial performance found in the panel analysis. We conclude that foundation ownership and codetermination weaken financial performance, but this effect is fairly small.

These findings are important for the theory of corporate governance as they highlight the effects on corporate policy and financial performance of several variations in the stakeholder model. The effects of foundation ownership are similar to those of codetermination, except for financing policy. Hence, also foundations likely put or tolerate a higher weight on employee interests. This weakens financial performance so that it is costly to residual income-owners. Employees apparently are not interested in maximising their benefits over the short/medium term by extracting money from the firm, but pursue a long-term policy of safeguarding the existence of the firm, thereby promoting job security. They can achieve these goals in a competitive environment only if financial performance is not impaired or only to a small degree. Hence, competitive financial performance strongly constrains the impact of conflicting interests (Fama 1980). Conflicts of interest may be stronger regarding financing policy. Residual income-owners may insist on high profit payouts to secure their financial claims (Shleifer and Vishny 1997), in contrast to foundation managers.

At least two organizational channels may explain why the strong separation of ownership and control associated with foundation ownership has only limited effects on financial performance of FoFs. The foundation managers, a special stakeholder group, may act in the spirit of the founder to preserve the long run existence of the firm and their reputation as supervisors. Thus, they may put pressure on the FoF-managers to safeguard profitability. Alternatively, managers and employees of the FoF themselves pursue profitability to preserve their jobs in the long run in a competitive environment so that monitoring of foundation managers may be largely irrelevant. As long as the foundation managers do not insist on policies which are detrimental to FoFs, FoF-managers may act independently.

Our conclusion that foundation ownership weakens financial performance is in contrast to earlier studies. Thomsen (1996) investigates accounting based returns of Danish FoFs. He does not find inferior returns relative to the largest Danish non-FoFs. Thomsen and Rose (2004) compare Danish FoFs with other Danish firms listed at a stock exchange while Thomsen and Hansmann (2013) compare them to firms with a traditional ownership structure. Both studies also use stock market data and arrive at the same conclusion as Thomsen (1996). Hansmann and Thomsen (2013) find that greater managerial distance between the board of the foundation and that of the FoF improves the return on assets.

In an early study, Herrmann (1996) and Herrmann and Franke (2002) analyze a small sample of German FoFs over the short period of 1990 to 1992. Relative to German firms listed at a stock exchange, they find slightly higher returns on assets, higher labor intensity, but lower salary levels in FoFs. Risk is ignored.

The paper is organized as follows. In the next section, we provide more details about the motives of founders of foundations and the regulation of foundations in Germany. Then we derive some hypotheses on corporate policies and performance of FoFs. The subsequent



section shows descriptive statistics and the following section presents our empirical findings. After discussing some robustness results the paper concludes.

## **2. Background of Foundation Owned Firms**

Usually, the founder transforms a family firm with a traditional ownership structure into a FoF to assure that the firm thrives "forever". The foundation gets an ownership stake in the firm which usually cannot be sold. In Germany motives of founders differ with regard to the beneficiaries of the foundation (Götz/Pach-Hanssenheimb 2016). Founders of a charitable foundation may wish to fund charitable activities. Charitable foundations are tax-exempt. Founders of a family foundation may be afraid of conflicts between family members which may endanger the stability of the family firm. The family foundation provides restricted financial support to the members of the founder's family. These beneficiaries cannot sell their claims against the foundation. The family foundation is not tax-exempt.

Another motive for setting up a foundation is regulatory arbitrage. A family firm may be a partnership in which at least one partner has unlimited liability. A foundation can take the position of the unlimited liability partner and thereby remove full liability of natural persons. In our sample, 14 family foundations are fully liable partners, but mostly have no equity stake, i.e., no claim on the firm's profit. They get a fixed fee for management and taking the unlimited liability-risk. As a fully liable partner, the foundation is entitled to manage the firm.

Another type of regulatory arbitrage relates to the German codetermination law. To avoid codetermination, Aldi and Lidl, two very big retail store chains, have set up various small regional partnerships which own the supermarkets. These partnerships are owned by family foundations, similar to holding companies.

Regulation of foundations is mostly governed by the German state in which the foundation is domiciled. Setting up a foundation requires the founder to design a foundation charter with many rules which specify the purpose of the foundation, its activities, and how the foundation should be managed. It often also contains rules about corporate governance of the FoF. The charter is an important and effective device for the founder to impose her will "forever" on the foundation and the FoF. The foundation charter is very difficult to change once it has been approved by the German state which registers the foundation. The state usually does not interfere in the foundations' policies as long as the charter is observed. Foundations should preserve their capital, defined in real terms.

## **3. Foundation Owned Firms versus Family Firms: Hypotheses**

### **3.1 A Stylized Stakeholder Model**

For a comparison of different stakeholder models, we consider a simplified version of the model used by Magill et al (2015). Let  $u_i(A)$  denote the utility of stakeholder (group)  $i$  given

the firm's policy  $A$ . A linearly calibrated stakeholder model attaches the nonnegative weight  $\lambda_i$  to stakeholder  $i$ . The optimal policy  $A^*$  of the firm is the solution to

$$\max \sum_i \lambda_i u_i(A) \quad \text{s.t.} \quad u_i(A) \geq 0 \text{ for each } i; \quad A \in \Phi, \quad \sum_i \lambda_i = 1 \quad (1) \quad A$$

$u_i(A) \geq 0$  is the participation constraint of stakeholder  $i$ .  $\Phi$  denotes the set of feasible firm policies, defined by institutional and other constraints. The weights add up to 1.

Transforming a family firm into a FoF changes the set of stakeholders. Family members being residual claimants of the firm are (partially) replaced by the foundation which (partially) owns the firm. As a new stakeholder, the foundation gets a positive weight. It will be small if the foundation managers do not effectively use their power. As the foundation managers are not residual claimants of the firm, the weight of residual claimants should decline. Depending on the goals of the foundation managers, also the weights of other stakeholders may change. We address this variation in the stakeholder model by deriving and testing hypotheses about its governance and performance effects.

### 3.2. Family Firms: The Origin of FoFs

First, we discuss some properties of family/closely held firms from which most FoFs originate. Most matching firms in our sample are also family/closely held firms. A successful entrepreneur may want to preserve her successful business model by setting up a FoF. Therefore, corporate governance of the FoF may inherit features of this model. The role of owners in a family/closely held firm is controversial. Owners with a relational/stewardship attitude adopt a stakeholder orientation, while owners with an individualistic attitude maximize their private benefits (Jones et al 2007, Kallifatides et al 2010, Ch. 1 and 22). Empirically, Bau and Chirico (2014) and Bingham et al (2011) find a relational attitude in family firms which primarily benefits employees (see also Hillman and Keim 2001). Van Essen, Strike et al (2015) find that family controlled firms were less likely to downsize their workforce or cut wages in the last financial crisis. An important reason for a stakeholder culture in closely held firms could be the long-term presence of the owner-managers (Anderson and Reeb 2003). In these firms, other stakeholders are dealing with the same owner-managers for longer periods than in public firms, promoting stronger ties. While family firms may suffer from tensions in the family and excessive valuation of socio-emotional wealth by family members, they may reduce agency problems, created by separation of ownership and control, and promote long-term oriented corporate policies. Bezemer et al (2015) argue that a stakeholder culture prevails in the Netherlands. This is also true in Germany.

### 3.3 Privileged Employee Orientation

We conjecture that a weaker role of residual claimants in FoFs strengthens that of employees. The move to a FoF likely renders managers of the firm more powerful, in particular if the foundation's management is weak. This might translate into more power of

employees. They are always present in the firm, their representatives often talk to managers. As managers are a particular group of employees, they share joint interests. When a stakeholder model attaches a higher weight to employee interests, we call this "privileged employee orientation". Our hypotheses compare corporate governance under a privileged employee and under a stakeholder orientation which prevails in family firms.

Under privileged employee orientation management focuses more on employee preferences. Employee behavior may be motivated extrinsically by money, but also intrinsically (Rebitzer and Taylor 2011). A critical question is whether employees pursue a short or long-term perspective in the firm. In his analysis of the labor managed firm Furubotn (1971) argues that the employees' time horizon depends, apart from their age, on their options to extract money from the firm in the short/medium-term and on their outside opportunities to earn money. If creditors impose strong credit constraints, employees' options for money extraction are curtailed. Moreover, if it is difficult to find another job, then employees may attach a high value to long-term job security. This is even more important in the case of firm specific human capital of employees which cannot be transferred to other jobs (Jensen and Meckling 1979). Therefore, the employees' time horizon regarding their job is ambiguous.

(1) Hypothesis 1 addresses potential employee benefits in FoFs with privileged employee orientation. Raising the average income of employees benefits short/medium-term oriented employees, but may endanger the firm's long run-viability. Raising the number of jobs or making jobs safer benefits long-term oriented employees and managers.

***Hypothesis 1: Privileged employee orientation raises a) the average income of employees, b) the number of jobs, and c) makes jobs safer, relative to stakeholder orientation in family firms.***

We briefly discuss strategies to raise the number of jobs and make jobs safer<sup>1</sup>. (i) The firm can offer more (product-related) services and produce more labor-intensive products. Also, a firm may substitute labor (ii) for capital or (iii) for material. The firm might buy less labor-saving technical equipment (ii) or produce material internally instead of buying it (iii). These strategies raise the number of jobs and may also strengthen job security.

To identify these strategies, we analyze accounting items and ratios. (i) Concentrating on labor intensive products and services raises the firm's personnel expense, but may have little effect on depreciation and material expense. The firm's ratio "Personnel expense/operating revenue" should increase. (ii) Substituting labor for capital raises a firm's ratio "Personnel expense/depreciation". (iii) Substituting labor for material raises "Personnel expense/material expense". It also raises "Personnel expense/operating revenue" and lowers "Material expense/operating revenue" if operating revenue does not change. If, however, the

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<sup>1</sup> Instead of raising the number of jobs existing employees might prefer to maximize benefits per employee. That might prohibit new jobs. But firms need to hire young people to balance the age pyramid of employees and to expand when there are new windows of opportunity.

substitution is achieved by vertical integration of firms, then consolidation in the annual statement lowers the operating revenue of the merged firm. This should reinforce the increase in "Personnel expense/operating revenue". Hence, a high ratio "Personnel expense/operating revenue" does not always indicate low labor productivity. It may be due to a consolidation effect. "Material expense/operating revenue" of the merged firm should be lower than the average of the ratios of the non-merged firms, weighted by their operating revenues<sup>2</sup>.

Similar results can be obtained from analyzing the firm's long-term production function. For simplicity, we assume that the firm's production function can be approximated by a Cobb-Douglas function  $\ln OR = \alpha \ln PE + \beta \ln ME + \gamma \ln DE + \delta \ln OE$  with  $OR$  = operating revenue,  $PE$  = personnel expense,  $ME$  = material expense,  $DE$  = depreciation, and  $OE$  = other production expenses.  $\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\delta$  are the elasticities of the operating revenue with respect to the production factors. These elasticities should add to 1,  $\alpha + \beta + \gamma + \delta = 1$ .

To model the impact of privileged employee orientation, we use a simplified version of equation (1) and assume that the firm maximizes a weighted average of operating revenue and personnel expense,  $\kappa OR + (1 - \kappa) PE$ ,  $0 < \kappa < 1$ . The weight  $(1 - \kappa)$ , put on personnel expense, is higher under the privileged employee orientation. The objective function is maximized with respect to  $PE$ ,  $ME$ ,  $DE$ , and  $OE$ , subject to the budget constraint  $PE + ME + DE + OC = TC$ . Assume the total production cost  $TC$  to be given. Then a higher weight of the personnel expense lowers the optimal operating revenue and raises the optimal personnel expense and the elasticity of operating revenue with respect to personnel expense, indicating higher labor intensity. The expenses for the other production factors and their corresponding elasticities decline. This follows from the optimization as shown in an appendix which is electronically available upon request. The optimization results motivate Hypothesis 2.

***Hypothesis 2: Stronger employee orientation raises the elasticity of operating revenue with respect to personnel expense and the ratio "Personnel expense/operating revenue"; it lowers the elasticity of operating revenue with respect to material expense and the ratio "Material expense/operating revenue".***

(iv) A fourth strategy to stabilize employment relates to the diversity of the firm's product portfolio. Many firms streamlined their product portfolio to improve their competitiveness by focusing on core competences. This led to spin-offs and closures of product lines, the number of employees and operating revenue declined. With a privileged employee orientation, FoFs may abstain from such policies. This might explain why FoFs are mostly

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<sup>2</sup> For illustration, merge two firms with subsequent production stages. Before the merger, each firm has its own material expense and its own operating revenue. As an approximation, the operating revenue of the firm with the first production stage equals the material expense of the firm with the second production stage. In the "consolidated annual statement" the material expense of the second firm is netted against the operating revenue of the first firm while personnel expenses are added. It can be shown that "Personnel expense/operating revenue" of the integrated firm is higher than the average of the ratios of the two firms, weighted by their operating revenues. "Material expense/operating revenue" of the integrated firm is smaller.

larger than matching firms. Job security (see Hypothesis 1c)) may be strengthened through various channels including high profitability, a conservative financing policy, and internal firm growth.

(2) Next, consider financing policy. If residual claimants are weakened in a FoF, then employees and creditors may gain power. Long term-oriented employees and creditors may be afraid of higher leverage and higher investment risk as they raise the FoF's default risk. Hence in a FoF both stakeholders may insist on a lower leverage and a less risky investment policy if loan-interest rates are to stay the same (see also Istitieh and Rodriguez-Fernandez 2006). Chen et al (2012) find that firms with unionized workers (in which employee orientation is likely stronger) invest less risky and pay lower bond coupons than other firms. Croci et al (2011) find that family firms (in which employee orientation tends to be stronger than in public firms) invest less risky and obtain more long-term debt (see also Lins et al (2013)). These findings support the view that a conservative investment and financing policy benefits long term-oriented employees and also creditors. It should stabilize the firm and strengthen job security. It also weakens concerns about difficulties in raising new equity capital, due to small financial reserves of the foundation. Hence,

***Hypothesis 3: Privileged employee orientation motivates a more conservative investment and financing policy, in line with creditors' interest.***

(3) All firms would grant costless benefits to employees, i.e., benefits which do not lower profits<sup>3</sup>. If FoFs provide more benefits than family firms, these benefits likely are costly and impair financial performance. This is supported also by the previous analysis of the Cobb Douglas-production function. A higher weight on personnel expense lowers the optimal operating revenue. Hence

***Hypothesis 4: Privileged employee orientation lowers financial performance of FoFs.***

The counterargument that ownership structure and hence FoF-ownership should not matter for financial performance (Demsetz and Villalonga (2001)) is based on the shareholder value approach. Profit maximizing shareholders choose the ownership structure so that it has no impact on financial performance. Given the very inflexible ownership structure in FoFs, this counterargument is likely invalid.

In Germany, there exist charitable and family foundations. This allows additional insights into corporate governance of FoFs, driven by heterogeneity of foundations. If a charitable foundation is the single owner of a FoF, natural persons being residual claimants have no power. Even though foundation managers and other external directors of the FoF may oppose privileged employee orientation, their incentives to do so may be weak. In a family foundation, the charter often reserves some power for the family. As the family receives financial support from the foundation which is funded by the FoF, the family likely uses its

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<sup>3</sup> Hillman and Keim (2001) find that firms improving their relations with employees often raise shareholder value. These cases illustrate a win-win situation.

power to constrain employee orientation in the FoF so that it does not materially impair financial performance. Hence, we expect less employee orientation in FoFs owned by family foundations.

***Hypothesis 5: Employee orientation is weaker in firms owned by family foundations than in those owned by charitable foundations.***

While privileged employment orientation may prevail in FoFs informally, codetermination legally enforces it. We conjecture that codetermination and foundation ownership have similar effects on employment and production policy. If this turns out to be true, then this strongly confirms privileged employment orientation in FoFs. Therefore, we also check for codetermination effects.

Jensen and Meckling (1979) argue that codetermination constrains firms and is therefore inefficient; this argument may explain why codetermination so far has not been adopted in countries other than Germany. Other authors take a more positive view. Hall and Soskice (2001, Introduction) present a relational view of the firm. For them the quality of the relationships between stakeholders within a firm is critical. Employees collect information about the firm that can be valuable to management, but they can also withhold information and reduce their efforts. Gorton and Schmid (2004) find that companies with equal representation of employees and shareholders on the supervisory board trade at a substantial stock market discount relative to companies with one third representation of employees. Fauver and Fuerst (2006), however, find that Tobin's Q significantly improves with employee representation for firms in industries that demand strong coordination with workers. Labor representation may improve monitoring and reduce managerial agency costs. Jirjahn (2011) reviews the controversial empirical findings about workers's councils and codetermination.

#### **4. Descriptive Statistics**

In 2007 Fleschutz published a list of 419 German FoFs. Marc Eulerich from the University of Duisburg/Essen recently updated this list which now includes 740 FoFs. He was kind enough to provide us his new list which appears to be very carefully derived. This list includes for-profit- and not for-profit firms, parent companies and subsidiaries. In this paper, we only analyze for-profit firms. Since only a small fraction of FoFs is listed, we only use accounting data. We include a firm of the Eulerich list in our sample only if several requirements are satisfied. First, we exclude financial firms. As we obtain annual statements from the data base Orbis, we exclude those FoFs for which Orbis does not provide (enough) reliable data. These are mostly small FoFs. As cutoff points, we require a minimum annual operating revenue of 380,000 € in the sampling period 2003 to 2012 and minimum total assets of 49,000 €. Second, we only consider operating units as firms, i.e., legal entities with operating revenues generated within this entity. Such an entity may be a subsidiary of another firm.

Third, we include a firm as a FoF if a) the foundation has limited liability in the firm and has at least 2 percent of the voting rights or 2 percent of the equity stake (i.e. equity-cash flow rights), or b) if the foundation is an unlimited liability-partner. Often, shares of voting rights and of equity stakes differ substantially. We obtain the foundation's share of equity stakes from the well-established German database Hoppenstedt, the share of voting rights from Orbis as far as possible. In addition, we hand-collect data from public registers. Since often pyramid structures of firms exist, we derive the effective shares of the foundation in the FoF (similar to Franks and Mayer 1997). This leaves us with 164 for-profit FoFs. Even though the number of FoFs may increase slightly over time, our sample is clearly representative for Germany.

Fourth, we match each FoF with firms of the same industry and similar size, following other papers (Strebulaev and Yang 2013, e.g.). Matching firms are also German and taken from Orbis. We use two digit US SIC codes for industry classification. But whenever there are more than 100,000 German firms in a two digit US SIC industry, we use the three digit US SIC codes for a finer classification. Size is measured by operating revenue or by total assets. Both numbers are correlated with 0.945. If possible, we select for each FoF five matching firms of the same industry which are closest in size. Our sample contains 757 matching firms. Hence, on average, for every FoF we use 4.6 matching firms. By using several matching firms, we try to neutralize idiosyncrasies of matching firms. The disadvantage of using so many matching firms is that the average size difference between a FoF and its matching firms increases. Most matching firms are family/closely held firms as documented by Franks and Mayer (1997). Even though this has changed to some extent in the last 20 years, it is still typical. For the big discount chain stores Aldi and Lidl there are no matching firms. Therefore, we exclude these FoFs.

Sometimes total assets and/or operating revenue of a firm change dramatically from one year to the next. This can be due to mergers, split-offs or data errors. Whenever for some firm total assets, operating revenue, or number of employees declines by more than 50 percent or increases by more than 100 percent from one year to the next, we only use the data starting after the dramatic change. We winsorize data at the 1 percent and at the 99 percent-quantile. We deflate accounting numbers to the 2003-price level by the Eurostat BIP-deflator for Germany.

As shown in Table 1, the foundation is charitable in 105 cases, in 55 cases non-charitable (= family foundation). In 4 cases a charitable and a non-charitable foundation share ownership in a FoF. These cases are excluded when we analyze FoFs related to either a charitable or a non-charitable foundation. In 150 FoFs the foundation has limited liability, in 14 FoFs full liability (also counted as having all voting rights). The foundation has the majority of votes in 112, the majority of equity-cash flow rights in 84 cases.

**TABLE 1 Summary Statistics**

|                 | all FoFs | Charity-owned FoFs |     | Full liability-FoFs |     | vote share |       | equity share |       |
|-----------------|----------|--------------------|-----|---------------------|-----|------------|-------|--------------|-------|
|                 |          | no                 | yes | no                  | yes | < 0.5      | > 0.5 | < 0.5        | > 0.5 |
| Number of firms | 164      | 55                 | 105 | 150                 | 14  | 52         | 112   | 80           | 84    |

| FoFs                                 | # of obs | Mean  | Median | 25%-quantile | 75%-quantile |
|--------------------------------------|----------|-------|--------|--------------|--------------|
| ∅ Total assets (mill EUR): FoFs      | 164      | 1,070 | 80.8   | 20.9         | 458          |
| Matching firms                       | 757      | 451   | 51.7   | 15.9         | 181          |
| ∅ Operating revenue (mill EUR): FoFs | 151      | 1,200 | 151    | 49.6         | 730          |
| Matching firms                       | 531      | 532   | 109    | 33.6         | 311          |
| ∅ Number of Employees: FoFs          | 164      | 5,588 | 624    | 171.0        | 3,156        |
| Matching firms                       | 757      | 2,050 | 320    | 106.0        | 1,093        |

*Summary statistics for foundation owned firms (FoFs) and matching firms. All firms are for profit-firms. Charity-owned FoFs are FoFs with ownership by a charitable foundation, no-charity-owned FoFs are FoFs with ownership by a family foundation. Full liability-FoFs are FoFs with unlimited liability of the foundation. Vote share [equity share] is the foundation's share of voting rights [equity-cash flow rights] in the FoF. In the lower part of the table descriptive statistics for average total assets, average operating revenue, and average number of employees across firms are shown. For each firm an average number ( $\emptyset$ ) is a simple average of its numbers within the sampling period.*

To portray differences between FoFs and matching firms, we look at various accounting numbers. For each firm, we use the time series of its numbers and take averages for descriptive statistics. The frequency distributions of these averages are strongly skewed to the right.

**Size.** Total assets, operating revenue, and the number of employees tend to be clearly higher in FoFs relative to matching firms (lower part of Table 1). Only in "chemicals/rubber/plastics", "gas/electricity", and "other services" the median operating revenue of FoFs is lower than that of matching firms. Several reasons may explain the larger size of FoFs. Successful entrepreneurs are likely to transform a firm into a FoF. Successful firms likely are larger. Hence, we expect a "birth-bias" towards large FoFs. Moreover, if the entrepreneur has a strong employee orientation already before setting up a FoF, then the firm might employ more people. This would reinforce the "birth-bias". If the FoF continues this policy, then it should stay large, as confirmed in the first line in Table 2.

Table 2 displays items for all FoFs and for subgroups. We distinguish binary subgroups of FoFs where the foundation

- has at least 50 percent of voting rights (Majority vote, yes) or not (... , no),
- has at least 50 percent of the equity-cash flow rights (Majority equity, yes) or not (... , no),
- is charitable (Charity-owned, yes) or not, i.e., a family foundation (... , no),
- is a partner with unlimited liability (Full liability, yes) or not (... , no).

The full liability-FoFs are a subset of those with ownership of a family foundation. Table 2 displays a median of the FoFs, divided by the median of the matching firms. To facilitate reading, we only report the ratio of the medians. Thus, a ratio of more than 100 percent



indicates a lower median of the matching firms. We check the significance of the median differences by the Pearson chi-squared-test.

The first line in Table 2 shows that FoFs employ on average about twice as many people as matching firms. The difference in medians is strongly significant, supporting Hypothesis 1b). This also holds for all subgroups of FoFs, except for no-charity-owned FoFs and the subset of full liability-FoFs. This supports a weaker employee orientation of FoFs with ownership of a family foundation (Hypothesis 5).

**Production and Employment Policy.** To further characterize corporate governance and financial performance of firms, we use ratios. For each firm an average ratio a/b is a simple average of its annual ratios.

**TABLE 2 - Descriptive Statistics**

|                                | Full sample of FoFs | Majority vote-FoFs |         | Majority equity stake-FoFs |         | Charity-owned FoFs |         | Full liability-FoFs |      |
|--------------------------------|---------------------|--------------------|---------|----------------------------|---------|--------------------|---------|---------------------|------|
|                                |                     | no                 | yes     | no                         | yes     | no                 | yes     | no                  | yes  |
| Ø Number of employees          | 195%***             | 188%*              | 203%*** | 206%**                     | 176%**  | 148%               | 208%**  | 191%***             | 239% |
| Ø Income of employees (€)      | 100%                | 99%                | 100%    | 99%                        | 100%    | 103%               | 98%     | 100%                | 87%  |
| Ø Pers. expense/operating rev. | 131%***             | 111%               | 138%*** | 122%**                     | 134%*** | 139%***            | 122%*** | 130%***             | 124% |
| Ø Mat. expense/operating rev.  | 79%***              | 87%                | 74%***  | 84%                        | 77%***  | 83%                | 72%***  | 80%***              | 67%  |
| Ø Pers. expense/mat. Expense   | 173%***             | 135%               | 198%*** | 173%*                      | 189%*** | 159%               | 167%*** | 170%***             | 216% |
| Ø Shareh. funds/total assets   | 119%**              | 117%*              | 123%    | 110%                       | 133%**  | 103%               | 123%*** | 122%***             | 90%  |
| Ø Return on assets             | 89%                 | 79%                | 94%     | 86%                        | 95%     | 99%                | 86%**   | 88%                 | 133% |
| Ø Return on equity             | 76%***              | 72%***             | 77%***  | 72%***                     | 79%**   | 77%                | 74%***  | 76%***              | 73%  |
| Ø Return on sales              | 108%                | 113%               | 102%    | 108%                       | 108%    | 89%                | 103%    | 107%                | 119% |
| σ(Return on assets)            | 78%***              | 69%***             | 80%***  | 73%***                     | 80%**   | 82%*               | 74%***  | 78%***              | 68%  |

*This table shows ratios (FoFs/matching firms) for various numbers based on annual reports of firms (in percent). A ratio is the FoF-median divided by the median of the matching firms. Ratios are shown for the full sample of FoFs and for binary subgroups of FoFs. The table lists the ratios of the medians of firms' average (Ø) numbers of employees, firms' average (Ø) income of employees, firms' average (Ø) "personnel expense/operating revenue", firms' average (Ø) "material expense/operating revenue", firms' average (Ø) "personnel expense/material expense", firms' average (Ø) "shareholder funds/ total assets", firms' average (Ø) "return on assets" (=EBIT/total assets TA), firms' average (Ø) "return on equity" (=EBT/shareholder funds), firms' average (Ø) "return on sales" (EBT/operating revenue) and firms' standard deviation of "return on assets". Stars indicate whether the difference in medians is significant. \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, resp.*

The average income of employees (= personnel expense/number of employees) appears to be very similar for FoFs and matching firms falsifying Hypothesis 1a). Apparently, employees do not exploit FoFs through higher income. This effect might also be driven by the typical German industry-wide standard wages.

Hypothesis 2 states that the ratio "Personnel expense/operating revenue" should be higher for FoFs, while the ratio "Material expense/operating revenue" should be lower. The 3rd and the 4<sup>th</sup> line of Table 2 support this hypothesis. The differences in medians are strongly significant for all FoFs and for most subgroups. Hence, "Personnel expense/material expense" should be even higher for FoFs relative to matching firms. This is confirmed in the 5th line of Table 2.

We also check the ratio "Personnel expense/depreciation" (not shown). Orbis always reports the sum of depreciation and amortization under the heading "depreciation". Differences in medians of FoFs and matching firms are always insignificant. Hence, FoFs appear to use more labor relative to material, but not relative to capital.

**Financing Policy and Financial Performance.** The last five lines in Table 2 portray the financing policy and financial performance. "Shareholder funds/total assets" is higher in FoFs relative to matching firms, except for full liability-FoFs, significance of differences is mixed. Leverage policy appears to be more conservative in FoFs supporting Hypothesis 3, in particular when the foundation is charitable, in line with Hypothesis 5. As a check, we define cash flow as net income plus depreciation including amortization and find that the ratio "Cash flow/(total assets – shareholder funds)" provides a similar answer (not shown).

One might expect that, due to a lower leverage, FoFs pay lower average interest rates on bank debt and other long-term debt relative to matching firms. This is, however, not supported by the frequency distribution of the average paid interest rates (not shown). This suggests that creditors are cautious and provide credit to FoFs at "normal" interest rates if FoFs protect creditors through lower leverage. This policy may also be driven by the restricted possibilities of FoFs to raise new equity capital. In interviews 95 percent of FoF-managers view this as a problem. 24 percent considered it a strong disadvantage (Institut für Demoskopie (2012)).

The next lines in Table 2 show "Return on assets", "Return on equity", and "Return on sales". Return on assets is EBIT/total assets. EBIT is defined as operating profit/loss, excluding financial profit/loss, extraordinary expenses/ revenues and income taxes. The median return on assets (RoA) is lower for all FoFs (6.7 percent) than for matching firms (7.5 percent) and also for all subgroups except for full liability-FoFs. But the difference in medians is significant only for charity-owned FoFs. This provides weak evidence that FoFs earn lower returns on assets than matching firms (Hypothesis 4).

Splitting FoFs and matching firms into quartiles of operating revenue shows a differentiated picture. The median RoA of FoFs is lowest (highest) in the lowest (highest) OR-quartile, but this is reversed for the matching firms. This suggests more effective governance in larger FoFs and/or economies of scale for FoFs, but diseconomies of scale for matching firms. Corporate governance of small foundations may be weak, due to little transparency of the

foundation and little expertise of foundation managers. These may be dignitaries without a business background and with little or no pay. These deficiencies are less likely to exist in large foundations. This may explain higher returns on assets in larger FoFs.

The evidence is quite different for the return on equity, defined as EBT/equity capital. EBT is EBIT +/- financial profit/loss. All FoFs and most subgroups have significantly lower returns on equity than matching firms. The explanation is that, apart from full liability-FoFs, most FoFs have relatively more equity capital. "Return on sales" again provides a different picture. The median is insignificantly higher for all FoFs and for subgroups. Presumably operating revenues of many FoFs are condensed by more vertical integration.

Financial performance also takes financial risk into account. As a proxy, we use the standard deviation of the firm's RoA,  $\sigma(\text{RoA})$ , derived from the time series of the firm's RoA. Risk is significantly lower for FoFs (3.7 percent) than for matching firms (4.8 percent) (last line of Table 2)<sup>4</sup>. This also holds for all subgroups of FoFs except for full liability-FoFs. Thus, FoF-managers tend to use less risky policies. This does not come as a surprise because, relative to normal firm owners, managers and employees have fewer possibilities to diversify their risk (Eisenhardt 1989, Pepper and Gore 2015). As both, the average RoA and  $\sigma(\text{RoA})$  are lower for FoFs relative to matching firms, these numbers do not permit a comparative statement about financial performance.

## 5. Regression Results

**Methods.** Next, we apply regression methods. Panel regressions with firm fixed effects capture time-invariant heterogeneity of firms. Random effects are infeasible because the residuals strongly correlate with explanatory variables (Hausman-test). We employ panel regressions in two ways. A) When we analyze Cobb-Douglas functions and the hiring and firing policy of firms, we are primarily interested in sensitivities to certain explanatory variables. We estimate different sensitivities for FoFs and matching firms and check whether their differences are significant. If they are, then this indicates different policies. B) In all other cases, we follow a two step-procedure. First, we panel-regress some time-dependent variable on explanatory time-dependent variables, including control variables, to estimate the fixed effects for FoFs and for matching firms. We also run this regression with different sensitivities for FoFs and matching firms. As they never differ significantly, we estimate the firm fixed effects from regressions with unique sensitivities for all firms. Second, we OLS-regress the firm fixed effects on a dummy variable for FoFs and time-invariant control variables, including industry dummies. This shows whether the firm fixed effects are significantly higher/lower for FoFs than for matching firms.

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<sup>4</sup> It is well known that larger firms tend to have lower risk due to more diversification of their activities. But a linear regression of the standard deviations of return on assets shows that the larger size of FoFs can only explain a small part of the negative difference in standard deviations between FoFs and matching firms. Thus, FoFs appear to play a safer game.

As an error in variables-problem exists for the estimated firm fixed effects, one would like to adjust for that in the second regression. A way around this problem is the Hausman-Taylor method (Hausman and Taylor 1981). It requires suitable instrumental variables which are difficult to find in our setting. Therefore, we follow Lewis and Linzer (2005:363) who conclude: "Indeed, OLS with robust standard errors is probably the best approach, except when information about the sampling in the dependent variable is not only available, but highly reliable". For large samples, they suggest to use White standard errors, correcting for heteroscedasticity. We do this.

Analyzing corporate policies always faces endogeneity issues. As management decides about corporate policy, it has a strong impact on most accounting numbers so that they are not independent. Empirical estimates may be biased by this endogeneity. Our premise is that estimated differences between FoFs and matching firms are robust to these biases. This premise is difficult to test. Robustness checks mitigate this problem.

### 5.1 Production and Employment Policy

**Average Income of Employees.** The descriptive statistics show no differences in average income of employees between FoFs and matching firms. We also OLS-regress the average income of employees of a firm, averaged over the sampling period, on a FoF-dummy, a codetermination dummy and an interaction term of both dummies, controlling for industry effects. All 3 variables turn out to be insignificant (not shown). Hence neither foundation ownership nor codetermination affects the average income of employees.

**Cobb-Douglas Function.** To analyze production and employment policy, we use panel regressions to estimate the Cobb-Douglas function for FoFs and for matching firms<sup>5</sup>. As regressors we use personnel and material expense and depreciation. Even though it is common to estimate translog-production functions with linear and quadratic terms, we only use linear terms to find out the elasticities of operating revenue with respect to these expenses.

The first column of Table 3 shows the elasticities estimated separately for all FoFs and for their matching firms, and the differences between these elasticities. The elasticities for personnel expense, material expense, and depreciation add up to about 0.96 for the FoFs, and to 0.66 for the matching firms. The elasticity for personnel expense is more than twice as high for FoFs than for matching firms, the difference is significant. The elasticity for material expense is insignificantly lower for FoFs. Apparently, FoFs are more labor intensive (Hypothesis 2). The strong difference in personnel expense-elasticities and the weak difference in material expense-elasticities suggest that - to a limited extent - FoFs substitute

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<sup>5</sup> The explanatory power of a regression is given by "within R squared". Consider a panel regression  $y_{i,t} = \alpha + \beta x_{i,t} + v_i + \varepsilon_{i,t}$  where  $v_i$  is the fixed effect of firm  $i$ . Let  $\bar{y}_i$  and  $\bar{x}_i$  be the means over time. Then,  $(y_{i,t} - \bar{y}_i) = \beta (x_{i,t} - \bar{x}_i) + \varepsilon_{i,t}$ . The within R squared denotes the variance of  $\hat{\beta}(x_{i,t} - \bar{x}_i)$ , divided by the variance of  $(y_{i,t} - \bar{y}_i)$ . This measure excludes the contribution of the estimated firm fixed effects to explaining the variance of  $y$ .

labor for material, but also focus more on services and more labor-intensive products. The elasticities for depreciation are small and not significantly different. Thus, substitution of labor for capital in FoFs is not supported.

**TABLE 3 Cobb Douglas Function**

| In OR  |                       | All FoFs | Lim Liability-FoFs | No-Charity-owned FoFs | Charity-owned FoFs |
|--------|-----------------------|----------|--------------------|-----------------------|--------------------|
| In PE: | mat                   | 0.202**  | 0.229**            | 0.217***              | 0.258*             |
|        | FoF                   | 0.574*** | 0.573***           | 0.399***              | 0.729***           |
|        | Difference            | 0.372**  | 0.344*             | 0.182                 | 0.471**            |
| In ME: | mat                   | 0.427*** | 0.406***           | 0.585***              | 0.344***           |
|        | FoF                   | 0.345**  | 0.340**            | 0.561***              | 0.189              |
|        | Difference            | -0.082   | -0.066             | -0.024                | -0.155             |
| In De: | Mat                   | 0.033**  | 0.024              | 0.029*                | 0.037              |
|        | FoF                   | 0.040    | 0.044              | 0.036                 | 0.009              |
|        | Difference            | 0.007    | 0.020              | 0.013                 | -0.028             |
|        | within R <sup>2</sup> | 0.6869   | 0.6798             | 0.8135                | 0.6622             |
|        | # of obs              | 5,052    | 4,557              | 1,802                 | 3,148              |

*This table shows the results of panel regressions estimating the Cobb-Douglas function  $\ln OR_{i,t} = \alpha \ln PE_{i,t} + \beta \ln ME_{i,t} + \gamma \ln DE_{i,t} + v_i + \varepsilon_{i,t}$ . PE is the personnel expense, ME the material expense, and DE depreciation.  $v_i$  is the fixed effect for firm  $i$ . The coefficients are estimated separately for matching firms (mat) and for FoFs. Difference is "coefficient for FoFs – coefficient for matching firms", with asterisks indicating significance. The first column includes all FoFs and their matching firms, the other columns include only subsets of FoFs and their matching firms. Year dummies and regression constants are included, but not shown. Standard errors are adjusted for clustering (firm) effects and heteroscedasticity. \*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%*

The second, third and fourth column in Table 3 show the results for limited liability-FoFs, no-charity-owned and charity-owned FoFs, respectively. The qualitative results are similar to "all FoFs". But the elasticity differences are much stronger for FoFs owned by charitable than those owned by family foundations, in line with Hypothesis 5.

In order to check whether codetermination has similar effects as foundation ownership, we rerun the first regression in Table 3 for codetermined firms only (not shown). 68 of the 164 FoFs and 238 of the 758 matching firms are codetermined. Regarding the elasticities of operating revenue to personnel expense, we now find a coefficient of 0.725 for FoFs and 0.084 for matching firms. Thus, the difference between these sensitivities is almost doubled and highly significant. The negative difference of the elasticities with respect to material expense is more than doubled, but stays insignificant. These results suggest that both, foundation ownership and codetermination raise labor intensity.

**A Simple Test of Labor Intensity.** The ratio "Personnel expense/material expense" (PPM) should increase with labor intensity and, thus, be higher in FoFs. We test this in a two step-procedure. In the first step, we panel-regress PPM on the explanatory variable "operating revenue", on leverage and on leverage squared to estimate firm fixed effects. We include leverage as a control variable because it might affect employment. The negative sensitivity of PPM to  $\ln OR$  in Table 4a) is no surprise as a substantial part of personnel expense is a fixed expense, but material expense is mostly variable. Leverage effects are insignificant.

**TABLE 4 - Analysis of the "Personnel expense/material expense"-ratio (PPM)**

| PPM                   | Regression coefficients |
|-----------------------|-------------------------|
| ln OR                 | -0.558*                 |
| lev                   | -0.048                  |
| lev <sup>2</sup>      | 0.085                   |
| within R <sup>2</sup> | 0.0097                  |
| # of obs              | 5,378                   |

**4a)** This table displays the panel regression  $PPM_{i,t} = a + b \ln OR_{i,t} + c lev_{i,t} + d lev_{i,t}^2 + v_i + \varepsilon_{i,t}$ .  $v_i$  is the fixed effect for firm  $i$ .  $lev_{i,t}$  is  $(1 - \text{shareholder funds}/\text{total assets})$  of firm  $i$  in year  $t$ . Year dummies and regression constants are included, but not shown. Standard errors are adjusted for clustering (firm) effects and heteroscedasticity.

\*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

| Firm fixed effects | Regression Coefficients |         |         |        |         |          |
|--------------------|-------------------------|---------|---------|--------|---------|----------|
| FoF                | 1.301***                | -       | -       | 2.401* | 1.879** | 1.507**  |
| no-char-FoF        | -                       | 0.689   | -       | -      | -       | -        |
| char-FoF           | -                       | 1.639** | -       | -      | -       | -        |
| difference         | -                       | -0.950  | -       | -      | -       | -        |
| lim liab-FoF       | -                       | -       | 1.276** | -      | -       | -        |
| full liab-FoF      | -                       | -       | 1.557   | -      | -       | -        |
| difference         | -                       | -       | -0.281  | -      | -       | -        |
| FoF x vote share   | -                       | -       | -       | -1.540 | -       | -        |
| FoF x equity share | -                       | -       | -       | -      | -1.041  | -        |
| codetermin.        | -                       | -       | -       | -      | -       | 1.127*** |
| FoF x codetermin.  | -                       | -       | -       | -      | -       | -0.803   |
| adj R <sup>2</sup> | 0.2152                  | 0.2161  | 0.2142  | 0.2165 | 0.2155  | -0.2221  |
| # of obs           | 778                     | 761     | 778     | 778    | 778     | 778      |

**4b)** This table displays OLS-regressions of firm fixed effects  $v_i$ , derived in Table 4a). FoF, no-char-FoF (= no-charity owned FoF), char-FoF (= charity owned FoF), lim liab-FoF (= limited liability-FoF) and full liab-FoF (= unlimited liability-FoF) are dummies which are equal to 1 if a firm is of that type, 0 otherwise. "FoF x vote share" and "FoF x equity share" are interaction variables of the FoF-dummy and the foundation's vote share resp. the equity share in the FoF. "Difference" is that between the two sensitivities above in the same column, with asterisks indicating significance. "codetermin." is a dummy for codetermined firms, "FoF x codetermin." the interaction term for foundation ownership and codetermination. Industry dummies and regression constants are included, but not shown. Significance is based on White standard errors correcting for heteroscedasticity.

\*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

In the second step, we OLS-regress the firm fixed effects on various FoF-characteristics. The FoF-dummy (= 1 for a FoF and 0 otherwise) has a strongly significant positive coefficient indicating that labor intensity is clearly higher in FoFs than in matching firms (Table 4b), first regression). In the next regression, the coefficient for charity-owned FoFs is significant and more than twice than that for no-charity-owned FoFs, weakly supporting Hypothesis 5. The coefficients for limited and full liability-FoFs do not differ significantly (3<sup>rd</sup> regression). Also, the vote and the equity share of the foundation have no significant impact (4<sup>th</sup> and 5<sup>th</sup> regression). Overall, these regressions support Hypothesis 2 that FoFs are more labor intensive than matching firms. In the last regression, both, foundation ownership and

codetermination have strongly significant positive effects on labor intensity. These effects appear to be rather independent, since the interaction term is insignificant.<sup>6</sup>

**Hiring and Firing Policy.** Job security is likely important for most employees. Therefore, we next analyze hiring and firing policies. Orbis shows the annual numbers of employees of firms and, thus, annual changes in these numbers, i.e., fluctuation. It is composed of employee motivated fluctuation (employees leave because of retirement or other personal reasons) and firm driven fluctuation (the firm hires and fires employees). Since firms do not publish data on fluctuation motives, we relate fluctuation to changes in operating revenue, presumably the most important driver apart from mergers, acquisitions, and spin-offs. We measure fluctuation by annual relative changes in personnel expense. As this expense can change without hiring and firing people, we also analyse the number of employees. As firms may react differently to positive and negative changes in operating revenue, we estimate sensitivities separately.

$$PE_{i,t}/PE_{i,t-1} = a + b OR_{i,t}^+ + c OR_{i,t}^- + v_i + \text{year dummies} + \varepsilon_{i,t} \quad (1)$$

with  $OR_{i,t}^+ := \max(OR_{i,t}/OR_{i,t-1} - 1, 0)$  and  $OR_{i,t}^- := \min(OR_{i,t}/OR_{i,t-1} - 1, 0)$ .  $PE_{i,t}$  and  $OR_{i,t}$  are the personnel expense and the operating revenue of firm  $i$  in year  $t$ .  $v_i$  is the firm fixed effect. We estimate the regression coefficients separately for matching firms, limited liability- and full liability-FoFs. Firm fixed effects capture firm heterogeneity within each group, year dummies heterogeneity across years.

**TABLE 5 - Hiring and Firing Policy**

**5a)** This table shows the results for equation (1), based on all annual changes in OR.

| PE <sub>t</sub> /PE <sub>t-1</sub> | Coeff    | differences      | EMP <sub>t</sub> /EMP <sub>t-1</sub> | Coeff    | differences   |
|------------------------------------|----------|------------------|--------------------------------------|----------|---------------|
| OR <sub>t</sub> <sup>+</sup> : mat | 0.409*** | -0.050; -0.228** | OR <sub>t</sub> <sup>+</sup> mat     | 0.155*** | -0.021; 0.146 |
| lim liab                           | 0.359*** | -0.178           | lim liab                             | 0.134*   | 0.167         |
| full liab                          | 0.181    |                  | full liab                            | 0.301*** |               |
| OR <sub>t</sub> <sup>-</sup> : mat | 0.270*** | 0.007; 0.297***  | OR <sub>t</sub> <sup>-</sup> mat     | 0.142*** | 0.078; 0.129  |
| lim liab                           | 0.277*** | 0.290**          | lim liab                             | 0.220**  | 0.051         |
| full liab                          | 0.567*** |                  | full liab                            | 0.271*** |               |
| within R <sup>2</sup>              | 0.2895   |                  | within R <sup>2</sup>                | 0.0764   |               |
| # of obs                           | 5,346    |                  | # of obs                             | 4,822    |               |

*This table shows the results of panel regressions with firm fixed effects estimating hiring and firing policy. Sensitivities are estimated separately for matching firms (mat), limited liability-FoFs (lim liab) and full liability-FoFs (full liab). On the left-hand side PE<sub>t</sub>/PE<sub>t-1</sub> is the dependent variable, on the right hand side it is EMP<sub>t</sub>/EMP<sub>t-1</sub>. PE is personnel expense, EMP the number of employees. Year dummies and regression constants are included, but not shown. "Differences" are differences between coefficients of the same regressor, with asterisks indicating significance. They are presented like in a covariance matrix. The first difference is that between mat and lim liab, the second is that between mat and full liab, and in the line below the third is that between lim and full liab. Standard errors are adjusted for clustering (firm) effects and heteroscedasticity.*

<sup>6</sup> The ratio "Personnel expense/material expense" could be biased by differences in average incomes of employees. Including this in Table 4b) as a control variable has no significant effect (not shown).

**5b)** This table shows the results for equation (1), based on annual changes in OR of at least 10 percent.

| PE/PE <sub>t-1</sub>          | Coeff    | differences       | EMP <sub>t</sub> /EMP <sub>t-1</sub> | Coeff    | differences    |
|-------------------------------|----------|-------------------|--------------------------------------|----------|----------------|
| OR <sub>t</sub> <sup>++</sup> |          |                   | OR <sub>t</sub> <sup>++</sup>        |          |                |
| mat                           | 0.485*** | -0.080; -0.381*** | mat                                  | 0.176*** | -0.017; 0.085  |
| lim liab                      | 0.405*** | -0.301*           | lim liab                             | 0.159*   | 0.102          |
| full liab                     | 0.104    |                   | full liab                            | 0.261*   |                |
| OR <sub>t</sub> <sup>--</sup> |          |                   | OR <sub>t</sub> <sup>--</sup>        |          |                |
| mat                           | 0.442*** | 0.005; 0.320***   | mat                                  | 0.213*** | 0.106; 0.238** |
| lim liab                      | 0.447*** | 0.315*            | lim liab                             | 0.319*** | 0.132          |
| full liab                     | 0.762*** |                   | full liab                            | 0.451*** |                |
| within R <sup>2</sup>         | 0.2764   |                   | within R <sup>2</sup>                | 0.0693   |                |
| # of obs                      | 5,346    |                   | # of obs                             | 4,822    |                |

\*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

Table 5a), left hand side, reports the findings for personnel expense. The table also shows the differences between the group-coefficients and their significance levels. The sensitivity of personnel expense growth to positive operating revenue growth is similar for limited liability-FoFs and matching firms, but very weak for full liability-FoFs. The sensitivity to negative OR growth is again similar for matching firms and limited liability-FoFs, but significantly stronger for full liability-FoFs. They appear to react much stronger by cutting personnel expense, perhaps because their leverage is high, i.e. their financial reserves are low (Table 2). The right-hand side of Table 5a) confirms the results for the number of employees. Employment reacts weaker than personnel expense to operating revenue, except for full liability-FoFs. This indicates that firms use flexibility in working hours through working time accounts or temporary workers to accommodate changes in operating revenue before they hire or fire “permanent” employees.

Firms may react stronger to larger changes in OR. Therefore, in Table 5b) we repeat the exercise, but consider only annual changes in OR of at least 10 percent. Except for full liability-FoFs, all significant coefficients turn out to be higher as expected, but differences between FoFs and matching firms remain insignificant<sup>7</sup>. We also analyse matching firms, charity-owned FoFs and no-charity-owned FoFs, the estimated sensitivities for these groups are not significantly different (not shown). This falsifies Hypotheses 1c) and 5.

Again, we check for codetermination effects by rerunning the regressions in Table 5b) for codetermined firms only. In this subset, there are almost no foundations with full liability. For the other FoFs and for the matching firms the estimated sensitivities turn out to be somewhat

<sup>7</sup> When we control for the average income of employees, it has a significant positive impact in the regressions for the personnel expense, but not in those for the number of employees (not shown). This suggests that changes in personal expense are inflated by the average income of employees.



higher, but the differences remain insignificant (not shown). This indicates that codetermination does *not* mitigate hiring and firing. Summarizing, our findings do not support the conjecture that FoFs and codetermined firms follow a more lenient hiring and firing policy.

**Number and Income of Top Managers.** Even though FoFs and matching firms pay about the same average income to employees, top managers in FoFs might be more powerful and earn a higher income. Therefore, we check the total income and the per capita income of the management board. The German commercial code requires corporations to publish these numbers unless the management board has only one member or the corporation is small. We have the data for 55 FoFs and for 192 matching firms. The median of the average number of board members over the sampling period is 4 for FoFs and 3.5 for matching firms. This indicates that the board is only slightly larger in FoFs even though FoFs tend to be much larger. We first panel-regress total income of board members and their per capita-income on  $\ln OR$ , EBIT and leverage to derive firm fixed effects. In a second step, we OLS-regress these fixed effects on the FoF dummy, various FoF characteristics, industry dummies, and the IFRS-dummy. This dummy is 1 if the firm uses IFRS for its annual reports and 0 if it uses German accounting principles<sup>8</sup>. The FoF-dummy is positive with a p-value of 0.092 for total board income, but completely insignificant for per capita income. Other FoF-characteristics are also completely insignificant. Thus, we find no evidence for entrenchment of management boards in FoFs. For brevity, these regressions are not shown.

## 5.2 Leverage and Payout Policy

As argued before, a more conservative financing policy supports job security and may be motivated also by privileged employee orientation (Hypothesis 3). First, we OLS-regress a firm's ratio "equity/total assets", averaged over the sampling period, on a FoF-dummy, a codetermination-dummy and their interaction term, controlling for industry effects. As expected, the FoF-dummy is positive and strongly significant. Both codetermination terms are insignificant (not shown). In our sample codetermination does not affect leverage, in contrast to Fauver and Fuerst (2006).

Second, FoFs can also strengthen their equity capital by lower payouts to owners. For anecdotal evidence, the big profitable, charity owned FoFs Bosch, Mahle, and Körber paid out about 3, 4, and 10 percent, respectively, of their net income, compared to an average of about 40 percent for the big German corporations listed in the DAX. Our sample is composed of corporations and partnerships. As there is no official payout in partnerships, we analyze

$$\begin{aligned} \text{net payout}_{i,t} &= \text{equity payout}_{i,t} - \text{newly raised equity}_{i,t} \\ &= \text{net income}_{i,t} + \text{equity capital}_{i,t-1} - \text{equity capital}_{i,t}. \end{aligned}$$

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<sup>8</sup> According to § 315a (2) of the German Commercial Code listed firms have to publish a consolidated annual statement according to IFRS, beginning in 2005. Non-listed firms can choose to publish a consolidated annual statement according to IFRS or to German accounting rules (§ 315a (3)). Non-consolidated annual statements have to be published according to the German accounting rules.

The net payout in year  $t$  may be driven by the firm's return on equity and the deviation of the leverage from a target-leverage (Hovakimian 2004). As the cost of financial distress may increase with leverage in a convex manner, the payout ratio might react non-linearly to leverage ( $lev$ ). Therefore, we also include the squared leverage in the regression for the payout ratio  $PoR_{i,t}$  ( $:=$  net payout $_{i,t}$ /equity $_{i,t-1}$ ). This ratio may react differently to positive  $[RoE^+_{i,t-1}]$  and negative  $[RoE^-_{i,t-1}]$  returns on equity.  $v_i$  is the fixed effect for firm  $i$ .

$$PoR_{i,t} = a + b RoE^+_{i,t-1} + c RoE^-_{i,t-1} + d lev_{i,t-1} + e lev_{i,t-1}^2 + v_i + \varepsilon_{i,t}. \quad (2)$$

The payout ratio may be smaller than  $-1$  in some years because of substantial issues of new equity capital. It also may be higher than  $1$  because of spin-offs and other divestments. These cases are not representative for the normal payout policy. Also, payout ratios tend to be extreme when equity is close to  $0$ . Therefore, we exclude payout ratios below  $-0.9$  and above  $0.9$ . Moreover, we exclude firms with negative equity.

**TABLE 6 - Analysis of the Payout Ratio**

| PoR $_t$       | (-0.9; 0.9) | (-0.8; 0.8) | (-0.5; 0.5) | (-0.4; 0.4) |
|----------------|-------------|-------------|-------------|-------------|
| RoE $^+_{t-1}$ | 0.076***    | 0.066***    | 0.022*      | 0.022**     |
| RoE $^-_{t-1}$ | 0.028       | -0.001      | -0.033      | -0.026      |
| lev $_{t-1}$   | -0.044      | -0.091      | -0.105      | -0.160      |
| lev $_{t-1}^2$ | -0.337**    | -0.251*     | -0.110      | -0.032      |
| within R $^2$  | 0.0824      | 0.0683      | 0.0493      | 0.0570      |
| # of obs       | 3,399       | 3,376       | 3,247       | 3,186       |

**6a)** This table displays the findings for the panel regression of the payout ratio (equation (2)). Only firms are included that have positive equity in the whole sample period. Firm fixed effects, year dummies, and regression constants are included, but not shown. Standard errors are adjusted for clustering (firm) effects and heteroscedasticity. \*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

| Firm fixed effects | (-0.9; 0.9) | (-0.8; 0.8) | (-0.5; 0.5) | (-0.4; 0.4) |
|--------------------|-------------|-------------|-------------|-------------|
| FoF                | -0.042**    | -0.033**    | -0.030***   | -0.024***   |
| IFRS               | -0.087***   | -0.079***   | -0.031      | -0.020      |
| adj. R $^2$        | 0.0447      | 0.0447      | 0.0306      | 0.0196      |
| # of obs           | 558         | 556         | 551         | 548         |

**6b)** This table displays OLS-regressions of firm fixed effects, derived in Table 6a). FoF and IFRS are dummies which are equal to 1 if a firm is an FoF, resp. if the firm uses IFRS. Only firms are included which do not switch from IFRS to German accounting standards or vice versa in the sample period. Industry dummies and regression constants are included, but not shown. Significance is based on White standard errors correcting for heteroscedasticity. \*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

The first regression of Table 6a) includes only payout ratios between  $-0.9$  and  $0.9$ , the next regression only ratios between  $-0.8$  and  $0.8$ , and so forth. The payout ratio increases significantly with a higher positive return on equity. But there is no significant reaction to a negative return on equity. Firms may stop net payouts or pay (small) fixed amounts when they incur losses. Leverage has no significant impact, but squared leverage has a significant

negative impact when payout ratios in the range +/- 0.9 or +/- 0.8 are considered. This suggests that the marginal decline in the payout ratio increases in leverage.

Next, we OLS-regress the estimated firm fixed effects on the FoF-dummy, controlling for accounting effects (Table 6b)). For all ranges of payout ratios, the FoF-dummy is negative and strongly significant. That indicates lower payout ratios of FoFs and supports Hypothesis 3. We do not find higher payout ratios for firms (partially) owned by family foundations relative to charitable foundations (not shown), invalidating Hypothesis 5.

The payout ratio is negatively affected by IFRS accounting. Switching from German accounting rules to IFRS mostly increases equity capital because many assets are valued at market prices instead of historical cost (Hung and Subramanyam 2007). A higher equity lowers the return on equity. This likely explains the negative IFRS effect on the payout ratio.

When we include a codetermination-dummy and an interaction term of the FoF- and the codetermination-dummy in Table 6b), both variables have insignificant effects (not shown). Codetermination does not affect the payout policy in our sample.

### 5.3 Financial Performance

Hypothesis 4 claims that stronger employee orientation weakens financial performance. For a test we consider the return on assets (RoA), a better measure of financial performance than return on equity or return on sales as argued before. In a first step, we panel-regress RoA on operating revenue and on operating revenue growth as RoA reacts sensitively to these variables. An increase in output usually raises profit. Operating revenue growth is a proxy of a firm's aggressiveness for raising its market share. Of course, these growth rates are driven by many factors, including product improvement and innovation by the firm and by its competitors. The median growth rate of operating revenue is insignificantly lower for all FoFs relative to matching firms (not shown). We use leverage and leverage squared as control variables. A low leverage might motivate a generous spending policy as stated by the free cash flow argument (Jensen (1986, Core et al 2005). Hence, an increase of a low leverage might constrain generous spending and thereby increase RoA. The effect of a high leverage might be a shortage of funds available for investments leading to underinvestment (Myers 1977). An increase of a high leverage might reinforce this shortage and thereby lower RoA.

**TABLE 7 - RoA-Analysis**

| Financial Performance                    | EBIT/TA   |           | EBITDA/TA |
|--|-----------|-----------|-----------|
|  | (1)       | (2)       | (3)       |
| In OR                                    | 0.051***  | 0.096     | 0.049***  |
| (ln OR) <sup>2</sup>                     | -         | -0.001    | -         |
| ln (OR <sub>t</sub> /OR <sub>t-1</sub> ) | 0.079***  | 0.079***  | 0.077***  |
| lev                                      | 0.150**   | 0.148**   | 0.135**   |
| lev <sup>2</sup>                         | -0.247*** | -0.244*** | -0.230*** |
| within R <sup>2</sup>                    | 0.1733    | 0.1735    | 0.1695    |
| # of obs                                 | 5,464     | 5,464     | 5,335     |

**7a)** This table shows the findings of a panel regression estimating return on assets  $RoA_{i,t} = a + b \ln OR_{i,t} + c growth_{i,t} + d lev_{i,t} + e lev_{i,t}^2 + v_i + \varepsilon_{i,t}$ . Growth is  $\ln (OR_t/OR_{t-1})$ .  $v_i$  is the fixed effect for firm  $i$ . In the last column, EBIT/TA is replaced by EBITDA/TA. Year dummies and a constant are included in the regression, but not shown. Standard errors are adjusted for clustering (firm) effects and heteroscedasticity. \*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

| Firm fixed effects              | (1)       | (2)       | (3)       | (4)       | (5)       | (6)        | (7)       |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| FoF                             | -0.040*** | -0.023**  | -0.021*   | -0.076*** | -0.021**  | -0.049***  | -0.016    |
| char x FoF                      | 0.016     | -         | -         | -         | -         | -          | -         |
| full liab x FoF                 | -         | -         | -         | -         | -         | -          | -0.075*** |
| codetermination                 | -         | -0.104*** | -0.105*** | -0.105*** | -0.106*** | -0.106***  | -0.107*** |
| FoF x codetermination.          | -         | -0.003    | -0.005    | -         | -         | -          | -         |
| Listed Res                      | -         | -         | -0.030*   | -         | -0.041**  | -          | -         |
| FoF x Listed Res                | -         | -         | 0.096**   | -         | 0.082*    | -          | -         |
| FoF x PPM                       | -         | -         | -         | -         | 0.002*    | 0.003***   | 0.002**   |
| (1 – FoF) x PPM                 | -         | -         | -         | -         | 0.005***  | 0.004**    | 0.004***  |
| FoF x age                       | -         | -         | -         | -         | -         | 0.002*     | -         |
| FoF x age <sup>2</sup>          | -         | -         | -         | -         | -         | -0.00002** | -         |
| FoF x vote share                | -         | -         | -         | 0.294***  | -         | -          | -         |
| FoF x (vote share) <sup>2</sup> | -         | -         | -         | -0.244*** | -         | -          | -         |
| $\sigma(RoA)$                   | 0.990***  | 0.876***  | 0.871***  | 0.875***  | 0.788***  | 0.802***   | 0.782***  |
| IFRS                            | -0.124*** | -0.094*** | -0.090*** | 0.091***  | -0.082*** | -0.087***  | -0.085*** |
| adj R <sup>2</sup>              | 0.2861    | 0.4040    | 0.4044    | 0.4064    | 0.3738    | 0.3750     | 0.3777    |
| # of obs                        | 773       | 789       | 789       | 789       | 714       | 697        | 714       |

**7b)** This table shows the findings of OLS-regressions of firm fixed effects  $v_i$ , estimated in the first regression in 7a) "FoF" is a dummy which is 1 for an FoF and 0 otherwise. "char x FoF", "unlim liab x FoF" are interaction variables multiplying the FoF-dummy with a dummy which is 1 if the foundation is charitable or has unlimited liability, respectively; otherwise they are 0. "Codetermination" is a dummy which is 1 for a corporation with a supervisory board in which at least 1/3 of the seats are assigned to employee representatives. "FoF x codetermination" is an interaction variable multiplying the FoF-dummy with the codetermination-dummy. "Listed res" is the residual from a linear regression of the listing dummy on the IFRS-dummy. The listing dummy is 1 for a firm listed at a stock exchange, 0 otherwise. "FoF x Listed res" is an interaction variable multiplying the FoF-dummy with the listed residual. "FoF x PPM" and "(1 – FoF-dummy) x PPM" are interaction variables multiplying the first dummy with the ratio "Personnel expense/material expense". "FoF x age" is an interaction variable multiplying the FoF-dummy with the age of an FoF. Age is measured by the time between the setup as an FoF and 2013. "FoF x vote share" is the vote share of the FoF multiplied by the FoF-dummy.  $\sigma(RoA)$  is the standard deviation of the RoA-time series of a firm. "IFRS" is a dummy which is 1 if the firm uses IFRS, 0 otherwise. Only firms are included which do not switch from IFRS to German accounting standards or vice versa in the sample period. Industry dummies and regression constants are included, but not shown. Significance is based on White standard errors correcting for heteroscedasticity. \*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%

RoA increases with In OR and with growth of operating revenue (Table 7a)), as expected. The leverage effect is inversely u-shaped and strongly significant. That supports the free cash flow hypothesis for low levels of leverage and the underinvestment hypothesis for high levels. The inverse u-shape attains its peak at a leverage of 0.26. Most firms operate at levels above 0.5, i.e. on the declining part of the curve.

In the second step, we OLS-regress the firm fixed effects, estimated in the first regression of Table 7a), on different firm-characteristics. All regressions in Table 7b) except for the last one show a significantly negative coefficient of the FoF-dummy. In support of Hypothesis 4, RoAs are significantly smaller in FoFs than in matching firms. In the first regression, the interaction term for charity owned FoFs is insignificant so that ownership of a charitable or a family foundation does not matter for RoA.

We control for risk by including  $\sigma(\text{RoA})$ . Its strongly significant, positive coefficient shows that firms with higher risk tend to earn higher returns.  $\sigma(\text{RoA})$  is mostly smaller for FoFs than for matching firms (Table 2). When we OLS-regress  $\sigma(\text{RoA})$  on the FoF-dummy, the codetermination dummy and the interaction term, controlling for industry effects, foundation ownership and codetermination have similar, strongly significant negative effects on risk which add up (not shown). Managerial risk appetite appears to be lower. The IFRS-dummy controls for accounting effects. Under IFRS total assets are higher so that RoA is lower.

Codetermination has a strongly significant, negative impact on RoA (regression (2) in Table 7b)). The interaction term "FoF-dummy x codetermination dummy" is insignificant. Hence both, foundation ownership and codetermination lower RoA in a rather additive manner. The codetermination effect appears to be stronger.

In the third regression, we analyze listing effects. 21 of the 164 FoFs are listed which is about 1/8. Among the 757 matching firms 89 are listed, slightly less than 1/8. Each listed firm has to use IFRS. Therefore, the IFRS-dummy and the listing-dummy (= 1 for a listed firm) are strongly correlated. To avoid multi-collinearity, we first linearly regress the listing dummy on the IFRS-dummy and use the regression residual "Listed res" in Table 7b). Surprisingly, "Listed res" has a weakly significant, negative impact on RoA. Apparently, "capital market control" does not improve RoA. Our finding is consistent with Bezemer et al (2015) who find that Dutch firms which enforce shareholder value orientation, end up with lower financial performance. But the interaction term "FoF-dummy x Listed res" has a significantly positive impact on RoA. To derive the net effect of listing and foundation ownership, we add the regression coefficients  $-0.21 - 0.030 + 0.096 = 0.045$ . This term is positive, but insignificant. Hence, listing appears to have a significantly negative effect on RoA, but together with foundation ownership an insignificant positive effect. "Capital market control" may effectively counteract weaknesses in corporate governance of FoFs. Hansmann and Thomsen (2013) also find that listing improves the financial performance of Danish FoFs.

The positive RoA-effect of mixed ownership is also confirmed in regression (4) which includes the voting share of the foundation and its square instead of listing. The vote-effect is inversely u-shaped and clearly significant. Thus, financial performance tends to be better when a foundation acts together with other owners. This is in line with some studies of corporate governance which suggest that a blockholder improves financial performance, but a very strong owner lowers it (McConnell and Servaes 1990, Himmelberg et al 1999). But the empirical evidence on ownership structure and financial performance is controversial (see the excellent overview in Demsetz and Villalonga 2001).

Apart from the foundation's voting share, the number of blockholders might affect financial performance (van Essen et al (2013)). We define the free float in a FoF as the fraction of voting rights, neither held by the foundation nor by blockholders. A blockholder has at least 5 percent of the voting rights. In 3/4 of the FoFs there is no free float. Thus, most FoFs are closely held firms. Neither free float nor the number of blockholders affects RoA (not shown).

In regression (5) we test for the RoA-effect of labor intensity measured by PPM (= personnel expense/material expense). Its regression coefficient is about twice as high for matching firms than for FoFs and strongly significant. This indicates that in particular matching firms might benefit from more labor intensity. Possibly, they outsource too much.

In regression (6) we check whether the financial performance of FoFs declines when they become older. A firm's age is measured by the number of years since its incorporation until 2013. The median age is 54 years for FoFs and 30 years for matching firms. As vote share and age of FoFs are strongly correlated, we exclude the vote share. We do not find significant age effects for matching firms (not shown). When we distinguish matching firms with an age above and below 30 years, we find no evidence for generational effects. This is in contrast to van Essen, Carney et al (2015) who conclude that the performance of US family firms drops after the first generation (similarly, Villalonga and Amit 2006). Alternatively, we measure the age of a FoF by the number of years since its setup as a FoF until 2013. Using a quadratic function, we find a significant inverse u-shaped age effect on the RoA of FoFs (regression (6)). But only FoFs older than 100 years would earn a lower RoA. Moreover, within a FoF we do not observe aging effects on RoA between 2003 and 2012. FoFs apparently follow rather stable policies with stable RoAs<sup>9</sup>.

In the last regression in Table 7b), we check the performance of FoFs with unlimited liability of the foundation. The interaction dummy "full liability x FoF" has a significantly negative impact on RoA. It suggests that, in contrast to the descriptive statistics in Table 2, full liability-FoFs earn lower RoAs. This may partly explain the setup of these FoFs. Full liability is more dangerous for partners if RoA is lower.

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<sup>9</sup> This is also consistent with Franks et al (2012) who find that family control persists in countries with inactive markets for corporate control. Germany might belong to these countries.

Our findings on financial performance of FoFs are inconsistent with those of Herrmann and Franke (2002) for Germany and those of Thomsen (1996), Thomsen and Rose (2004), and Thomsen and Hansmann (2013) for Denmark. They do not find weaker financial performance of FoFs relative to matching firms.

Our previous analysis with a linear control for risk indicates lower financial performance of FoFs. An alternative measure of financial performance is the Sharpe ratio, with risk in the denominator. We derive for each firm a Sharpe ratio  $SR := \text{average (annual RoA - 12 months money market rate)} / \sigma(\text{RoA})$ . Its median is 1.06 for FoFs and 1.09 for matching firms; the difference is small and insignificant. In the OLS-regression

$SR = a + b \ln \text{ average OR} + c \text{ FoF-dummy} + d \text{ IFRS-dummy} + \text{industry dummies} + \text{noise}$   
all coefficients are insignificant. Also, when we look at subsets of FoFs and codetermined firms, we do not find significant coefficients. Hence, in contrast to our findings from the more sophisticated panel regression, financial performance, measured by the Sharpe ratio, is not inferior in FoFs and codetermined firms. The difference between both findings suggests that financial performance of FoFs and codetermined firms is somewhat weaker relative to matching firms, but that this effect is rather small. Hence Hypothesis 4 is weakly supported.

#### 5.4 Robustness Checks

First, we address a potential survivorship bias. Our sample includes only solvent firms. We argue that the observed gap in financial performance between matching firms and FoFs would be smaller if the sample included firms which went bankrupt. Bankruptcy pulls down the RoA. The likelihood of bankruptcy should be higher for matching firms than for FoFs for two reasons. (1) German bankruptcy statistics (Creditreform 2015) indicate that the relative frequency of bankruptcy is clearly higher for firms up to an age of 8 years. FoFs are mostly older than 8 years because they exist already before being transformed into a FoF. Hence young insolvent firms are rarely FoFs. (2) Lower leverage and lower business risk improve financial stability of FoFs relative to matching firms. The effect on equity of a lower RoA of FoFs is to a large extent neutralised by a lower payout ratio. Both reasons support our conjecture that the probability of bankruptcy is higher for matching firms. Hence the inclusion of insolvent firms in our sample should depress the RoA of matching firms more than that of FoFs. In the following we report some of our robustness checks.

(1) Firms can manage earnings through various channels. The most important is arguably depreciation and amortization. Therefore, we repeat the analysis of financial performance by replacing  $\text{RoA} = \text{EBIT}/\text{TA}$  by  $\text{EBITDA}/\text{TA}$ . EBITDA equals EBIT plus depreciation including amortization. The firm fixed effects are derived from the last regression in Table 7a). For these effects, we run the same regressions as in Table 7b). As the analysis yields similar results, we do not report them.

(2) The RoA-findings might differ for small and large FoFs. Therefore, we repeat the analysis for different size quartiles of FoFs. FoFs always have a lower RoA relative to matching firms.

(3) The RoA-gap between FoFs and matching firms also exists in the crisis years 2008-2010.

(4) More risky firms might pay out less to stabilize solvency. Therefore, we include the standard deviation of RoA in the OLS-regressions in Table 6b). Its coefficient is positive and weakly significant only if the payout ratio is restricted to the range (-0.9; 0.9). This suggests that a firm's risk may have a very small impact on its payout policy.

(5) Somewhat tricky is the estimation of the Cobb-Douglas function. In Table 3 we report the results for a log-linear Cobb-Douglas function. We also run a panel regression for a quadratic function (translog production function) in personnel and material expense with separate slopes for matching firms and FoFs. We estimate four linear and four quadratic terms and two cross-terms. The coefficients of three linear terms are insignificant; all the other coefficients are significant with varying sign (not shown). These coefficients are hard to interpret. It indicates that the findings for the log-linear Cobb-Douglas function in Table 3 need to be interpreted with caution.

(6) We also check whether the number of matching firms has a strong impact on our findings. The results are quite similar if we move from 5 to 4 or 3 matching firms, but the findings change more if we move to 2 or 1 matching firm. This is to be expected because with 1 or 2 matching firm the specifics of these firms matter a lot.

(7) We repeat our analysis using a different matching procedure. Within the same industry, we match a FoF with other firms by size *and* by age using nearest neighbour matching (Abadie et al 2004). Age is the time span from the incorporation of the firm until 2013. The results (not shown) are quite similar to those obtained before. But the RoA-effects of listing and of full liability of the foundation are now insignificant.

(8) Finally, we run a logistic regression to find out strong predictors for a firm to be a FoF.

**TABLE 8 - Logistic Regression**

| FoF                  | Coefficients |           |
|----------------------|--------------|-----------|
| In OR                | -            | 0.186***  |
| In OR-growth         | -1.754       | -1.890    |
| PPM                  | 0.063***     | 0.071***  |
| Leverage             | -1.563***    | -1.737*** |
| RoA                  | -3.508**     | -3.577**  |
| $\sigma(\text{RoA})$ | -7.836**     | -6.389**  |
| HL p-value           | 0.578        | 0.864     |
| # of obs             | 774          | 774       |
| # of groups          | 10           | 10        |



*This table shows the results of a logistic regression to find out which variables predict whether a firm is an FoF. For each time-dependent variable we take the average of its observations within the sampling period as a regressor. OR-growth is  $(OR_t/OR_{t-1})$ . PPM is "Personnel expense/material expense". RoA is return on assets.  $\sigma(\text{RoA})$  is the standard deviation of the firm's return on assets within the sampling period. Industry dummies are included, but not shown. Significance is based on White standard errors correcting for heteroscedasticity. The Hosmer-Lemeshow (HL) p-value indicates the goodness of fit of the logistic regression. If it is less than 10 percent, the model should be rejected as insignificant. \*, \*\*, \*\*\* statistically significant at 10%, 5%, 1%*

An important predictor is the size measure "Operating revenue". In the first regression size is omitted, in the second it has a strongly significant, positive coefficient. The other predictors are the same in both regressions. The Hosmer-Lemeshow p-value which measures the goodness of fit of the model, strongly increases from about 58 to about 86 percent. Annual growth of operating revenue tends to be smaller in FoFs, but is insignificant. Strongly significant are "Personnel expense/material expense" (PPM) and leverage. FoFs are more labor intensive and less leveraged. Also, a lower average RoA and a lower standard deviation of RoA raise the likelihood of a firm to be a FoF. The high Hosmer-Lemeshow p-value of 86 percent suggests that omitted variables are not a major problem in our analysis.

## **6. CONCLUSION**

A large variety of stakeholder approaches exists. For the theory of corporate governance, it is important to understand how corporate governance and financial performance vary with these approaches. This paper contributes to the theory of corporate governance by analysing the effects of foundation ownership and of codetermination on German firms. In FoFs a foundation often is a blockholder, its managers supervise the firm. Since they are not residual claimants, the question arises which goals these managers pursue. The role of natural persons as residual claimants is weakened or eliminated, presumably strengthening other stakeholders. Natural candidates are managers and employees of the FoF. Employees might strengthen their influence to earn rents in the form of higher wages, more jobs and more job security.

We do not find that employees and board members earn higher income. Hiring and firing is hardly different in FoFs and matching firms. But FoFs appear to be more labor intensive, they substitute labor for material. Also, FoFs appear to take less risk and thereby safeguard the long-term existence of the firm. Financial performance of FoFs is somewhat weaker relative to matching firms. Possibly strong competition in products and services markets and strict creditor policies leave little room for long term changes in corporate governance which substantially weaken financial performance. These findings are consistent with a privileged employee orientation within a stakeholder approach. Strong support for this interpretation is provided by codetermined firms in which employees are assigned a stronger role by law. Germany provides a unique opportunity to study the effects of codetermination. We find

similar effects for both types of firms. This provides strong support for privileged employee orientation in FoFs.

We find significant differences between FoFs and codetermined firms only in financing policy. While in our sample codetermination has no effect on financing policy, it is more conservative in FoFs. This stabilizes FoFs financially and also employment. Ownership of charitable relative to family foundations has only limited effects. More important are the findings for mixed ownership structures. The impact of the foundation's vote share on financial performance is inversely u-shaped, similar to blockholdings of normal residual claimholders. More surprising may be that listing of a firm at a stock exchange appears to impair financial performance. But if listing and foundation ownership coexist in a firm, then its financial performance is not inferior. This suggests that foundation ownership and "capital market control" have specific weaknesses in corporate governance which are eliminated by their synergy effects.

Given various stakeholder approaches with different sets of stakeholders and different formal or informal weights attached to stakeholders, there is a strong need for future research to better understand the effects of these variations on corporate governance and financial performance. Which governance mechanisms safeguard/endanger the long-term existence of the firm and how do they interact? Are there variations which enforce corporate social responsibility? More detailed studies of these mechanisms in different countries are required to develop a comprehensive theory of corporate governance.

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