What Happens to Tax Aggressiveness and Earnings Management when Workers Enter the Boardroom?

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Abstract: We use the corporate tax aggressiveness and earnings management settings to provide new evidence on whether worker representation on corporate boards results in improved monitoring or in payroll maximization. To identify worker effects on corporate behavior, we use mandatory worker representation on corporate boards in Germany. This setting assigns decision-making power and voting rights to workers and enables workers to actively participate in the boardroom without acquiring an equity stake. Using hand-collected data on German firms' worker representation, we find that the presence of worker representatives on corporate boards is generally associated with improved monitoring of tax aggressiveness and accrual-based earnings management. However, we also find that payroll maximization objectives weaken worker representatives' monitoring when monitoring incentives conflict with payroll maximization incentives. More precisely, our findings suggest that worker representatives are more attentive to the impact of tax strategies and real earnings management when the risk of offshoring or losing jobs is higher. Our results suggest that including worker representation in the boardroom is incrementally important for a firm's tax and earning management decisions. This evidence helps policymakers and researchers to better understand the role of workers in corporate governance systems and contributes to the ongoing political and public debate about worker representation in countries that have no legally mandated worker representation (e.g., the U.S. and the U.K.).

Keywords: worker representation, tax aggressiveness, agency conflict, corporate governance

JEL: G34, H25, K34, M4

1. Introduction

In recent years, worker representation on corporate boards has received increasing attention from politicians and popular press in the U.S. and U.K. In August, 2018 U.S. Senator Elizabeth Warren proposed that U.S. corporations "must ensure that no fewer than 40% of [their] directors are selected by the corporation's employees" as part of the Accountable Capitalism Act (Warren, 2018). Inspired by the worker representation approach of Germany and many other European economies, interest in the potential economic effects of workers on U.S. corporate boards of directors has increased (e.g., Hockett et al., 2018; Bloomberg, 2018a; The Wall Street Journal, 2018). Similar debates evolve in the U.K. In her speech in 2016 during her national campaign to become Leader of the Conservative Party and Prime Minister of the U.K., Theresa May proposed renewing the British corporate governance system by insisting that all main British corporate boards should include worker representation. She asserted: "If I'm Prime Minister, we're going to change that system – and we're going to have not just consumers represented on company boards, but employees as well" (May, 2016a). Her proposal triggered criticism due to the potential economic effects of assigning decision-making power and control rights to workers in the U.K. (e.g., Financial Times, 2016). Afterward she clarified that her statement was not meant to be "mandating" worker representation on corporate U.K. boards (May, 2016b). Popular press called this turn a "serious misjudgment" and a "betrayal" (e.g., The Guardian, 2016).

The broad goal of this study is to contribute to this ongoing debate about worker representation on corporate boards. Our objective is to understand the association between workers on corporate boards and corporate decision making. The tax aggressiveness and earnings management settings permit us to examine whether worker representatives focus on monitoring to reduce agency costs versus payroll maximization.

To address our research question we use mandatory worker representation on corporate boards in publicly traded German companies. While in most Anglo-Saxon countries (e.g., the

U.S. and the U.K.) the board typically represents the interests of shareholders, many European countries consider the interests of workers in their corporate governance system. These countries allocate participation, decision-making power, and control rights to workers by law. Worker representation on corporate boards enables workers to vote on the board without having invested any money in the firm. In other words, legally mandated representation of workers on corporate boards allows workers to at least partially control the firm without acquiring an equity stake.[1] This board-level worker representation ensures the participation and cooperation of both shareholders and workers in a firm's decision-making. Board-level worker representation was introduced in Germany in the 19th century to allocate decision-making power across different organizational hierarchies and to ensure that workers' interests are balanced with interests of owners and managers (Hammer et al., 1991).

We use the German setting of worker representation on corporate boards because this setting provides several benefits and strengths. First, the German legislation on co-determination mandates that up to 50 percent of the board seats of large corporations are assigned to workers and their representatives.[2] While many EU countries mandate moderate levels of worker representation on corporate boards, there is no other country that mandates up to half of the board seats to workers and their representatives (e.g., external labor union members).[3]

Second, using German corporate governance data, prior literature on worker representation shows in detail that this setting allows workers to actively participate in the decision-making process on corporate boards. The extant studies on German worker representation examine performance and valuation implications (e.g., Gorton and Schmid, 2004; Fauver and Fuerst,

[1] The scope of this study is to examine legally mandated worker representation. We do not analyze any worker representation that results from employee stock ownership.

[2] *Co-determination* describes the general understanding of worker participation in a firm. It refers to any right that enhances workers active participation in the decision-making process. In Germany, the participation is twofold. Workers shape the decision-making process in the boardroom ("board-level") and also participate in works councils to negotiate working conditions ("shop floor-level"). For an overview of the historical development of co-determination, see McGaughey (2016).

[3] Laws on co-determination are common practice in a majority of EU countries (i.e., 16 out of 28 EU countries). While some countries have no laws (e.g., Belgium, Estonia, Italy, Romania), many countries have workers on corporate boards of around a third of board members (e.g., Austria, Czech Republic, Denmark).

2006; Balsmeier et al., 2013; Petry, 2018), productivity consequences (e.g., FitzRoy and Kraft, 1993), and financial leverage (e.g., Lin et al., 2017). German worker representation on corporate boards has a long tradition, is deeply rooted in German worker and social rights, and has been successfully transferred to other countries.

To investigate the association between worker representation on corporate boards and tax aggressiveness (earnings management), we use a hand-collected sample of 1,739 firm-years (1,941 firm-years) over the period from 2009 to 2015, corresponding to 426 German firms (371 German firms). For each firm, we collect information on board composition and worker representation from publicly available annual reports. German financial statement data are provided by COMPUSTAT Global (WRDS). We estimate quantile regressions of tax aggressiveness and earnings management on worker representation indicators and other firm control variables. To proxy for overall tax aggressiveness, we use industry-size adjusted effective tax rates (Balakrishnan et al., 2018).[4] In our earnings management setting, we differentiate between accrual-based earnings management (Kothari et al., 2005) and real earnings management (e.g., Roychowdhury, 2006; Cohen and Zarowin, 2010).

First, we examine whether worker representatives fill a monitoring role with respect to tax aggressiveness, consistent with the reduction in agency costs documented in Armstrong et al. (2015) for more independent boards and more financially sophisticated boards. Following Armstrong et al. (2015), we predict an increase in tax aggressiveness for low-aggression firms and a decrease in aggressiveness for high-aggression firms when workers participate on boards.

Alternatively, worker representatives may focus on payroll maximization. Prior research indicates that multinational tax incentives are used to shift income to low-tax jurisdictions (e.g., Collins et al., 1998; Huizinga and Laeven, 2008; Klassen and Laplante, 2012; Dyreng and Mar-

[4] This measure assumes the industry-average level of tax reducing activities are available to all firms in the industry. In the German setting, other proxies commonly used in U.S. research such as predicted shelter use and actual shelter use are infeasible.

kle, 2016). Relatedly, Williams (2018) shows that taxes have relevant and important implications for the decision of where to move jobs. We expect that the risk of offshoring jobs to other jurisdictions will result in workers on corporate boards preferring less aggressive tax planning when the risk of jobs moving offshore is high.

Consistent with our expectation, we find that the presence of workers on corporate boards is negatively associated with tax aggressiveness for high-aggression firms and positively associated for low-aggression firms. This inverse U-shaped relation is consistent with worker representatives functioning as effective monitors similar to the governance findings in Armstrong et al. (2015). Our results are also consistent with worker representatives constraining aggressive tax planning. Further, we show that this association is even stronger when corporate tax behavior includes moving firm operations to other jurisdictions, suggesting that worker representatives block offshore tax strategies, but not necessarily other tax-related accounting and financing decisions. Specifically, we find no association between worker representation and tax aggressiveness for firms that have low foreign operations. We also find evidence consistent with worker representatives at low-aggression firms maximizing payroll rather than increasing tax aggressiveness.

Next, we use the earnings management setting to provide additional evidence on whether payroll maximization incentives constrain worker representatives' monitoring. Accrual-based earnings management is generally feasible without the risk of cuts to jobs or wages. Therefore, we expect that the presence of worker representatives on corporate boards is associated with improved monitoring of accrual-based earnings management. However, we predict that worker representatives are sensitive to real earnings management when real activity manipulation affects their payroll. Thus, we expect payroll maximization incentives mitigate worker representatives' monitoring when managers manipulate real activities that could lead to reduced jobs or wages.

We indeed find that worker representatives lead to more (less) accrual-based earnings

management for low-level (high level) earnings management firms, consistent with improved monitoring. However, worker representatives maximize payroll when monitoring incentives conflict with payroll maximization incentives. Specifically, worker representatives on corporate boards are associated with an increase in production levels for firms at the lower tail of the real-earnings management distribution. This increase in production levels leads to an increase in job security and lower uncertainty. We also find that worker representatives are associated with smaller reductions in R&D and administrative spending for firms in the higher tail of the real earnings management distribution. However, we find no corresponding reduction in production levels for firms at the upper tail or increase in R&D and administrative spending at the lower tail of their respective distributions, consistent with a focus on payroll maximization instead of monitoring.

This paper makes a number of contributions. First, we address the calls for research on more examinations of the relation between taxes and agency issues (e.g., Shackelford and Shevlin, 2001; Hanlon and Heitzman, 2010). Several studies have analyzed tax implications within the agency framework (e.g., Desai and Dharmapala, 2006; Chen et al., 2010). We extend this stream of literature by analyzing the effects of workers on corporate tax behavior. Showing that worker representation has an effect on agency costs and monitoring similar to board independence and financial sophistication contributes to prior research that has examined tax implications of various stakeholders, e.g., shareholders, managers, labor organizations, tax authorities, within the agency context (e.g., Desai et al., 2007; Rego and Wilson, 2012; Chyz et al., 2013; Armstrong et al., 2015).

Second, this study incrementally contributes to recently presented evidence regarding the effects of multinational tax incentives on labor decisions (e.g., De Simone et al., 2017; Williams, 2018). For example, Williams (2018) indicates that multinational tax incentives play an important role in deciding where to move jobs. Our results support this finding and are consistent with the notion that workers on corporate boards use their decision-making power and

control rights to challenge and constrain a specific type of aggressive tax planning that includes relocating firm operations to other (low-tax) jurisdictions.

Third, our examination of worker representation on corporate boards addresses the ongoing political and public debate in the U.S. and the U.K. about the economic effects associated with worker representation (e.g., The Guardian, 2016; The Wall Street Journal, 2018). The finding that including workers' interests on corporate boards is associated with reduced agency costs and improved monitoring, similar to more independent or financially sophisticated boards, supports the reasoning that worker participation in the decision-making process balances interests of both shareholders and workers. In addition, this cooperation between different stakeholders likely reduces a manager's ability to over-invest in aggressive tax planning and manage earnings. However, our results also suggest that worker representatives focus on maximizing payroll over monitoring when monitoring incentives conflict with payroll maximization objectives, indicating that the inclusion of worker representatives in the boardroom is associated with improved monitoring only at first glance. Therefore, our findings are relevant for policymakers and may help to further stimulate a discussion about the intended and unintended effects of worker representation in countries that have no legally mandated worker representation on corporate boards (e.g., the U.S. and the U.K.).

Fourth, we contribute to financial economics research that has examined the economic effects of worker representation on corporate boards (e.g., Gorton and Schmid, 2004; Fauver and Fuerst, 2006; Balsmeier et al., 2013; Petry, 2018). Our results support the notion that workers on corporate boards are able to affect board decisions. We extend this line of research by investigating an unexplored link between both worker representation and tax aggressiveness and worker representation and earnings management.

Finally, this study is related to research on cross-sectional variation in corporate tax avoidance (e.g., Dyreng et al., 2008). Empirical tax research provides evidence that some firms extensively use tax avoidance strategies, whereas other firms engage only in little or no tax

avoidance. We provide evidence that different board compositions help to explain this "under-sheltering puzzle". More precisely, including different stakeholders on corporate boards may help to explain why firms vary in their corporate tax behavior.

This paper proceeds as follows. Section 2 reviews related literature and develops the hypotheses. In Section 3, we outline our methodology and report the sample selection process. Section 4 presents and discusses results and robustness tests. Final remarks are provided in Section 5.

2. Prior Literature and Hypotheses

2.1. Board Composition

Although the objective of boards are similar, board compositions vary across countries (e.g., Adams and Ferreira, 2007). For example, Germany mandates the participation of workers, defined as employees who earn wages collectively agreed to by trade unions and employer associations, and their representatives on the supervisory board. Depending on a firm's number of workers and its legal form, the supervisory board consists either exclusively of shareholders or of shareholders *and* workers. The overall fiduciary responsibility resides with all supervisory board members and thus also with worker representatives. All supervisory board members including shareholder and labor representatives also have a legal obligation to maintain the secrecy of information conveyed to the board.

(Insert Figure 1 about here)

Worker representatives are elected by a firm's German workforce and are appointed to the board to represent and protect the interests of the domestic workforce.[5] The number of worker representatives depends on the size and legal form of the firm. The German laws on board-level worker representation limit stock corporations to one out of three general possible

[5] The non-representation of foreign workers was part of a recent decision by the European Court. The Court upheld the restriction on voting and board membership for non-European workers of German companies.

board compositions.[6] Figure 1 compares and contrasts the different board compositions. Panel A shows the composition for stock corporations with less than 500 German workers, which are exempt from worker representation. The supervisory board consists exclusively of shareholders. This board composition only includes shareholders and is, therefore, comparable to the composition of U.S. boards.

As shown in Figure 1, Panel B German stock corporations with more than 500 and up to 2,000 workers are required by the Industrial Constitution Act of 1952 and the Third Part Act of 2004, to assign one-third of the total amount of the supervisory board seats to worker representatives and the remaining two-thirds to shareholder representatives (*One-third co-determination*). Thus, the majority of the voting power is attributed to shareholders.

German stock corporations with more than 2,000 workers are required to allocate half of the supervisory board seats to worker representatives as shown in Figure 1, Panel C (The Co-Determination Act of 1976). The group of worker representatives consists of employed workers and two or three external labor union members.[7] For example, the board of a firm with not more than 10,000 workers consists of six shareholder representatives, four worker representatives, and two labor union representatives. The labor union representatives are proposed by the labor union and are not employed by the firm that they monitor. The chairman of the supervisory board is elected by the firm's shareholders and holds the tie-breaking vote. This tie-breaking vote grants slightly greater voting power to shareholders (*Quasi-parity co-determination*). However, the assigned decision-making power and control rights are substantial and enable worker representatives to shape boardroom decisions. Assuming that worker representatives have similar interests and consequently vote as a homogenous group, they are able to outvote

[6] In this study, we examine worker representation of public stock corporations. We do not analyze worker representation on corporate boards of limited liability companies, although these firms are also required to assign board seats to workers under certain conditions.

[7] In some cases middle management has a seat at the supervisory board (only under the Co-Determination Act of 1976). This representative is elected by the middle management and holds at most one seat on the supervisory board. In contrast to workers, managers are payed salaries above the collectively agreed wages.

shareholders when shareholders are divided by disagreement and thus, form heterogeneous groups (e.g., Lin et al., 2017).

To ensure worker representatives protect workers' interests, all worker representatives are nominated by workers or labor unions. Workers vote for their representatives directly or through delegates if the number of workers is very large. Directors and executives who have the power to represent the company are excluded from voting or being elected to represent workers.

There is little voluntary inclusion of worker representation in Germany.[8] Additionally, few loopholes to avoid worker representation exist. Two exceptions include German firms incorporated in the European Union who are permitted to decide in their articles of incorporation whether they have worker representatives on the supervisory board or not. Further, holding companies that solely manage assets (non-operating holdings) are not required to include worker representatives on the supervisory board. The question of whether workers can send representatives to the supervisory board in these exceptions is currently subject to protracted lawsuits. In robustness tests, we exclude 152 firm-years in the tax sample and 165 firm-years in the earnings management sample (less than 10 percent in each of the two samples) where the firm has more than 500 German workers and no worker representation.[9]

The extant literature that analyzes worker representation and participation suggests that workers have low risk-taking tendencies and non-existent risk diversification possibilities (e.g.,

[8] We hand-collect the number of domestic jobs from annual reports to investigate how many firms voluntary include worker representatives on the corporate board. Within our tax (earnings management) sample, only 25 of 426 firms (23 of 371 firms) have worker representatives on the board, when the number of German workers is below 500. By contrast, Fauver and Fuerst (2006) find 88 of 786 firms with less than 500 employees have worker representatives on the board. However, compared to our study, their sample includes smaller firms: Fauver and Fuerst (2006) report that firms without worker representatives on the board have, on average, total assets (sales) of €222.6 (€129.3) billion compared to €569.0 (€510.4) billion in our tax sample. Their sample of firms with worker representatives have, on average, total assets (sales) of €1,320 (€393.6) billion compared to €11,379.7 (€8,748.2) in our tax sample. As a robustness test, we exclude the abovementioned firms and repeat our main analyses. The inferences are unchanged.

[9] These 152 firm-years represent 45 firms: 11 firms are European corporations, 8 firms are asset management holding firms, 6 firms exceed the threshold of 500 German workers within our sample period but do not include worker representatives on the board until the end of the year 2015, and 20 firms (68 firm-years) do not incorporate worker representatives without any obvious reason. This distribution is very similar in the earnings management sample. Excluding these firms does not change our inferences.

Jensen and Meckling, 1979; Benelli et al., 1987; Furubotn, 1988; Faleye et al., 2006). Workers are also primarily interested in the long-term survival of the firm (e.g., Gorton and Schmid, 2000; Berk et al., 2010). Workers earn their salaries and pension benefits independently from firm performance, as long as the firm is not in default. Because of this fixed claim on the firm, workers would avoid some investments with volatile cash flows that shareholders would undertake, regardless of their net present values (Faleye et al., 2006). Thus, worker representatives on boards could play a monitoring role, reducing agency costs or could focus on payroll maximization.

Research to-date is not definitive as to whether worker representation improves monitoring, reducing agency costs or results in worker payroll maximization. An early examination of the impact of worker representation on firm value maximization concluded that workers on the board shift a firm's objective function more towards maximizing payroll (Gorton and Schmid, 2004). Gorton and Schmid (2004) find a decrease in market value of 31 percent for firms with one-half board-level worker representation, compared to those with only one-third. However, a subsequent empirical analysis of all publicly traded German corporations across the spectrum of worker representation finds a more nuanced monitoring effect for worker representation that varies with competition, benefits from coordination and the level of worker representation (Fauver and Fuerst, 2006).[10] We use the tax aggressiveness and earnings management settings to examine the extent to which worker representation is associated with monitoring that reduces agency costs versus payroll maximization.

2.2. Worker Representation and Tax Aggressiveness

The tax aggressiveness setting allows us to differentiate between worker risk preferences and payroll maximization preferences. Prior research on the association between governance

[10] Fauver and Fuerst (2006) conclude that the relation between worker representation and firm value is an inverse U-shape, where the optimal level of worker representation is below 50%. An inverse U-shaped relation is also consistent with the theoretical model in Balsmeier et al. (2013).

and tax aggressiveness suggests the relationship is nuanced. Minnick and Noga (2010) investigate whether certain board characteristics (e.g., board size, board independence) are related to proxies for tax aggressiveness. They find weak evidence for an association between these board characteristics and industry adjusted cash and GAAP ETRs. In a more recent study, Armstrong et al. (2015) highlight the importance of evaluating the association between corporate governance and tax avoidance across the entire tax avoidance distribution. Their evidence implies a positive relation between board independence and financial sophistication and tax avoidance for low levels of tax avoidance and a negative association for high levels of tax avoidance. This finding is consistent with the notion that these board characteristics mitigate agency problems related to extreme levels of tax avoidance.

Consistent with Hanlon and Heitzman (2010), we understand tax avoidance as a continuum of different tax planning activities that range from perfectly legal activities on the one end to tax sheltering and tax evasion activities on the other end of the continuum. We are particularly interested in tax planning activities that are closer to the more aggressive end of the continuum. Conceptually, aggressive tax planning allows us to contrast the monitoring role of worker representative on the board with evidence workers have low risk-taking tendencies and non-existent risk diversification possibilities (e.g., Jensen and Meckling, 1979; Benelli et al., 1987; Faleye et al., 2006). Recent tax research indicates that aggressive tax planning represents one type of risky investment (e.g., Kim et al., 2011; Rego and Wilson, 2012; Hanlon et al., 2017). If the role of workers is to oppose risky management actions, we propose that the risk of aggressive tax planning motivates workers to challenge these tax positions. Thus, we label our construct of interest tax aggressiveness.

Following Armstrong et al. (2015), we predict worker representation on the board results in more tax aggressiveness for low-aggression firms and less tax aggressiveness for high-aggression firms if workers monitor managers' tax decision and reduce agency costs. However, if the lower risk tolerance of workers impacts their monitoring function, we will not observe an

increase in tax aggressiveness for low-aggression firms, only a decrease in tax aggressiveness for high-aggression firms. Similarly, the current political and public awareness of aggressive corporate tax planning (e.g., The New York Times, 2012; Bloomberg, 2018b) has increased concerns about general inequality between low corporate tax rates and relatively high personal income taxation. The attention has led to demands for a change in tax systems and regulations (e.g., Hans Boeckler Foundation, 2016). Strong public awareness could affect board decisions when the board consists of workers constraining investments in aggressive tax planning for high-aggression firms, but would not resulting in an increase in tax aggressiveness for low-aggression firms. Note, however, that both the low risk tolerance of worker representatives and the political costs of corporate tax aggressiveness still lead us to predict a decrease in tax aggressiveness for high-aggression firms.

We state our first hypothesis based on our expectation the monitoring role is the primary effect:

H1: *The presence of workers on corporate boards is negatively (positively) associated with aggressive (unaggressive) tax planning.*

Worker representation may lead to payroll maximization rather than a reduction in agency costs or a reduction in risky tax planning strategies. We focus on income shifting to differentiate between monitoring and payroll maximization. Prior literature provides evidence that firms use multinational tax incentives to shift income to low-tax jurisdictions (e.g., Collins et al., 1998; Klassen and Laplante, 2012; Dyreng and Markle, 2016). Firms are able to move income to another jurisdiction through accounting and financing decisions (e.g., internal debt financing) or through a relocation of a firm's real operations. Research indicates that tax incentives influence the location of foreign investments, fixed capital, and intangible assets (e.g., Graham et al., 2011; Hanlon et al., 2015). Taxes also influence the decision to offshore jobs (Williams, 2018). The impact of taxes on job location is not trivial. In a study that assesses the impact of

the tax activities revealed by the "Panama Papers" published in April 2016, the Policy Department on Budgetary Affairs of the European Parliament conservatively estimates that around 1.5 million jobs could have been supported with the money that was lost to EU Member States and their national tax authorities because of tax losses related to these activities (European Parliament, 2017).

If worker representatives focus on maximizing payroll over monitoring, we suggest that workers on the board may not *per se* constrain managerial investments in aggressive tax planning. Instead, workers may use their decision-making power and control rights on the board to challenge and constrain a specific type of cross-border transaction associated with tax decisions. For example, while internal debt financing likely does not directly influence workers and their risk preferences outlined above, moving jobs and relocating a firm's operations to other (low-tax) jurisdictions because of tax-related decisions directly affects the workforce through job losses. Therefore, we expect that workers on corporate boards are particularly sensitive to aggressive tax planning, if this includes moving firm operations to other jurisdictions. Anecdotally, German worker representation prevented a firm from establishing or expanding a more profitable production facility abroad (Hans Boeckler Foundation, 2004). Apart from tax-related implications, moving firm operations to other jurisdictions can also be used to weaken or circumvent worker rights, social protection laws, and co-determination regulation. Additionally, similar to U.S. firms, there is little empirical or anecdotal evidence that German firms share tax savings with workers. In Germany, workers are unlikely to be compensated via stock option plans limiting their ability to benefit from an increase in firm value due to aggressive tax planning (Lin et al., 2017). The risk of job losses and the circumvention of worker rights supports our expectation of a negative association between worker representation on corporate boards and tax aggressiveness for high-aggression firms. For low-aggression firms, worker representation moderates the governance effect of hypothesis 1 and we expect to find an insignificant or negative association.

Based on multinational tax incentives and their implications for labor decisions, we expect workers on corporate boards to be more sensitive to aggressive tax planning, when the risk of moving jobs offshore is high. This leads to our second hypothesis:

H2: *The association between the presence of workers on corporate boards and aggressive (unaggressive) tax planning is moderated by a firm's likelihood of moving jobs offshore.*

2.3. Worker Representation and Earnings Management

Previous research provides strong evidence that board characteristics are associated with earnings management through accruals and real activities. Board or audit committee independence and the corporate or financial background of board and audit committee members are associated with lower abnormal accruals (Klein, 2002; Xie et al., 2003). Related evidence indicates that U.S. corporations with gender-diverse boards exhibit higher-quality abnormal accruals (Srinidhi et al., 2011) and that abnormal accruals are smaller when a majority of independent directors serves on at least two of the three principal monitoring committees (Faleye et al., 2011).

Managers may also inflate earnings through real activities manipulation. Following Roychowdhury (2006) and Cohen and Zarowin (2010), we refer to real activities manipulation as management decisions that differ from normal business practices in order to meet certain earnings thresholds. In a survey of more than 400 executives, Graham et al. (2005) find that managers prefer to manipulate earnings through real activities rather than accruals manipulation. These real activities may include decisions about pricing, production, and discretionary expenditures (Roychowdhury, 2006).

Prior evidence on boards and real earnings management indicates that short-term earnings pressure causes opportunistic reductions in R&D expenditures. For example, Cheng (2004) shows that compensation committees respond to, and effectively mitigate, potential opportunistic reductions in R&D spending. Related literature also indicates that more independent

boards constrain the manipulation of R&D expenditures (Garcia Osma, 2008). In a more recent study, Chen et al. (2015) find that board independence can reduce the extent of working capital management and real earnings management when the information acquisition cost is low.

We use this board-related evidence on accrual-based and real earnings management to motivate our investigation of the impact of workers representation on earnings management. Although prior research has focused on the average impact of governance on earnings management, following Armstrong et al. (2015) we expect worker representation on corporate boards to be consistent with improved monitoring and a reduction of agency costs in the earnings management setting. This would be consistent with an inverse U-shape relation between the presence of workers on corporate boards and accrual-based earnings management. More precisely, we predict that worker representation on the board would result in more accrual-based earnings management for low-level earnings management firms and less accrual-based earnings management for high-level earnings management firms.

However, workers' risk-taking tendencies may constrain this inverse U-shape relation and would only allow us to observe a decrease in accrual-based earnings management. For example, research indicates that accruals quality entails several risks (e.g, Francis et al., 2005; Roychowdhury, 2006). If workers are more risk-averse than shareholders (Faleye et al., 2006), we would expect to only find a decrease in accrual-based earnings management for firms with high levels of earnings management.

Based on workers on corporate boards lead to improved monitoring of accrual-based earnings management we state the following hypothesis:

H3: *The presence of workers on corporate boards is negatively (positively) associated with high-level (low-level) accrual-based earnings management.*

Paralleling our expectation that worker representatives also have payroll maximization in

the tax aggressiveness setting, we expect payroll maximization incentives mitigate worker representatives monitoring in the real earnings management setting. Following prior literature, we focus on abnormal levels of three operational activities: overproduction, reduction of discretionary expenditures such as R&D and administrative expenses, and sales manipulation (e.g., Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010; Zang, 2012). We suggest that workers are sensitive to real earnings management depending on whether real activity manipulation affects their payroll. The association between workers on corporate boards and real earnings management is nuanced and our expectation differs for each of the three operational activities. First, managers may decide to increase production levels in order to spread costs over a larger number of units, so that costs per unit decline. We expect that worker representatives on corporate boards would prefer higher production levels as this is associated with stronger job security and lower uncertainty. Consequently, if managers increase production levels to inflate earnings, worker representatives will promote these decisions as the consequences are directly connected to their payroll incentives. Thus, we conclude that worker representatives on corporate boards are positively associated with abnormal production levels for low-level earnings management firms. Additionally, we expect to find no negative association between worker representation and abnormal production levels.

Second, prior literature shows that managers manipulate earnings through a reduction of discretionary expenditures. Similar to overproduction, we expect worker representatives to mitigate real earnings management through cuts in discretionary expenditures, including R&D and administrative expenses. For example, Roychowdhury (2006) argues that discretionary expenditures, such as SG&A expenditures, typically include among other expenditures, certain expenditures such as "employee training" (Roychowdhury, 2006, p. 340). Training programs are typically established to increase human capital and commitment of the workforce (Gunny, 2010). If these discretionary expenditures include expenditures that are closely related to work-

ers' incentives, such as training programs as proposed by Roychowdhury (2006), and if a reduction of these expenditures is consistent with a reduction of worker incentives or job losses, we would expect worker representatives to block real earnings management that is achieved through a reduction of discretionary expenditures. For firms that have relatively high levels of discretionary expenditures (i.e., low levels of earnings management) we do not expect worker representatives to advocate for cuts in the level of discretionary expenditures.

Third, managers may manipulate sales through one-time price discounts and changes of credit terms to temporarily increase sales. However, the relation between workers on corporate boards and abnormal cash flow from operations (CFO) levels is not ex ante clear because workers' payroll maximization incentives are not directly linked to abnormal CFO levels.

We use real earnings management to investigate whether workers on corporate boards would maximize payroll incentives. We expect worker representatives to be more sensitive to earnings management when managers manipulate real activities that are directly connected to workers' payroll incentives. This leads to our fourth hypothesis:

H4: *The presence of workers on corporate boards is positively associated with abnormal production levels for low-level earnings management firms and negatively associated with abnormal discretionary expenditures for high-level earnings management firms.*

3. Research Design and Sample

3.1. Design of Tax Aggressiveness Tests

To examine the association between worker representation on corporate boards and tax aggressiveness, we estimate Equation (1):

$$ETR\_DIFF_{i,t} = \beta_0 + \beta_1 WORKER\_REP_{i,t} + \beta_2 ROA_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 PPE_{i,t} + \beta_5 INTAN_{i,t} + \beta_6 LEV_{i,t} + \beta_7 CAPEX_{i,t} + \beta_8 R\&D_{i,t} + YEAR\_FE + \varepsilon_{i,t}. \quad (1)$$

We operationalize total tax expense scaled by pre-tax income for the portfolio of firms

from the same industry and same quintile of total assets less a firm's *GAAP ETR*.[11] We recognize that several measures of tax aggressiveness have been developed in prior literature. For example, related tax aggressiveness literature has measured aggressive tax planning through the likelihood of entering into tax shelters (Wilson, 2009; Lisowsky, 2010), tax haven activities (Dyreng and Lindsey, 2009), discretionary permanent book-tax differences (Frank et al., 2009), and uncertain tax benefits recorded under FIN 48 (De Waegenaere et al., 2015). However, Blouin (2014) and Balakrishnan et al. (2018) point out that each measure has its limitations and only partially captures a firm's overall tax aggressiveness. Therefore, we follow Balakrishnan et al. (2018) and measure a firm's aggressiveness relative to a benchmark of "typical" tax planning.[12] Positive values of *ETR_DIFF* indicate that the firm pays less taxes than its industry and size peers, which we interpret as greater tax aggressiveness. In addition, using industry-size adjusted effective tax rates is most suitable for our particular research question. Armstrong et al. (2015) suggest that using a benchmark rather than raw ETRs better captures board monitoring. We are interested in effects of workers on corporate boards and their ability to monitor and constrain aggressive tax planning. To assess a firm's tax position, workers on corporate boards may easily perform a comparison between their firms' ETR and that of their industry and peers. Our measure benchmarks a firm's aggressiveness to "typical" tax planning and thus, accounts for this potential way of monitoring.

We use quantile regression rather than OLS because we are interested in the association between worker representation and extreme corporate tax planning. OLS estimates the association between independent variables and the conditional mean of the dependent variable. In our context, for example, OLS measures how "on average" worker representation is associated with a firm's tax aggressiveness. By contrast, quantile regression provides a more comprehensive picture (Mosteller and Tuckey, 1977). Quantile regression estimates the effect of independent

[11] *GAAP ETRs* are constrained to be between zero and one, following, among many others, Dyreng et al. (2008).

[12] This measure is based on the assumption that firms with similar size and from the same industry have identical tax planning opportunities. If so, a firm with a rather low tax position can be expected to be more aggressive.

variables on the dependent variable for conditional quantiles of the dependent variable's conditional distribution (Koenker and Bassett, 1978; Koenker and Hallock, 2001).[13] As discussed in Section 2.3, we expect to find different effects of worker representation across the respective distribution of *ETR_DIFF*. More precisely, extreme corporate tax planning would be either considered to be at the lower tail (i.e., low-aggression) or at the upper tail (i.e., high-aggression) of the respective distribution. Because quantile regression allows us to evaluate the association between worker representation and extreme corporate tax planning on both tails, we use this type of regression analysis as our primary method of estimation.

The primary independent variable is *WORKER_REP*. We define *WORKER_REP* as an indicator variable that measures whether a firm is obliged to have workers on the board. *WORKER_REP* equals one if the board of a firm includes workers and zero otherwise. Considering our first hypothesis, we expect β_1 to be significantly negative in the aggressive tax planning quantiles. This is consistent with the notion that workers on corporate boards prefer less aggressive tax planning. However, for the lower tail of the distribution, we expect to find no or a positive association, consistent with an insignificant or significantly positive β_1 in low-aggression tax planning quantiles.

Following prior research, we control for firm characteristics that tax research has identified to be important determinants of tax avoidance (e.g., Gupta and Newberry, 1997; Mills et al., 1998; Rego, 2003; Frank et al., 2009; Chen et al., 2010; Rego and Wilson, 2012). Return on assets (*ROA*) is defined as pre-tax income scaled by total assets, and controls for a firm's profitability. Worker representation on boards depends on the number of workers. To minimize concerns that our results are driven by firm size, we control for *SIZE* which is defined as the natural logarithm of market value of equity. We include net property, plant and equipment

[13] From a statistical perspective, recall that OLS minimizes the sum of squared residuals. Quantile regression minimizes the weighted sum of the absolute deviation, where the different weights are described by the different quantiles of the distribution (Koenker and Bassett, 1978). Notice that quantile regression is not equal to just dividing the sample into subsets and then applying OLS on the subsets. As quantile regression is applied on the full sample, this methodology avoids sample truncation and sample selection bias (Zietz et al., 2008).

(*PPE*) and intangible assets (*INTAN*) to control for different book-tax treatments for non-current tangible and intangible assets. Leverage (*LEV*) is defined as long-term debt scaled by total assets. We also control for capital expenditures (*CAPEX*) and R&D expenditures (*R&D*). Our controls also address potential non-tax reasons for differences in operations that affect tax. All control variables are scaled by total assets. Since we define our independent variable, *ETR_DIFF*, as the difference between the average GAAP ETR of industry-size matched firms and a firm's GAAP ETR, all control variables in the model are also expressed as industry-size matched differences. The model also includes year fixed effects to control for any time-specific effects.[14]

Our second hypothesis tests whether the association between worker representation and tax aggressiveness is moderated by the likelihood a firm moves jobs offshore, which we proxy for using a firm's foreign operations. We follow prior literature and use a firm's foreign sales (e.g., Jacob, 1996) as a percentage of total sales to measure the risk of jobs moving offshore. We manually collect foreign sales from segment disclosures of annual reports. We use foreign sales to proxy for a firm's foreign operations for two reasons. First, we assume that a firm that attempts to enter foreign markets and increasingly engages in multinational business strategies begins its multinational strategy by selling products to foreign countries. These transactions are highly visible and recognizable for a firm's workforce and thus, fit our particular research question. Second, other indicators of a firm's multinationality (e.g., foreign assets) are incompletely and inconsistently disclosed by German public firms.[15]

To test our second hypothesis, we modify Equation (1) and replace *WORKER_REP* with three variables that measure the level of a firm's foreign operations and indicate whether a firm's board includes worker representation: (1) *WORKER_REP_FSLOW* equals one if the

[14] All continuous variables are winsorized at the top and bottom 1% of their respective distributions to minimize the influence of potential outliers.

[15] However, in Section 4.3, we test the association on a subsample using foreign assets instead of foreign sales to proxy for a firm's foreign operations. We find that our results are not influenced by proxy definition and hold when we use foreign assets.

board of a firm includes workers and if this firm reports foreign sales less than 25 percent of the total sales and zero otherwise, (2) *WORKER_REP_FSMID* equals one if the board of a firm includes workers and if this firm reports foreign sales equal to or greater than 25 percent and less than 75 percent of the total sales and zero otherwise, (3) *WORKER_REP_FSHIGH* equals one if the board of a firm includes workers and if this firm reports foreign sales equal to or greater than 75 percent of the total sales and zero otherwise. Consistent with our second hypothesis, we expect β_1 to be insignificant, but β_2 and β_3 to be significantly negative for high-aggression firms. This is consistent with the notion that workers on corporate boards are more sensitive to tax aggressiveness when firms have relatively high foreign operations.

3.2. Design of Earnings Management Tests

To examine the association between worker representation on corporate boards and earnings management (hypothesis 3 and 4), we estimate Equation (2):

$$EM_{i,t} = \beta_0 + \beta_1 WORKER\_REP_{i,t} + \beta_2 MVE_{i,t} + \beta_3 MTB_{i,t} + \beta_4 NET\_INCOME_{i,t} + \beta_5 LOSS_{i,t} + YEAR\_FE + \varepsilon_{i,t}. \quad (2)$$

We use four measures of earnings management as dependent variables in Equation (2). First, we use discretionary accruals (*ABN_ACC)* from the performance-based Jones model to test hypothesis 3 (Kothari et al., 2005). Second, we use three real earnings management proxies as dependent variables (*ABN_PROD*, *ABN_EXP*, and *ABN_CFO*) to test hypothesis 4. Following Roychowdhury (2006), *ABN_PROD* is calculated as the actual production costs minus the average industry-year production costs. Similarly, *ABN_EXP (ABN_CFO)* is calculated as the actual discretionary expenses (cash flow from operations) minus the "normal" discretionary expenses (cash flow from operations).[16] We multiply *ABN_EXP* and *ABN_CFO* by negative one (e.g., Cohen and Zarowin, 2008; Zang, 2012), so that the higher the amount, the more likely

[16] See Appendix A for detailed information regarding the calculation of *ABN_ACC*, *ABN_PROD*, *ABN_EXP*, and *ABN_CFO*.

it is that a firm reduced discretionary expenditures and engaged in sales manipulation, respectively.

The independent variable *WORKER_REP* is as defined above. Regarding our third hypothesis, we expect β_1 to be significantly negative for high-level earnings management firms. This supports the view that worker representatives effectively monitor to reduce accrual-based earnings management. Contrarily, we expect to find an insignificant or significantly positive β_1 for low-level earnings management firms. Our fourth hypothesis predicts β_1 is significantly positive for low-level earnings management firms when *ABN_PROD* is the dependent variable. This expectation is in line with the notion that worker representatives prefer higher production levels to achieve a stronger job security. Additionally, we expect β_1 to be significantly negative when *ABN_EXP* is the dependent variable, consistent with workers on corporate boards blocking reductions of discretionary expenditures that could result in job losses. Finally, although we make no prediction for *ABN_CFO*, a positive coefficient for low-level earnings management firms and a negative coefficient for high-level earnings management firms would be consistent with monitoring.

Based on prior literature, we control for size (*MVE*) and growth opportunities (*MTB*). *MVE* is defined as the logarithm of market value of equity at the beginning of the year. *MTB* is calculated as the market capitalization divided by book value of the equity at the beginning of the year. Additionally, to control for the performance of a firm, net income scaled by lagged total assets (*NET_INCOME*) is included in our model. Following prior research (e.g., Roychowdhury, 2006), *MVE*, *MTB*, and *NET_INCOME* are calculated as deviations from the corresponding industry-year means.[17] We also control for firm-years with a negative pre-tax book income (*LOSS*) because the management of a firm has an incentive to manage earnings in order to avoid

[17] Notice that the calculation of abnormal values differs between the tax and the earnings management sample. In the tax setting, we follow Balakrishnan (2018) and calculate the difference between the (industry-size) mean and the specific firm for all variables. In the earnings management setting, however, we follow Roychowdhury (2006) and calculate the difference between the specific firm and the (industry-year) mean for all variables. For detailed information, see Appendix A.

reporting losses. Furthermore, we include year fixed effects.[18]

3.3. Sample Selection

Table 1, Panel A summarizes our sample selection process for our tests of hypothesis 1 and 2. The initial sample contains all COMPUSTAT Global observations of publicly traded German firms over the sample period 2009-2015, corresponding to 5,622 firm-year observations of 942 unique firms. We then exclude observations with negative pre-tax income and with missing COMPUSTAT data required to compute our tax aggressiveness variables and control variables.[19] These requirements reduce the sample to 3,949 firm-year observations. Additionally, we exclude financial institutions because these firms are subject to different accounting and disclosure requirements and exclude firm-year observations with *GAAP ETRs* greater one.

Corporate governance data for German firms is not available in electronic databases. Specifically, there is no data available that contains information regarding board compositions. We manually obtain corporate governance data from annual reports and restrict our sample to firm-year observations for which corporate governance data is collectable. These criteria result in a sample of 1,891 firm-year observations. To operationalize our second hypothesis, we hand-collect foreign sales from annual reports and exclude observations without foreign sales data. This leads to our final tax sample of 1,739 firm-year observations from 426 unique firms.

In Panel B of Table 1, we present the sample selection process for our earnings management dataset. Consistent with the tax sample, our initial dataset begins with 5,622 firm-years. Following prior research (e.g., Roychowdhury, 2006), we exclude all firm-years with less than 15 observations per industry and year; this reduces our sample to 4,077 firm-years. Additionally, we exclude both firm-years with missing data on control variables (1,846 firm-

[18] Similar to the tax sample and in line with prior earnings management literature (e.g., Zang, 2012), all continuous variables in the earnings management setting are winsorized at the top and bottom 1% of their respective distributions to minimize the influence of potential outliers.

[19] We follow prior ETR-based tax research and eliminate loss years. Thus, our results do not apply to loss years. However, in Section 4.3, we conduct a supplemental test and find our inferences are insensitive to excluding loss years.

years are excluded) and firm-years with uncollectable corporate governance data (290 firm-years are excluded). Thus, our final earnings management sample includes 1,941 firm-year observations.[20]

(Insert Table 1 about here)

As outlined above, worker representation on corporate boards is legally mandated only for those firms that fulfill certain criteria (e.g., legal form, firm size). In our sample, worker representation is mandatory. Therefore, we assume the laws mandating working representation are exogenous to the firm, but address potential endogeneity in our robustness tests.

4. Results and Robustness Tests

4.1. Results for Tax Aggressiveness

Table 2, Panel A provides descriptive statistics for all of the variables used in our tax aggressiveness analysis. Each variable is partitioned by worker representation. Our tax sample includes 936 firm-year observations with worker representation and 803 firm-year observations with no worker representation on the corporate board. Firms with worker representation on the board comprise 53.8% of our tax sample. *ETR_DIFF* averages 0.002 over the sample period, with a median of 0.004. This indicates that the average sample firm pays slightly fewer taxes than its industry-size peers. Importantly, we find no significant mean difference for *ETR_DIFF* between firms with worker representation and no worker representation. This finding supports our expectation that the effects of worker representation are not related to the mean of the dependent variable's distribution and indicates that using quantile regression is the appropriate methodology to answer our specific research question. Firms with worker representation do differ significantly from firms with no worker representation on several other dimensions. For example, firms with worker representation report significantly lower *PPE* and have signifi-

[20] There is an overlap between the tax and the earnings management sample: 276 firms (1,101 firm-years) are included in both samples.

cantly lower *R&D* than firms without worker representation, meaning firms with worker representatives have higher industry-size adjusted levels of both PP&E and R&D expenditures. Furthermore, firms with worker representation have significantly higher *INTAN*, *LEV*, and *CAPEX* compared to boards purely consisting of shareholders. We control for these differences in our regressions. Firms with worker representation also have more foreign operations as reflected in a higher level of foreign sales. However, in an untabulated analysis, we find that worker representation is proportionately distributed across the quartiles of foreign sales used to partition the sample for hypothesis 2.

In Table 2, Panel B, we report Pearson correlations below the diagonal and Spearman correlations above the diagonal. The univariate correlation of *ETR_DIFF* with *WORKER_REP* is not statistically significant. We use quantile regression to examine the association across the distribution of industry-size adjusted ETRs. Additionally, our control variables are generally uncorrelated with *ETR_DIFF* due to our use of industry-size adjusted controls. *ETR_DIFF* is negatively correlated with *ROA* consistent with firms that are more profitable than their industry and size peers having ETRs that are lower (more aggressive) than their industry and size peers. Firms with higher *LEV* than their industry and size peers have higher ETRs as well.

(Insert Table 2 about here)

Table 3 reports the results of estimating Equation (1). For all regression specifications, the *t*-statistics are reported in the column next to the coefficients. Table 3 shows that worker representation on the board is associated with reduced agency costs. Specifically, *WORKER_REP* is negatively associated with *ETR_DIFF* for the upper end of the *ETR_DIFF* distribution. More precisely, we find significantly negative coefficients of -0.0209 (*t*-statistic of -2.84), -0.0285 (*t*-statistic of -2.73), and -0.0539 (*t*-statistic of -4.60) for the 0.7, 0.8, and 0.9 quantiles, respectively. Thus, the magnitudes of the coefficients and *t*-statistics increase consistently at the upper quantiles. From an economical perspective, the results suggest that *ETR_DIFF* is, on average, up to 5.4% lower for firms in the highest ETR quantile with worker

representation than for firms in that quantile with no worker representation.

At the lower end of the *ETR_DIFF* distribution, we find positive and significant coefficients of 0.0346 (*t*-statistic of 2.60), 0.0192 (*t*-statistic of 2.57), and 0.0095 (*t*-statistic of 1.72) for the 0.1, 0.2, and 0.3 quantiles, respectively. Our results are consistent with hypothesis 1 and indicate that the presence of workers on corporate boards is associated with improved monitoring that reduces extreme under- and overly-aggressive tax planning. The relations between the control variables and *ETR_DIFF* are generally consistent with prior research. For example, Table 3 shows that industry-size adjusted return on assets, intangible assets, and capital expenditures are negatively associated with tax aggressiveness. This implies that return on assets above the industry norm is associated with ETRs below the industry norm.

(Insert Table 3 about here)

Figure 2 depicts the association between *WORKER_REP* and *ETR_DIFF*. This figure plots quantile regression coefficient estimates at various quantiles of the *ETR_DIFF* distribution, ranging from 0.1 to 0.9 (i.e., solid green curve). The dashed line presents the OLS estimate. The grey area shows the 95 percent confidence band of the quantile regression estimates. Figure 2 indicates that the association between *WORKER_REP* and *ETR_DIFF* differs across the distribution. Corresponding to the results presented in Table 3, quantile regression coefficients of *WORKER_REP* are positive at lower quantiles and negative at higher quantiles. Figure 2 points out that this range of variation is ineffectively measured with OLS estimates.

(Insert Figure 2 about here)

Overall, the results in Table 3 and Figure 2 support our prediction that worker representation is consistent with the monitoring role of boards and is similar in direction to the impact of board independence and financial sophistication documented by Armstrong et al. (2015) and differs for unaggressive and aggressive tax planning.

Table 4 presents the results of the association between worker representation and tax aggressiveness, considering a firm's foreign operations.

(Insert Table 4 about here)

Specifically, in Table 4, we report the results of estimating Equation (1), except we change the independent variable to *WORKER_REP_FSLOW*, *WORKER_REP_FSMID*, and *WORKER_REP_FSHIGH*, represented in Column 1, Column 2, and Column 3, respectively. Estimations of control variables are untabulated. The estimated coefficient on *WORKER_REP_FSLOW* in the first column of Table 4 is not significant. In contrast, we still find the estimates in the second and third column are generally negative and significant for the upper tail of the *ETR_DIFF* distribution. Additionally, we still find significantly positive coefficients for low-aggression firms; at least for firms with relatively high foreign sales. The results of Table 4 indicate that the association between worker representation and tax aggressiveness is moderated by a firm's foreign operations. We partition firms into low and high foreign sales at the 25th and 75th percentile for our main test. Our inferences are robust to partitioning at the 10th and 90th, 20th and 80th or the 30th and 70th percentiles. Our findings suggest that workers are more attentive to the impact of tax strategies when the risk of offshoring jobs is higher.

In our main analyses, we have treated the group of worker representatives as a homogeneous group to estimate the association between worker representation and tax aggressiveness. However, German legislation on co-determination mandates that firms assign either one-third or half of the board seats to worker representatives. The latter form of worker representation differs from one-third worker representation as this form additionally assigns board seats to labor union representatives.[21] In this most extreme form, the group of worker representatives on corporate boards consists of regular workers that are employed by the firm and elected by the entire workforce and external labor union representatives that are sent to the board by labor

[21] Notice that both forms of worker representation, one-third and half worker representation, assign approximately one-third of board seats to regular workers. Most importantly, half worker representation is achieved by additionally assigning board seats to external labor union representatives. Thus, comparing both forms of worker representation, provides insights into the role of labor union representatives.

unions from outside of the firm. In general, both regular workers and labor union representatives are appointed to the board to represent the interests of the workers of the firm that they monitor. However, labor union representatives may have distinct interests, leading to a heterogeneous group of worker representatives (e.g., Balsmeier et al., 2013). For example, as labor union representatives are not employed by the firm that they monitor, board decisions do not directly affect these representatives. Furthermore, one may argue that labor unions act on behalf of their labor union's interest instead of the interests of the workers of the firm that they monitor.

To address different interests of worker and labor union representatives on corporate boards we include two indicator variables in the model to capture different forms of worker representation. The variable *ONE_THIRD* equals one if the board of a firm includes one-third worker representation and zero otherwise. *PARITY* equals one if the board of a firm includes half worker representation, including labor union representatives, and zero otherwise. In Table 5, Panel A we include *ONE_THIRD* and *PARITY* as independent variables. Panel B partitions the effect by a firm's level of foreign sales, as defined in Section 3.1 and used in Table 4.

(Insert Table 5 about here)

Table 5, Panel A presents consistent results for both forms of worker representation with respect to hypothesis 1. Our results show that the inverse U-shaped association in Table 3 is not attributable to a certain form of worker representation, so that worker representatives on corporate boards, including labor union representatives, monitor extreme under- and over-aggressive tax planning as a homogeneous group.

In Panel B, the mostly insignificant coefficients for *ONE_THIRD_FSLOW* and *PARITY_FSLOW* indicate that both forms of worker representation are largely inattentive to the impact of tax strategies when the risk of offshoring jobs is relatively low. However, when the risk of offshoring jobs is higher, we find a negative association between worker representation and tax aggressiveness for high-aggression firms, regardless of the form of worker representa-

tion. When boards also include labor union representatives (i.e., *PARITY_FSMID* and *PARITY_FSHIGH*), we continue to find that low-aggression firms with worker and labor union representatives are more tax aggressive. Only when boards include workers, but not labor union representatives do we observe increased sensitivity to tax avoidance for low-aggression firms. The lack of a positive relation between worker representation (i.e., *ONE_THIRD_FSMID* and *ONE_THIRD_FSHIGH*) and *ETR_DIFF* for low-aggression firms is consistent with payroll maximization and hypothesis 2. One possible explanation could be that the different incentives of worker and labor union representatives reduce their ability to cooperatively block tax aggressive activities of low-aggression firms that could result in jobs moving offshore.

4.2. Results for Earnings Management

Table 6, Panel A provides descriptive statistics for the variables used in our earnings management analysis. Our earnings management sample consists of 804 firm-years with and 1,137 firm-years without worker representation on corporate boards. Importantly, for our main variables of interest (i.e., *ABN_ACC, ABN_PROD,* and *ABN_EXP*), we find no significant mean difference between firms with and without worker representation, again suggesting the importance of using quantile regressions. Using quantile regression with signed abnormal accruals also allows us to avoid problems with absolute abnormal accruals (Hribar and Nichols, 2007). In contrast to the tax sample, firms with worker representation differ significantly from firms without worker representation with respect to size (*MVE*) and profitability (*NET_INCOME*). However, it is worth mentioning that the variable definitions and sample makeup differ between the tax and earnings management samples.

In Table 6, Panel B, we report Pearson (Spearman) correlations below (above) the diagonal. The Spearman univariate correlations with *WORKER_REP* are most appropriate because *WORKER_REP* is dichotomous and indicate *WORKER_REP* is not significantly associated with *ABN_ACC*, *ABN_PROD*, *ABN_EXP,* and *ABN_CFO*.

(Insert Table 6 about here)

The results of estimating Equation (2) are presented in Table 7. *WORKER_REP* is negatively associated with *ABN_ACC* for the upper end of the *ABN_ACC* distribution. Specifically, we find significantly negative coefficients of -0.0100 (*t*-statistic of -2.19), -0.0154 (*t*-statistic of -2.37), and -0.0288 (*t*-statistic of -3.54) for the 0.7, 0.8, and 0.9 quantiles, respectively. Hence, the magnitudes of the coefficients and *t*-statistics increase continuously at the uppermost quantiles.

At the lower end of the *ABN_ACC* distribution, we find significantly positive coefficients of 0.0327 (*t*-statistic of 3.11) and 0.0130 (*t*-statistic of 2.55) for the 0.1 and 0.2 quantiles. Our results are consistent with hypothesis 3 and indicate that the presence of workers on corporate boards is associated with improved monitoring and a reduction of agency costs and differs for low-level and high-level accrual-based earnings management.

(Insert Table 7 about here)

Table 8 presents the results of the association between worker representation and real earnings management. Regarding *ABN_PROD*, we indeed find that the estimated coefficient on *WORKER_REP* is significantly positive for low-level real earnings management firms and insignificant for high-level real earnings management firms. Thus, consistent with hypothesis 4, worker representatives on corporate boards are associated with an increase in production levels for firms at the lower tail of the distribution as this is associated with an increase in job security and lower uncertainty. We find no corresponding reduction in abnormal production for firms with high-levels of real earnings management, consistent with an emphasis on payroll maximization. Additionally, we find that the association between *ABN_EXP* and *WORKER_REP* is significantly negative; at least for high-level real earnings management firms. For firms in the lowest quantile of real earnings management, worker representatives are associated with cuts in discretionary expenditures, inconsistent with hypothesis 4. The absence of an inverse U-shape relation for *ABN_PROD* is in line with hypothesis 4 that worker representatives maximize payroll when monitoring incentives conflict with payroll maximization incentives. However,

the inverse U-shaped relationship of *WORKER_REP* with *ABN_EXP* is more consistent with monitoring. For the sake of completeness, the association between *ABN_CFO* and *WORKER_REP* – although we have no clear expectation – is significantly positive in most quantiles.

(Insert Table 8 about here)

In Table 9, we address the different interests of worker and labor union representatives on corporate boards by partitioning the *WORKER_REP* variable into the previously defined *ONE_THIRD* and *PARITY* variables. Both types of worker representatives are associated with better monitoring of abnormal accruals.

In general, our results for real earnings management for firms with *ONE THIRD* or *PARITY* are consistent with our results for the full sample. Both forms of worker representatives are associated with increases in production for firms in the lowest quantiles of earnings management, but no corresponding decrease in overproduction for firms in the highest quantiles of earnings management. Both forms of worker representatives are also associated with fewer cuts in discretionary expenditures for firms in the highest quantiles of real earnings management. Overall, our evidence is consistent with worker representatives improving monitoring expect in settings where worker representatives face strong payroll maximization incentives.

(Insert Table 9 about here)

4.3. Robustness Tests

We conduct several (untabulated) robustness tests to evaluate our reported results. First, to examine the effect of financial accounting losses on our results, we restrict our tax sample to firms that report positive pre-tax income in each year during 2009-2015 as NOLs of German firms are not disclosed. Although our sample decreases from 1,739 firm-year observations to 654 firm-year observations, we continue to find a negative and significant (albeit weaker) association between worker representation and tax aggressiveness for high-aggression firms (hypothesis 1). In addition, this association is still moderated by a firm's level of foreign operations

(hypothesis 2). Therefore, we conclude that it is unlikely that our inferences are driven by loss firms.

Second, we investigate whether our results still hold when we use industry-size adjusted *CASH ETRs* (i.e., a cash-based tax aggressiveness measure) instead of *GAAP ETRs*. Our results indicate a strong negative and significant association between worker representation on corporate boards and tax aggressiveness for high-aggression firms (hypothesis 1). The coefficients range from -0.0210 to -0.0431, with *t*-statistics ranging from -2.38 to -5.30. We find no increase in tax aggressiveness for low-aggression firm. This result contrasts with our inferences using *ETR_DIFF* to measure aggressiveness and provides some support for a low risk-tolerance or aversion to aggressive tax planning when worker representation is included on the board. Regarding hypothesis 2, we find consistent results for our expectation that workers on corporate boards are particularly sensitive to aggressive tax planning when this includes opportunities to move firm operations to other jurisdictions.

Third, to ensure that our results are insensitive to the measurement specification of a firm's foreign operations, we re-run our analysis of hypothesis 2 by using foreign assets instead of foreign sales. We find consistent results for our expectation that the negative association between worker representation and tax aggressiveness is moderated by a firm's foreign operations. We conclude that our results are insensitive to different foreign operation measures.

Fourth, we also test whether our results are robust to compensation incentives as prior research provides evidence that managerial equity incentive compensation is an important determinant of a firm's tax avoidance behavior. Thus, we additionally hand-collect compensation incentives from compensation reports. We find that our inferences regarding hypothesis 1 and 2 are unchanged after controlling for CEO equity incentive compensation. Similarly, our results are robust to supervisory board directors' compensation.

Fifth, we use two alternative Jones models to verify our results for the association between worker representatives and accrual-based earnings management. Our results for hypothesis 3

remain statistically and economically unchanged when we use the original Jones model (Jones, 1991) or the cash flow Jones model (Kasznik, 1999).

Sixth, in line with prior research (e.g., Roychowdhury, 2006), missing values for R&D expenditures are coded as zero. In our earnings management sample, 682 firm-years (35%) have no R&D expenses. To validate our findings for *ABN_EXP* (hypothesis 4) and to make sure that our main results are not driven by missing R&D expenditures, we separately re-estimate Equation (2) for administrative expenditures and R&D expenditures. We find that worker representatives are associated with smaller reductions in administrative spending for firms in the upper quantiles and find no increase in administrative spending for firms in the lower quantiles, consistent with hypothesis 4 and a focus on payroll maximization instead of monitoring. We find negative (positive) coefficients at the upper (lower) tail of the real earnings management distribution for R&E expenditures. This inverse U-shaped association is additional evidence on monitoring, consistent with the positive coefficient at the lowest quantile in our main test (Table 8, Model 2).

Seventh, we modify the estimation method for our earnings management tests. Chen et al. (2018) demonstrate that using residuals as dependent variables may lead to inconsistent results and propose using all model regressors in a single- instead of a two-step regression procedure. In our earnings management tests, we use residuals as dependent variables in our second-step regression (Equation 2). Following Chen et al. (2018), we use actual values as the dependent variables and estimate a single regression for each dependent variable, including *WORKER_REP* as our variable of interest. In addition, we include industry-year indicator variables and their interactions with each of the first-step regressors because our two-step procedure requires estimations by industry and year. Using this single-step regression procedure, we find consistent results regarding hypothesis 3 and 4 (albeit slightly weaker for real earnings management through production levels), indicating that our inferences are robust regarding the regression procedure.

Finally, we address the endogeneity issue that is typical in many areas of empirical corporate governance research (e.g., Hermalin and Weisbach, 1998; Hermalin and Weisbach, 2003; Adams et al., 2010). For example, it is difficult to differentiate whether sophisticated board members increase firm performance through their actions on the board or whether successful firms simply attract knowledgeable board members. Thus, empirical corporate governance is typically confronted with the scenario that firms may choose corporate governance structures and board compositions in response to changes in the firms' performance. With respect to this study, we acknowledge that one might argue that our inferences regarding the association between worker representation on corporate boards and tax aggressiveness (earnings management) are limited because worker representation may not be exogenous with respect to tax aggressiveness (earnings management). For example, one could expect that firms with aggressive tax positions (high-level earnings management) select more workers on the board to oversee these strategies. We believe that this concern of reverse causality is not an issue in our model. In the German corporate governance setting, worker representation on corporate boards is not a firm choice, as it is legally mandated and predetermined and universal across firms. Our tax sample (earnings management sample) contains only 4 firms (5 firms) that move from none to worker representation or vice versa, thus, we cannot investigate firms that cross thresholds.[22] We control for firm size in our analyses and find worker representation has incremental explanatory power for tax aggressiveness and earnings management. Additionally, using hand-collected data on the number of domestic workers, we exclude all firms with more than 1,000 German workers (i.e., 670 and 978 firm-years remain in the tax sample and in the earnings management sample, respectively). For these subsamples, firms with and without worker representatives on the board do not differ significantly with respect to total assets and

[22] For an examination of the association of firms crossing thresholds and abnormal announcement returns, see Petry (2018).

sales.[23] For the tax sample, we repeat the analyses in Table 3 and 4 and obtain consistent results. The monitoring effect (i.e., positive coefficients at the lower tail), however, is slightly weaker. In the earnings management setting, the inferences are unchanged for accruals and discretionary expenditures; however, we do not find the increase in production levels for firms at the lower tail of the distribution.

While we believe that the endogeneity issue unlikely influences our results, we acknowledge that our model and our corporate governance setting do not completely rule out the endogeneity issue. Therefore, as with every association study, readers should interpret our results with caution.

5. Conclusion

This paper presents new insights about the governance role of workers in the tax and earnings management settings. Specifically, we examine whether worker representation results in improved monitoring or payroll maximization. We use a manually obtained data set of German firms during the period 2009 to 2015 that includes details on board composition and worker representation. Using a quantile regression model to investigate extreme forms of corporate tax planning and earnings management, we find strong evidence that workers on corporate boards are associated with decreased agency costs and improved monitoring. We also find that payroll maximization objectives constrain worker representative monitoring when incentives to preserve jobs and wages are present. Specifically, we find that when monitoring of tax aggressiveness or real earnings management is more likely to lead to moving jobs offshore or reduced jobs and payroll expenditures, worker representatives focus on payroll maximization over monitoring that reduces agency costs.

[23] In the tax sample, firm-years without worker representatives have, on average, total assets (sales) of €173.5 (€148.0), whereas firm-years with worker representatives show total assets (sales) of €155.6 (€174.6). The difference in means between these two groups is not statistically significant (total assets: *t*-value = 0.74; sales: *t*-value = -1.48).

Overall, this study contributes to the literature on boards and corporate decision making by providing evidence on the monitoring and payroll maximization roles of worker representatives. Our results suggest that worker representatives do maximize payroll, moderating their monitoring role. These results extend research on the intended and unintended effects of worker representation and should be relevant for both academics and policymakers.

We recognize that inferences regarding the role of boards in a corporate governance system should be transferred to other countries with caution. Although corporate governance systems and board compositions depend on regulations adopted by each country, we believe that our results are transferable to other countries because the one and two-tier board systems converge due to an increased number of independent directors on one-tier boards and an enhanced cooperation between supervisory boards and management boards on two-tier boards. Therefore, one-tier boards are more similar to two-tier boards than rules would suggest (Hopt, 1997), but we acknowledge the setting may limit generalizability.

References

Adams, R., Ferreira, D., 2007. A theory of friendly boards. *Journal of Finance* 62, 217–250.

Adams, R., Hermalin, B., Weisbach, M., 2010. The role of boards of directors in corporate governance: a conceptual framework and survey. *Journal of Economic Literature* 48, 58–107.

Armstrong, C., Blouin, J., Jagolinzer, A., Larcker, D., 2015. Corporate governance, incentives, and tax avoidance. *Journal of Accounting and Economics* 60, 1–17.

Balakrishnan, K., Blouin, J., Guay, W., 2018. Tax Aggressiveness and Corporate Transparency. *The Accounting Review*, forthcoming.

Balsmeier, B., Bermig, A., Dilger, A., 2013. Corporate governance and employee power in the boardroom: An applied game theoretic analysis. *Journal of Economic Behavior & Organization* 91, 51–74.

Benelli, G., Loderer, C., Lys, T., 1987. Labor Participation in Corporate Policy-Making Decisions: West Germany's Experience with Codetermination. *The Journal of Business* 60, 553–575.

Berk, J., Stanton, R., Zechner, J., 2010. Human Capital, Bankruptcy, and Capital Structure. *Journal of Finance* 65, 891–926.

Bloomberg, 2018a. Why German Corporate Boards Include Workers. A brief history of "co-determination," which Elizabeth Warren now wants to bring to U.S. corporations. Available at: https://www.bloomberg.com/view/articles/2018-08-24/why-german-corporate-boards-include-workers-for-co-determination.

Bloomberg, 2018b. Google's 'Dutch Sandwich' Shielded 16 Billion Euros From Tax. Available at: https://www.bloomberg.com/news/articles/2018-01-02/google-s-dutch-sandwich-shielded-16-billion-euros-from-tax.

Blouin, J., 2014. Defining and measuring tax planning aggressiveness. *National Tax Journal* 67, 875–900.

Chen, S., Chen, X., Cheng, Q., Shevlin, T., 2010. Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics* 95, 41–61.

Chen, X., Cheng, Q., Wang, X., 2015, Does Increased Board Independence Reduce Earnings Management? Evidence from Recent Regulatory Reforms. *Review of Accounting Studies* 20, 899–933.

Chen, W., Hribar, P., Melessa, S., 2018. Incorrect Inferences When Using Residuals as Dependent Variables. *Journal of Accounting Research* 56, 751–796.

Cheng, S., 2004. R&D Expenditures and CEO Compensation. *The Accounting Review* 79, 305–328.

Chyz, J., Leung, W., Li, O., Rui, O., 2013. Labor unions and tax aggressiveness. *Journal of Financial Economics* 108, 675–698.

Cohen, D., Dey, A., Lys, T., 2008. Real and accrual-based earnings management in the pre- and post Sarbanes-Oxley period. *The Accounting Review* 83, 757–787.

Cohen, D., Zarowin, P., 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics* 50, 2–19.

Collins, J., Kemsley, D., Lang, M., 1998. Cross-jurisdictional income shifting and earnings valuation. *Journal of Accounting Research* 36, 209–229.

De Simone, L., Huang, J., Krull, L., 2017. R&D and the rising foreign profitability of U.S. multinational corporations. Working paper.

De Waegenaere, A., Sansing, R., Wielhouwer, J., 2015. Financial accounting measures of tax reporting aggressiveness: Contracting and measurement. *Contemporary Accounting Research* 32, 223–242.

Desai, M., Dharmapala, D., 2006. Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics* 79, 145–179.

Desai, M., Dyck, A., Zingales, L., 2007. Theft and taxes. *Journal of Financial Economics* 84, 591–623.

Dyreng, S., Hanlon, M., Maydew, E., 2008. Long-Run Corporate Tax Avoidance. *The Accounting Review* 83, 61–82.

Dyreng, S., Lindsey, B., 2009. Using Financial Accounting Data to Examine the Effect of Foreign Operations Located in Tax Havens and Other Countries on U.S. Multinational Firms' Tax Rates. *Journal of Accounting Research* 47, 1283–1316.

Dyreng, S., Markle, K., 2016. The effect of financial constraints on tax-motivated income shifting by U.S. multinationals. *The Accounting Review* 91, 1601–1627.

European Parliament, 2017. The Impact of Schemes revealed by the Panama Papers on the Economy and Finances of a Sample of Member States. Available at: http://www.europarl.europa.eu/thinktank/de/document.html?reference=IPOL_STU%282017%29572717.

Faleye, O., Hoitash, R., Hoitash, U., 2011. The costs of intense board monitoring. *Journal of Financial Economics* 101, 160–181.

Faleye, O., Mehrotra, V., Morck, R., 2006. When Labor Has a Voice in Corporate Governance. *Journal of Financial and Quantitative Analysis* 41, 489–510.

Fauver, L., Fuerst, M., 2006. Does good corporate governance include employee representation? Evidence from German corporate boards. *Journal of Financial Economics* 82, 673–710.

Financial Times, 2016. Theresa May vows corporate crackdown on “privileged few”. Available at: https://www.ft.com/content/d80f606e-46b1-11e6-8d68-72e9211e86ab.

FitzRoy, F., Kraft, K., 1993. Economic Effects of Codetermination. *The Scandinavian Journal of Economics* 95, 365–375.

Francis, J., LaFond, R., Olsson, P., Schipper, K., 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39, 295–327.

Frank, M., Lynch, L., Rego, S., 2009. Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review* 84, 467–496.

Furubotn, E., 1988. Codetermination and the modern theory of the firm: a property rights analysis. *The Journal of Business* 61, 165–181.

Garcia Osma, B., 2008. Board Independence and Real Earnings Management: The Case of R&D Expenditure. *Corporate Governance: An International Review* 16, 116–131.

Gorton, G., Schmid, F., 2000. Universal banking and the performance of German firms. *Journal of Financial Economics* 58, 29–80.

Gorton, G., Schmid, F., 2004. Capital, labor, and the firm: a study of German codetermination. *Journal of the European Economic Association* 2, 863–905.

Graham, J., Hanlon, M., Shevlin, T., 2011. Real effects of accounting rules: evidence from multinational firms' investment location and profit repatriation decisions. *Journal of Accounting Research* 49, 137–185.

Graham, J., Harvey, C., Rajgopal, S., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40, 3–73.

Gupta, S., Newberry, K., 1997. Determinants of the variability in corporate effective tax rates: evidence from longitudinal data. *Journal of Accounting and Public Policy* 16, 1–34.

Hammer, T., Currall, S., Stern, R., 1991. Worker Representation on Boards of Directors: A Study of Competing Roles. *Industrial and Labor Relations Review* 44, 661–680.

Hanlon, M., Heitzman, S., 2010. A review of tax research. *Journal of Accounting and Economics* 50, 127–178.

Hanlon, M., Lester, R., Verdi, R., 2015. The effect of repatriation tax costs on U.S. multinational investment. *Journal of Financial Economics* 116, 179–196.

Hanlon, M., Maydew, E., Saavedra, D., 2017. The taxman cometh: Does tax uncertainty affect corporate cash holdings? *Review of Accounting Studies* 22, 1198–1228.

Hans Boeckler Foundation, 2004. Zur aktuellen Kritik der Mitbestimmung im Aufsichtsrat. Available at: https://www.boeckler.de/pdf/mitbestimmung_2004.pdf.

Hans Boeckler Foundation, 2016. What could be done to reduce inequality? Available at: https://www.boeckler.de/wsi_110328.htm.

Hermalin, B., Weisbach, M., 1998. Endogenously Chosen Boards of Directors and Their Monitoring of the CEO. *American Economic Review* 88, 96–118.

Hermalin, B., Weisbach, M., 2003. Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature. *Federal Reserve Bank of New York Economic Policy Review* 9, 7–26.

Hockett, R., Basu, K., Alpert, D., Taub, J., Frank, R., Omarova, S., Mukunda, G., Kaboub, F., Rahman, K. Tcherneva, P., Lubben, S., Herndon, T., Madrick, J., Lazonick, W., 2018. Warren Introduces Accountable Capitalism Act. Letter of Support from Academics and Investors. Available at: https://www.warren.senate.gov/download/federal-corporate-charter-letter-of-support.

Hopt, K., 1997. The German two-tier board (Aufsichtsrat): a German view on corporate governance. In: Hopt, K. (Eds.), Comparative Corporate Governance: Essays and Materials. Walter de Gruyter, Berlin, pp. 3–20.

Hribar, P., Nichols, D., 2007. The Use of Unsigned Earnings Quality Measures in Tests of Earnings Management, *Journal of Accounting Research* 45, 1017–1053.

Huizinga, H., Laeven, L., 2008. International profit shifting within multinationals: a multi-country perspective. *Journal Public Economics* 92, 1164–1182.

Jacob, J., 1996. Taxes and Transfer Pricing: Income Shifting and the Volume of Intrafirm Transfers. *Journal of Accounting Research* 34, 301–312.

Jensen, M., Meckling, W., 1979. Rights and production functions: an application to labor managed firms and codetermination. *The Journal of Business* 52, 469–506.

Jones, J., 1991. Earnings Management During Import Relief Investigations. *Journal of Accounting Research* 29, 193–228.

Kasznik, R., 1999. On the Association between Voluntary Disclosure and Earnings Management. *Journal of Accounting Research* 37, 57–81.

Kim, J.-B., Li, Y., Zhang, L., 2011. Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics* 100, 639–662.

Klassen, K., Laplante, S., 2012. Are U.S. multinational corporations becoming more aggressive income shifters? *Journal of Accounting Research* 50, 1245–1285.

Klein, A., 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33, 375–400.

Koenker, R., Bassett, G., 1978. Regression quantiles. *Econometrica* 46, 33–50.

Koenker, R., Hallock, K., 2001. Quantile regression. *Journal of Economic Perspectives* 15, 143–156.

Kothari, S., Leone, A., Wasley, C., 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39, 163–197.

Lin, C., Schmid, T., Xuan, Y., 2017. Employee representation and financial leverage. *Journal of Financial Economics* 127, 303–324.

Lisowsky, P., 2010. Seeking shelter: Empirically modeling tax shelters using financial statement information. *The Accounting Review* 85, 1693–1720.

May, T., 2016a. We can make Britain a country that works for everyone. Speech in Birmingham launching her national campaign to become Leader of the Conservative Party and Prime Minister of the United Kingdom, July 11, 2016. Available at: http://press.conservatives.com/post/147947450370/we-can-make-britain-a-country-that-works-for.

May, T., 2016b. CBI annual conference 2016: Prime Minister's speech. Available at: https://www.gov.uk/government/speeches/cbi-annual-conference-2016-prime-ministers-speech.

McGaughey, E., 2016. The Codetermination Bargains: The History of German Corporate and Labor Law. *Columbia Journal of European Law* 23, 135–176.

Mills, L., Erickson, M., Maydew, E., 1998. Investments in tax planning. *Journal of the American Taxation Association* 20, 1–20.

Minnick, K., Noga, T., 2010. Do corporate governance characteristics influence tax management? *Journal of Corporate Finance* 16, 703–718.

Mosteller, F., Tukey, J., 1977. Data Analysis and Regression: A Second Course in Statistics. Reading, Mass.: Addison-Wesley.

Petry, S., 2018. Mandatory worker representation on the board and its effect on shareholder wealth. *Financial Management* 47, 25–54.

Rego, S., 2003. Tax-avoidance activities of U.S. multinational corporations. *Contemporary Accounting Research* 20, 805–833.

Rego, S., Wilson, R., 2012. Equity risk incentives and corporate tax aggressiveness. *Journal of Accounting Research* 50,775–810.

Roychowdhury, S., 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42, 335–370.

Shackelford, D. and Shevlin, T., 2001. Empirical tax research in accounting. *Journal of Accounting and Economics* 31, 321–387.

Srinidhi, B., Gul, F., Tsui, J., 2011. Female Directors and Earnings Quality. *Contemporary Accounting Research* 28, 1610–1644.

The Guardian, 2016. The Guardian view on workers' representation: May's U-turn is a betrayal, Editorial. Available at: https://www.theguardian.com/commentisfree/2016/nov/21/guardian-view-workers-representation-theresa-may-betrayal.

The New York Times, 2012. How Apple Sidesteps Billions in Taxes. Available at: https://www.nytimes.com/2012/04/29/business/apples-tax-strategy-aims-at-low-tax-states-and-nations.html.

The Wall Street Journal, 2018. Companies Shouldn't Be Accountable Only to Shareholders. Available at: https://www.wsj.com/articles/companies-shouldnt-be-accountable-only-to-shareholders-1534287687.

Warren, E., 2018. Warren Introduces Accountable Capitalism Act. Comprehensive Legislation to Eliminate Skewed Market Incentives and Return to the Era When American Corporations and American Workers Did Well Together. Available at: https://www.warren.senate.gov/newsroom/press-releases/warren-introduces-accountable-capitalism-act.

Williams, B., 2018. Multinational Tax Incentives and Offshored U.S. Jobs. *The Accounting Review* 93, 293–324.

Wilson, R., 2009. An Examination of Corporation Tax Shelter Participants. *The Accounting Review* 84, 969–999.

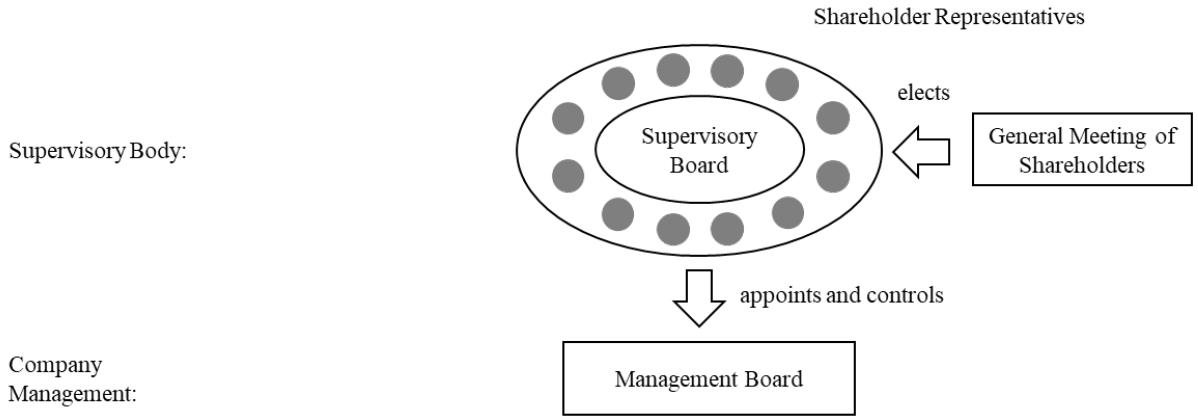
Xie, B., Davidson, W., DaDalt, P., 2003. Earnings management and corporate governance: the role of the board and the audit committee. *Journal of Corporate Finance* 9, 295–316.

Zang, A., 2012. Evidence on the Trade-Off between Real Activities Manipulation and Accrual-Based Earnings Management. *The Accounting Review* 87, 675–703.

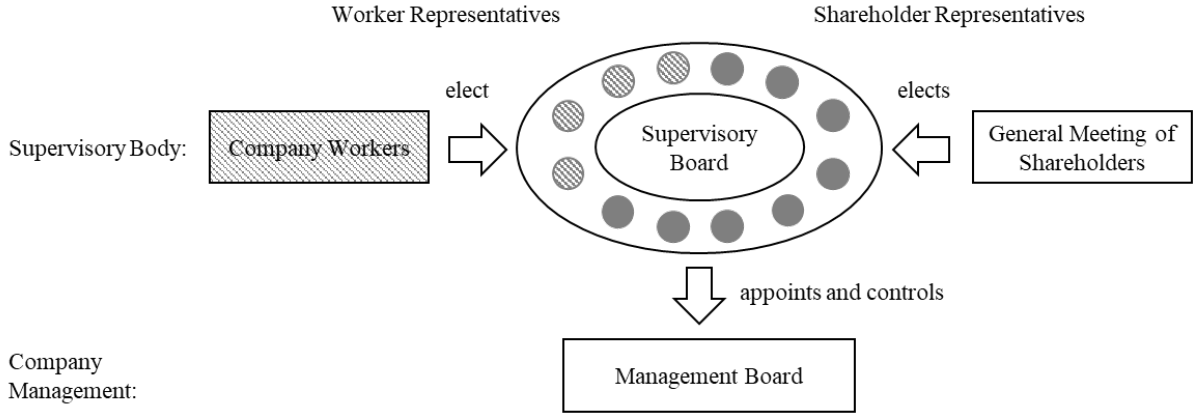
Zietz, J., Zietz, E., Sirmans, G., 2008. Determinants of house prices: a quantile regression approach. *Journal of Real Estate Finance and Economics* 37, 317–333.

Figure 1. Board-level worker representation

Panel A: Non-co-determined board



Panel B: One-third co-determination



Panel C: Quasi-parity co-determination

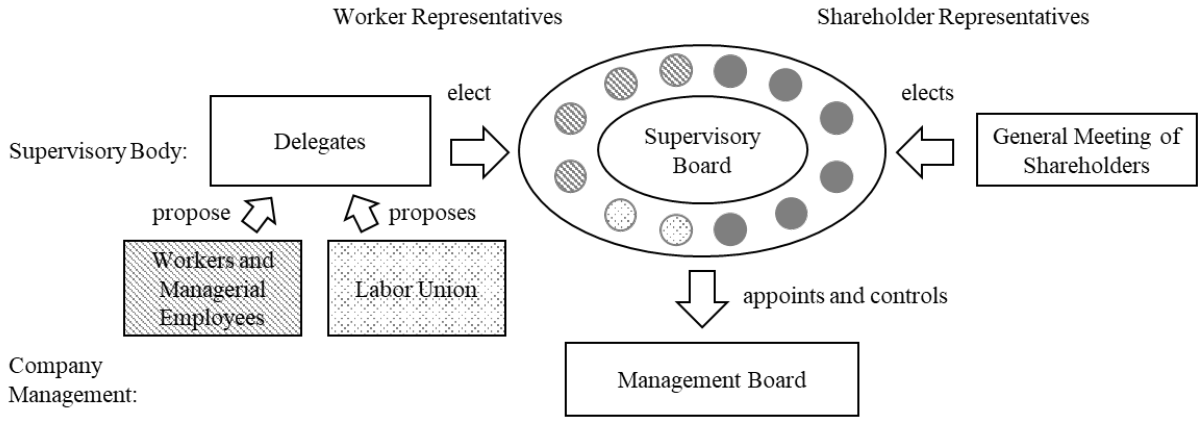
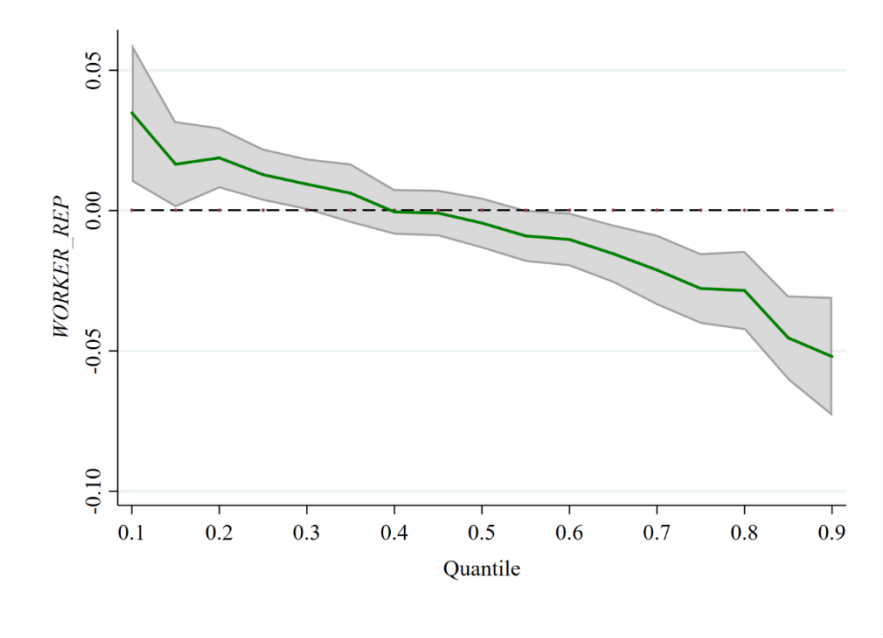


Figure 2. Coefficient estimates of *WORKER_REP* at various quantiles



Notes: Figure 2 plots the association between *WORKER_REP* and *ETR_DIFF*. Specifically, we show quantile regression coefficient estimates at various quantiles of the *ETR_DIFF* distribution, ranging from 0.1 to 0.9 (i.e., solid green curve). The dashed line presents the OLS estimate. The grey area shows the 95 percent confidence band of the quantile regression estimates. The sample covers 2009-2015 and all observations are subject to the criteria described in Table 1. All variables are defined in Appendix A.

Table 1. Sample selection

Panel A: Tax sample	
Criteria	Firm-years
Full sample: All COMPUSTAT Global firm-years between 2009 and 2015	5,622
With pre-tax income of less than zero	*(-1,673)* = 3,949
With missing values for control variables	*(-1,382)* = 2,567
Excluding all financial firm-years	*(-165)* = 2,402
With *GAAP ETRs* greater one	*(-422)* = 1,980
With uncollectable corporate governance data	*(-89)* = 1,891
With uncollectable foreign sales data	*(-152)* = **1,739**

Panel B: Earnings management sample	
Criteria	Firm-years
Full sample: All COMPUSTAT Global firm-years between 2009 and 2015	5,622
With less than 15 observations per industry and year	*(-1,545)* = 4,077
With missing values for control variables	*(-1,846)* = 2,231
With uncollectable corporate governance data	*(-290)* = **1,941**

Notes: In Table 1, we report the sample selection process for the tax sample (Panel A) and earnings management sample (Panel B). The sample covers the period 2009-2015. All financial statement data except foreign sales are acquired from the annual fundamentals database produced by COMPUSTAT Global (German firms).

Table 2. Univariate analyses – Tax sample

Panel A: Descriptive statistics

	N	Mean	S.D.	p25	p50	p75	Diff.
ETR_DIFF	1,739	0.002	0.134	-0.044	0.004	0.060	
Workers	936	0.001	0.120	-0.037	0.002	0.050	-0.002
No Workers	803	0.003	0.149	-0.055	0.007	0.076	(-0.39)
ROA	1,739	0.000	0.070	-0.021	0.013	0.043	
Workers	936	0.003	0.058	-0.017	0.011	0.036	-0.006
No Workers	803	-0.003	0.083	-0.030	0.017	0.051	(-1.59)
SIZE	1,739	-0.000	0.977	-0.547	0.016	0.558	
Workers	936	-0.037	1.062	-0.606	-0.018	0.601	-0.08
No Workers	803	0.043	0.866	-0.479	0.031	0.516	(-1.64)
PPE	1,739	-0.003	0.150	-0.057	0.026	0.089	
Workers	936	-0.018	0.148	-0.072	0.012	0.077	-0.033***
No Workers	803	0.015	0.152	-0.042	0.043	0.100	(-4.59)
INTAN	1,739	-0.002	0.149	-0.080	0.032	0.100	
Workers	936	0.015	0.126	-0.045	0.042	0.100	0.037***
No Workers	803	-0.022	0.170	-0.120	0.015	0.100	(5.23)
LEV	1,739	-0.001	0.117	-0.063	0.026	0.077	
Workers	936	0.011	0.107	-0.051	0.027	0.098	0.027***
No Workers	803	-0.016	0.127	-0.079	0.026	0.063	(4.86)
CAPEX	1,739	0.015	0.564	-0.024	0.062	0.175	
Workers	936	0.062	0.279	-0.013	0.047	0.119	0.101***
No Workers	803	-0.039	0.770	-0.080	0.089	0.269	(3.71)
R&D	1,739	0.001	0.037	-0.010	0.007	0.019	
Workers	936	-0.001	0.026	-0.013	0.002	0.015	-0.004**
No Workers	803	0.003	0.047	-0.003	0.012	0.031	(-2.30)
FOREIGN_SALES	1,739	0.497	0.306	0.211	0.540	0.760	
Workers	936	0.528	0.293	0.309	0.602	0.772	0.067***
No Workers	803	0.461	0.317	0.162	0.451	0.731	(4.66)

Table 2. Univariate analyses – Tax sample (continued)

Panel B: Correlations matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) *ETR_DIFF*		**-0.02**	-0.13	**-0.02**	**0.00**	**-0.03**	0.07	**-0.01**	**0.00**	**-0.02**
(2) *WORKER_REP*	**-0.01**		**-0.04**	**-0.03**	-0.12	0.09	0.08	-0.07	-0.20	0.11
(3) *ROA*	-0.16	**0.04**		0.40	-0.14	**0.00**	-0.21	0.19	0.17	-0.17
(4) *SIZE*	**-0.01**	**-0.04**	0.31		-0.09	0.06	-0.17	0.15	0.22	-0.13
(5) *PPE*	**0.03**	-0.11	-0.16	-0.14		-0.33	0.31	-0.35	**-0.02**	0.12
(6) *INTAN*	-0.05	0.12	-0.05	0.07	-0.33		0.12	0.17	**-0.03**	**0.03**
(7) *LEV*	0.06	0.12	-0.15	-0.18	0.38	0.14		-0.13	-0.11	0.09
(8) *CAPEX*	-0.07	0.09	0.10	**0.04**	-0.28	0.13	**-0.03**		**0.04**	**-0.04**
(9) *R&D*	**-0.00**	-0.06	0.14	0.22	-0.07	-0.06	-0.10	-0.06		-0.28
(10) *FOREIGN_SALES*	**-0.02**	0.11	-0.08	-0.14	0.17	**0.02**	0.14	0.07	-0.20	

Notes: In Panel A, we report descriptive statistics for the main variables used in the tax sample. Panel A also includes descriptive statistics partitioned by worker representation. The last column reports the difference in means between firms with and without worker representation and the t-statistic for the difference in the means. In Panel B, Pearson correlations are reported below the diagonal and Spearman correlations are reported above the diagonal. All reported correlations are statistically significant at the 5 percent level or better with the exception of the correlations in bold. All variables are defined in Appendix A. *, **, *** indicate significant mean differences at 10 percent, 5 percent, and 1 percent, respectively.

Table 3. Regression of *ETR_DIFF* on *WORKER_REP*

	WORKER_REP		*ROA*		*SIZE*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0002	0.02	-0.3391***	-4.63	0.0077*	1.65
Quantile						
0.1	0.0346***	2.60	-0.5697***	-5.73	-0.0019	-0.26
0.2	0.0192***	2.57	-0.3862***	-6.92	0.0014	0.34
0.3	0.0095*	1.72	-0.2816***	-6.82	0.0009	0.30
0.4	-0.0003	-0.07	-0.1928***	-5.49	0.0000	0.00
0.5	-0.0043	-0.95	-0.1166***	-3.42	-0.0012	-0.46
0.6	-0.0102*	-1.83	-0.0494	-1.19	0.0006	0.20
0.7	-0.0209***	-2.84	0.0505	0.92	0.0046	1.14
0.8	-0.0285***	-2.73	0.0533	0.69	0.0163***	2.87
0.9	-0.0539***	-4.60	-0.0261	-0.30	0.0293***	4.60

	PPE		*INTAN*		*LEV*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	-0.0548	-1.41	-0.0799**	-2.25	0.0894*	1.96
Quantile						
0.1	0.0400	0.74	-0.0672	-1.38	-0.0030	-0.05
0.2	0.0076	0.25	-0.0532*	-1.95	0.0376	1.05
0.3	-0.0287	-1.29	-0.0410**	-2.02	0.0558**	2.10
0.4	-0.0545***	-2.88	-0.0318*	-1.85	0.0828***	3.66
0.5	-0.0742***	-4.03	-0.0521***	-3.12	0.0775***	3.53
0.6	-0.0705***	-3.14	-0.0572***	-2.81	0.0703***	2.63
0.7	-0.0750**	-2.52	-0.0400	-1.48	0.0676*	1.91
0.8	-0.1362***	-3.25	-0.0953**	-2.50	0.0942*	1.88
0.9	-0.1468***	-3.11	-0.1161***	-2.71	0.0988*	1.76

	CAPEX		*R&D*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	-0.0132*	-1.81	0.0263	0.22
Quantile				
0.1	-0.0069	-0.58	-0.1138	-0.63
0.2	-0.0126*	-1.87	-0.1019	-1.01
0.3	-0.0108**	-2.16	-0.0123	-0.16
0.4	-0.0125***	-2.93	-0.0217	-0.34
0.5	-0.0147***	-3.55	0.0345	0.56
0.6	-0.0137***	-2.72	0.0258	0.34
0.7	-0.0093	-1.39	0.0356	0.36
0.8	-0.0126	-1.33	0.0064	0.05
0.9	-0.0098	-0.92	-0.1065	-0.68

Notes: In this table, we report the results of estimating Equation (1):

$$ETR\_DIFF_{i,t} = \beta_0 + \beta_1\, WORKER\_REP_{i,t} + \beta_2\, ROA_{i,t} + \beta_3\, SIZE_{i,t} + \beta_4\, PPE_{i,t} + \beta_5\, INTAN_{i,t} + \beta_6\, LEV_{i,t} + \beta_7\, CAPEX_{i,t} + \beta_8\, R\&D_{i,t} + YEAR\_FE + \varepsilon_{i,t}. \quad (1)$$

We run Equation (1) as OLS and quantile regression. We report *t*-statistics in the column next to the coefficient estimates. *, **, *** indicate significance at 10 percent, 5 percent, and 1 percent, respectively. Year fixed effects are included in the estimations. The sample consists of 1,739 firm-year observations and covers the period 2009-2015. All observations are subject to the criteria described in Table 1 (Panel A). All variables are defined in Appendix A. Regression estimation reveals an avg. Pseudo R^2 of 3.89%.

Table 4. Regression of *ETR_DIFF* on *WORKER_REP* partitioned by foreign sales

	WORKER_REP_FSLOW		*WORKER_REP_FSMID*		*WORKER_REP_FSHIGH*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0092	0.68	-0.0073	-0.65	0.0057	0.53
Quantile						
0.1	0.0191	0.79	0.0285	1.57	0.0527**	2.42
0.2	0.0152	1.26	0.0154*	1.70	0.0310***	2.84
0.3	0.0091	1.02	0.0065	0.96	0.0175**	2.17
0.4	0.0006	0.07	-0.0029	-0.50	0.0097	1.37
0.5	0.0035	0.48	-0.0110**	-1.98	0.0021	0.31
0.6	-0.0046	-0.53	-0.0221***	-3.34	-0.0052	-0.65
0.7	-0.0109	-0.87	-0.0315***	-3.35	-0.0120	-1.07
0.8	-0.0082	-0.48	-0.0460***	-3.57	-0.0202	-1.31
0.9	-0.0059	-0.30	-0.0683***	-4.67	-0.0747***	-4.24

Notes: In this table, we report the results of estimating Equation (1), except we change the independent variable *WORKER_REP* to *WORKER_REP_FSLOW*, *WORKER_REP_FSMID*, and *WORKER_REP_FSHIGH*:

$$ETR\_DIFF_{i,t} = \beta_0 + \beta_1 WORKER\_REP\_FSLOW_{i,t} + \beta_2 WORKER\_REP\_FSMID_{i,t} + \beta_3 WORKER\_REP\_FSHIGH_{i,t} + \beta_4 ROA_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 PPE_{i,t} + \beta_7 INTAN_{i,t} + \beta_8 LEV_{i,t} + \beta_9 CAPEX_{i,t} + \beta_{10} R\&D_{i,t} + YEAR\_FE + \varepsilon_{i,t}. \quad (1a)$$

We run Equation (1a) as OLS and quantile regression. We report *t*-statistics in the column next to the coefficient estimates. *, **, *** indicate significance at 10 percent, 5 percent, and 1 percent, respectively. Estimations of control variables are unreported. Year fixed effects are included in the estimations. The sample consists of 1,739 firm-year observations and covers the period 2009-2015. All observations are subject to the criteria described in Table 1 (Panel A). All variables are defined in Appendix A. Regression estimation reveals an avg. Pseudo R^2 of 4.16%.

Table 5. Tax aggressiveness and different forms of board-level worker representation

Panel A: Regression of *ETR_DIFF* on *ONE_THIRD* and *PARITY*

	ONE_THIRD		*PARITY*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	-0.0026	-0.24	0.0027	0.26
Quantile				
0.1	0.0306*	1.90	0.0390**	2.53
0.2	0.0158*	1.73	0.0220**	2.51
0.3	0.0089	1.29	0.0135**	2.05
0.4	-0.0030	-0.52	0.0035	0.63
0.5	-0.0093*	-1.66	-0.0003	-0.05
0.6	-0.0188***	-2.82	-0.0067	-1.04
0.7	-0.0251***	-2.71	-0.0165*	-1.86
0.8	-0.0351***	-2.77	-0.0215*	-1.77
0.9	-0.0460***	-3.08	-0.0561***	-3.91

Panel B: Regression of *ETR_DIFF* on *ONE_THIRD* and *PARITY* partitioned by foreign sales

	ONE_THIRD_FSLOW		*ONE_THIRD_FSMID*		*ONE_THIRD_FSHIGH*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0048	0.33	-0.0030	-0.22	-0.0213	-1.55
Quantile						
0.1	0.0491*	1.81	0.0286	1.45	0.0149	0.35
0.2	0.0243	1.59	0.0068	0.61	0.0243	1.02
0.3	0.0184	1.64	0.0066	0.80	0.0028	0.16
0.4	0.0049	0.53	-0.0028	-0.42	-0.0105	-0.72
0.5	0.0031	0.34	-0.0121*	-1.82	-0.0197	-1.38
0.6	-0.0082	-0.74	-0.0224***	-2.77	-0.0310*	-1.79
0.7	-0.0250	-1.64	-0.0264**	-2.36	-0.0500**	-2.10
0.8	-0.0290*	-1.66	-0.0334***	-2.63	-0.0522*	-1.93
0.9	-0.0293	-1.18	-0.0389**	-2.16	-0.0889**	-2.31
	PARITY_FSLOW		*PARITY_FSMID*		*PARITY_FSHIGH*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0150	0.73	-0.0137	-0.91	0.0112	0.96
Quantile						
0.1	-0.0253	-0.81	0.0278	1.21	0.0543**	2.55
0.2	0.0016	0.09	0.0219*	1.69	0.0357***	2.97
0.3	-0.0082	-0.64	0.0046	0.49	0.0211**	2.39
0.4	-0.0115	-1.08	-0.0021	-0.26	0.0145**	1.99
0.5	0.0002	0.02	-0.0081	-1.05	0.0109	1.52
0.6	-0.0023	-0.18	-0.0230**	-2.44	-0.0003	-0.04
0.7	0.0142	0.80	-0.0357***	-2.75	-0.0112	-0.93
0.8	0.0284	1.41	-0.0608***	-4.11	-0.0178	-1.30
0.9	0.0036	0.13	-0.0759***	-3.62	-0.0716***	-3.68

Notes: In this table, we report the results of estimating Equation (1), except we change the independent variable *WORKER_REP* to *ONE_THIRD* and *PARITY* to measure the effects of different forms of worker representation (Panel A). In Panel B, *ONE_THIRD* and *PARITY* are partitioned by foreign sales. We run the model as OLS and quantile regression. We report *t*-statistics in the column next to the coefficient estimates. *, **, *** indicate significance at 10 percent, 5 percent, and 1 percent, respectively. Estimations of control variables are unreported. Year fixed effects are included in the estimations. The sample consists of 1,739 firm-year observations and covers the period 2009-2015. All observations are subject to the criteria described in Table 1 (Panel A). All variables are defined in Appendix A. Regression estimation reveals an avg. Pseudo R^2 of 3.94% for Panel A and an avg. Pseudo R^2 of 4.47% for Panel B.

Table 6. Univariate analyses – Earnings management sample

Panel A: Descriptive statistics

	N	Mean	S.D.	p25	p50	p75	Diff.
ABN_ACC	1,941	-0.009	0.083	-0.051	-0.010	0.031	
Workers	804	-0.012	0.059	-0.046	-0.012	0.019	-0.005
No Workers	1,137	-0.007	0.097	-0.059	-0.007	0.040	(-1.26)
ABN_PROD	1,941	-0.007	0.186	-0.114	0.004	0.112	
Workers	804	0.000	0.169	-0.095	0.007	0.095	0.011
No Workers	1,137	-0.011	0.197	-0.131	0.000	0.122	(1.35)
ABN_EXP	1,941	0.001	0.175	-0.091	0.016	0.106	
Workers	804	0.003	0.134	-0.070	0.012	0.089	0.004
No Workers	1,137	-0.001	0.198	-0.109	0.019	0.126	(0.40)
ABN_CFO	1,941	-0.012	0.117	-0.074	-0.013	0.039	
Workers	804	-0.018	0.083	-0.058	-0.011	0.026	-0.010*
No Workers	1,137	-0.008	0.136	-0.082	-0.014	0.050	(-1.77)
MVE	1,941	0.011	1.966	-1.303	-0.110	1.285	
Workers	804	1.085	1.983	-0.308	1.230	2.538	1.833***
No Workers	1,137	-0.748	1.558	-1.726	-0.682	0.229	(22.78)
MTB	1,941	1.447	9.559	-1.039	-0.387	0.649	
Workers	804	1.130	9.009	-0.970	-0.380	0.494	-0.542
No Workers	1,137	1.672	9.928	-1.089	-0.391	0.765	(-1.23)
NET_INCOME	1,941	0.003	0.143	-0.025	0.013	0.064	
Workers	804	0.032	0.078	-0.013	0.017	0.065	0.050***
No Workers	1,137	-0.018	0.171	-0.045	0.010	0.064	(7.60)
LOSS	1,941	0.247	0.431	0.000	0.000	0.000	
Workers	804	0.143	0.350	0.000	0.000	0.000	-0.177***
No Workers	1,137	0.320	0.467	0.000	0.000	1.000	(-9.10)

Table 6. Univariate analyses – Earnings management sample (continued)

Panel B: Correlations matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) *ABN_ACC*		0.09	**-0.01**	0.33	**-0.03**	-0.08	**0.00**	**-0.03**	**0.00**
(2) *ABN_PROD*	0.08		0.61	0.28	**0.02**	**0.03**	-0.07	-0.19	0.12
(3) *ABN_EXP*	**0.00**	0.59		-0.05	**-0.01**	**0.03**	-0.07	**0.02**	**-0.03**
(4) *ABN_CFO*	0.29	0.31	-0.14		**-0.01**	-0.15	-0.13	-0.42	0.28
(5) *WORKER_REP*	**-0.03**	**0.03**	**-0.01**	**-0.04**		0.46	**0.00**	0.10	-0.20
(6) *MVE*	-0.09	**-0.01**	**0.03**	-0.18	0.46		0.23	0.27	-0.27
(7) *MTB*	**0.02**	**-0.02**	-0.09	**-0.01**	**-0.03**	**0.02**		0.15	-0.06
(8) *NET_INCOME*	**-0.03**	-0.19	0.13	-0.49	0.17	0.31	**-0.01**		-0.66
(9) *LOSS*	**-0.00**	0.13	-0.05	0.31	-0.20	-0.28	-0.05	-0.62	

Notes: In Panel A, we report descriptive statistics for the main variables used in the earnings management sample. Panel A also includes descriptive statistics partitioned by worker representation. The last column reports the difference in means between firms with and without worker representation and the t-statistic for the difference in the means. In Panel B, Pearson correlations are reported below the diagonal and Spearman correlations are reported above the diagonal. All reported correlations are statistically significant at the 5 percent level or better with the exception of the correlations in bold. All variables are defined in Appendix A. *, **, *** indicate significant mean differences at 10 percent, 5 percent, and 1 percent, respectively.

Table 7. Regression of *ABN_ACC* on *WORKER_REP*

	WORKER_REP		*MVE*		*MTB*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0020	0.46	-0.0041***	-3.61	0.0001	0.66
Quantile						
0.1	0.0327***	3.11	0.0010	0.36	-0.0001	-0.28
0.2	0.0130**	2.55	0.0004	0.34	0.0002	0.66
0.3	0.0084	1.58	-0.0001	-0.05	0.0001	0.28
0.4	0.0044	1.00	-0.0022**	-1.98	0.0001	0.53
0.5	0.0012	0.30	-0.0025**	-2.45	0.0001	0.52
0.6	-0.0017	-0.46	-0.0037***	-3.77	0.0001	0.34
0.7	-0.0100**	-2.19	-0.0037***	-3.10	0.0002	0.97
0.8	-0.0154**	-2.37	-0.0063***	-3.74	0.0000	0.05
0.9	-0.0288***	-3.54	-0.0082***	-3.90	0.0006	1.56

	NET_INCOME		*LOSS*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	-0.0184	-1.07	-0.0093	-1.62
Quantile				
0.1	0.0090	0.22	-0.0272*	-1.95
0.2	0.0433**	2.13	-0.0072	-1.07
0.3	0.0080	0.38	-0.0076	-1.08
0.4	-0.0110	-0.63	-0.0038	-0.66
0.5	-0.0046	-0.29	0.0006	0.11
0.6	-0.0198	-1.30	-0.0036	-0.71
0.7	-0.0513***	-2.82	-0.0022	-0.36
0.8	-0.0510**	-1.97	-0.0067	-0.79
0.9	-0.0821**	-2.53	0.0015	0.14

Notes: In this table, we report the results of estimating Equation (2):

$$EM_{i,t} = \beta_0 + \beta_1\, WORKER\_REP_{i,t} + \beta_2\, MVE_{i,t} + \beta_3\, MTB_{i,t} + \beta_4\, NET\_INCOME_{i,t} + \beta_5\, LOSS_{i,t} + YEAR\_FE + \varepsilon_{i,t}\,. \quad (2)$$

$EM_{i,t}$ is *ABN_ACC*. We run Equation (2) as OLS and quantile regression. We report *t*-statistics in the column next to the coefficient estimates. *, **, *** indicate significance at 10 percent, 5 percent, and 1 percent, respectively. Year fixed effects are included in the estimations. The sample consists of 1,941 firm-year observations and covers the period 2009-2015. All observations are subject to the criteria described in Table 1 (Panel B). All variables are defined in Appendix A. Regression estimation reveals an avg. Pseudo R^2 of 2.40%.

Table 8. The association between real earnings management and *WORKER_REP*

	Model (1) *ABN_PROD*		Model (2) *ABN_EXP*		Model (3) *ABN_CFO*	
	WORKER_REP		*WORKER_REP*		*WORKER_REP*	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0206**	2.16	-0.0037	-0.41	0.0160***	3.02
Quantile						
0.1	0.0302	1.42	0.0476**	2.03	0.0508***	5.24
0.2	0.0419***	3.14	0.0211	1.55	0.0366***	5.68
0.3	0.0359***	2.93	0.0089	0.77	0.0296***	5.30
0.4	0.0183	1.45	0.0051	0.53	0.0212***	4.10
0.5	0.0016	0.15	-0.0079	-0.91	0.0188***	3.57
0.6	-0.0007	-0.06	-0.0204**	-2.17	0.0131**	2.44
0.7	-0.0031	-0.28	-0.0221*	-1.95	0.0016	0.27
0.8	-0.0098	-0.95	-0.0432***	-3.28	-0.0054	-0.75
0.9	0.0172	0.96	-0.0400***	-3.83	-0.0229**	-2.00

Notes: In this table, we report the results of estimating Equation (2):

$$EM_{i,t} = \beta_0 + \beta_1\, WORKER\_REP_{i,t} + \beta_2\, MVE_{i,t} + \beta_3\, MTB_{i,t} + \beta_4\, NET\_INCOME_{i,t} + \beta_5\, LOSS_{i,t} + YEAR\_FE + \varepsilon_{i,t} \quad (2)$$

$EM_{i,t}$ is either *ABN_PROD*, *ABN_EXP*, or *ABN_CFO* (each tested in separate regressions). We run Equation (2) as OLS and quantile regression. We report *t*-statistics in the column next to the coefficient estimates. *, **, *** indicate significance at 10 percent, 5 percent, and 1 percent, respectively. Estimations of control variables are unreported. Year fixed effects are included in the estimations. The sample consists of 1,941 firm-year observations and covers the period 2009-2015. All observations are subject to the criteria described in Table 1 (Panel B). All variables are defined in Appendix A. Regression estimation reveals an avg. Pseudo R^2 of 2.86% for Model (1), avg. Pseudo R^2 of 3.24% for Model (2), and avg. Pseudo R^2 of 15.20% for Model (3).

Table 9. Earnings management and different forms of board-level worker representation

Panel A: Regression of *ABN_ACC* on *ONE_THIRD* and *PARITY*

	ONE_THIRD		*PARITY*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0008	0.17	0.0041	0.67
Quantile				
0.1	0.0271**	2.29	0.0420***	2.88
0.2	0.0096	1.61	0.0199***	2.69
0.3	0.0039	0.68	0.0160**	2.26
0.4	-0.0001	-0.02	0.0092	1.50
0.5	-0.0012	-0.27	0.0030	0.54
0.6	-0.0017	-0.40	-0.0022	-0.41
0.7	-0.0065	-1.30	-0.0133**	-2.14
0.8	-0.0157**	-2.20	-0.0210**	-2.40
0.9	-0.0253***	-2.77	-0.0341***	-3.02

Panel B: Regression of *ABN_PROD* on *ONE_THIRD* and *PARITY*

	ONE_THIRD		*PARITY*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0264**	2.45	0.0098	0.74
Quantile				
0.1	0.0155	0.66	0.0528*	1.84
0.2	0.0445***	2.90	0.0314*	1.66
0.3	0.0341**	2.43	0.0360**	2.08
0.4	0.0239	1.63	0.0058	0.32
0.5	0.0085	0.69	-0.0170	-1.13
0.6	0.0041	0.36	-0.0153	-1.07
0.7	-0.0016	-0.12	-0.0073	-0.46
0.8	-0.0002	-0.01	-0.0173	-1.20
0.9	0.0274	1.32	0.0071	0.28

Panel C: Regression of *ABN_EXP* on *ONE_THIRD* and *PARITY*

	ONE_THIRD		*PARITY*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	-0.0092	-0.90	0.0063	0.50
Quantile				
0.1	0.0436	1.62	0.0728**	2.20
0.2	0.0170	1.11	0.0374**	1.98
0.3	0.0060	0.44	0.0157	0.93
0.4	-0.0010	-0.10	0.0207	1.53
0.5	-0.0202**	-2.08	0.0089	0.75
0.6	-0.0336***	-3.24	0.0010	0.08
0.7	-0.0323***	-2.62	-0.0059	-0.39
0.8	-0.0478***	-2.99	-0.0394**	-2.00
0.9	-0.0378***	-3.13	-0.0446***	-2.99

Panel D: Regression of *ABN_CFO* on *ONE_THIRD* and *PARITY*

	ONE_THIRD		*PARITY*	
	Coef.	*t*-stat	Coef.	*t*-stat
OLS	0.0175***	2.91	0.0132*	1.79
Quantile				
0.1	0.0565***	4.81	0.0397***	2.74
0.2	0.0346***	4.61	0.0391***	4.22
0.3	0.0254***	4.05	0.0337***	4.37
0.4	0.0191***	3.20	0.0256***	3.47
0.5	0.0163***	2.79	0.0241***	3.34
0.6	0.0085	1.41	0.0180**	2.41
0.7	-0.0006	-0.09	0.0060	0.74
0.8	-0.0059	-0.71	-0.0053	-0.52
0.9	-0.0212	-1.62	-0.0236	-1.47

Notes: In this table, we report the results of estimating Equation (2), except we change the independent variable *WORKER_REP* to *ONE_THIRD* and *PARITY* to measure the effects of different forms of worker representation. We run the model as OLS and quantile regression. We report *t*-statistics in the column next to the coefficient estimates. *, **, *** indicate significance at 10 percent, 5 percent, and 1 percent, respectively. Estimations of control variables are unreported. Year fixed effects are included in the estimations. The sample consists of 1,941 firm-year observations and covers the period 2009-2015. All observations are subject to the criteria described in Table 1 (Panel B). All variables are defined in Appendix A. Regression estimation reveals an avg. Pseudo R^2 of 2.48% for Panel A, avg. Pseudo R^2 of 2.92% for Panel B, avg. Pseudo R^2 of 3.34% for Panel C, and an avg. Pseudo R^2 of 15.24% for Panel D.

Appendix A

Variable definitions

Compustat data item abbreviations are reported in parentheses and are written in all caps and bold font (**COMPUSTAT**).

Variable Name	*Definition*
ETR_DIFF	Average *GAAP ETR* of firms from the same industry and from the same quintile of total assets less a firm's *GAAP ETR*. *GAAP ETR* is computed as a firm's total income tax expense (**TXT**) divided by pre-tax income (**PI**).
WORKER_REP	Indicator variable equal to one if a firm's board includes worker representatives, zero otherwise.
WORKER_REP_FSLOW	Indicator variable equal to one if a firm's board includes worker representatives and if this firm reports foreign sales less than 25 percent of the total sales (**SALE**), zero otherwise.
WORKER_REP_FSMID	Indicator variable equal to one if a firm's board includes worker representatives and if this firm reports foreign sales equal or greater 25 percent and less than 75 percent of the total sales (**SALE**), zero otherwise.
WORKER_REP_FSHIGH	Indicator variable equal to one if a firm's board includes worker representatives and if this firm reports foreign sales equal or greater than 75 percent of the total sales (**SALE**), zero otherwise.
ONE_THIRD	Indicator variable equal to one if a firm's board includes one-third worker representatives, zero otherwise.
ONE_THIRD_FSLOW	Indicator variable equal to one if a firm's board includes one-third worker representatives and if this firm reports foreign sales less than 25 percent of the total sales (**SALE**), zero otherwise.
ONE_THIRD_FSMID	Indicator variable equal to one if a firm's board includes one-third worker representatives and if this firm reports foreign sales equal or greater 25 percent and less than 75 percent of the total sales (**SALE**), zero otherwise.
ONE_THIRD_FSHIGH	Indicator variable equal to one if a firm's board includes one-third worker representatives and if this firm reports foreign sales equal or greater than 75 percent of the total sales (**SALE**), zero otherwise.

PARITY	Indicator variable equal to one if a firm's board includes half worker representation, including labor union representatives, zero otherwise.
PARITY_FSLOW	Indicator variable equal to one if a firm's board includes half worker representation, including labor union representatives, and if this firm reports foreign sales less than 25 percent of the total sales (**SALE**), zero otherwise.
PARITY_FSMID	Indicator variable equal to one if a firm's board includes half worker representation, including labor union representatives, and if this firm reports foreign sales equal or greater 25 percent and less than 75 percent of the total sales (**SALE**), zero otherwise.
PARITY_FSHIGH	Indicator variable equal to one if a firm's board includes half worker representation, including labor union representatives, and if this firm reports foreign sales equal or greater than 75 percent of the total sales (**SALE**), zero otherwise.
ROA	Average *ROA* of firms from the same industry and from the same quintile of total assets less a firm's *ROA*, defined as pretax income (**PI**) divided by total assets (**AT**).
SIZE	Average *SIZE* of firms from the same industry and from the same quintile of total assets less a firm's *SIZE*, defined as natural logarithm of market value of equity
LEV	Average *LEV* of firms from the same industry and from the same quintile of total assets less a firm's *LEV*, defined as ratio of long-term debt (**DLTT**) to total assets (**AT**).
PPE	Average *PPE* of firms from the same industry and from the same quintile of total assets less a firm's *PPE*, defined as ratio of net property, plant, and equipment (**PPENT**) to total assets (**AT**).
INTAN	Average *INTAN* of firms from the same industry and from the same quintile of total assets less a firm's *INTAN*, defined as level of intangible assets (**INTAN**) scaled by total assets (**AT**).
R&D	Average R&D intensity of firms from the same industry and from the same quintile of total assets less a firm's R&D intensity, defined as ratio of R&D expenses (**XRD**) scaled by total assets (**AT**). Missing R&D data are coded as 0.
CAPEX	Average capital expenditures of firms from the same industry and from the same quintile of total assets less a firm's capital expenditures, defined as amount spent on capital assets

	(**CAPX**) scaled by net property, plant, and equipment (**PPENT**).
FOREIGN_SALES	The ratio of foreign sales to total sales (**SALE**).
ABN_ACC	Abnormal level of accrual-based earnings management (discretionary accruals), measured by using the performance-based Jones model (Kothari et al., 2005).
ABN_PROD	Actual productions costs (i.e., defined as the sum of cost of goods sold (**COGS**) and change in inventory (**INVT**)) minus normal production costs. Based on prior literature (e.g., Roychowdhury, 2006), normal production costs are estimated using the following industry-year regression (with A = Total Assets and S = Sales): $PROD_t / A_{t-1} = \beta_0 + \beta_1 (1 / A_{t-1}) + \beta_2 (S_t / A_{t-1}) + \beta_3 (\Delta S_t / A_{t-1}) + \beta_4 (\Delta S_{t-1} / A_{t-1}) + \varepsilon_t$
ABN_EXP	Actual discretionary expenses (i.e., defined as the sum R&D (**XRD**) and SG&A (**XSGA**) expenses) minus normal discretionary expenses. Because of data limitations, advertising expenses cannot be considered. *ABN_EXP* is multiplied by negative one, so that the higher these amounts the more likely that the firm reduced discretionary expenditures to manage reported earnings upwards (e.g., Cohen and Zarowin, 2010). Based on prior literature (e.g., Roychowdhury, 2006), normal discretionary expenses are estimated using the following industry-year regression (with A = Total Assets and S = Sales): $EXP_t / A_{t-1} = \beta_0 + \beta_1 (1 / A_{t-1}) + \beta_2 (S_{t-1} / A_{t-1}) + \varepsilon_t$
ABN_CFO	Actual cash flow from operations (**OANCF**) minus normal cash flow from operations. *ABN_CFO* is multiplied by negative one, so that the higher these amounts the more likely that the firm engaged in sales manipulation to manage reported earnings upwards (e.g., Cohen and Zarowin, 2010). Based on prior literature (e.g., Roychowdhury, 2006), normal cash flow from operations is estimated using the following industry-year regression (with A = Total Assets and S = Sales): $CFO_t / A_{t-1} = \beta_0 + \beta_1 (1 / A_{t-1}) + \beta_2 (S_t / A_{t-1}) + \beta_3 (\Delta S_t / A_{t-1}) + \varepsilon_t$
MVE	Logarithm of a firm's lagged market value (i.e., year-end share price (**PRC**) multiplied with the number of shares outstanding (**SHROUT**)) less the corresponding industry-year mean.
MTB	The ratio of lagged market value of equity to lagged book value of equity (**CEQ**) less the corresponding industry-year mean.
NET_INCOME	A firm's net income (**NICON**) scaled by lagged total assets (**AT**) less the corresponding industry-year mean.

LOSS	Indicator variable equal to one if a firm's pre-tax income (**PI**) is negative, zero otherwise.