Globalization and the Evolution of Corporate Governance

Jan Schymik

Ludwig Maximilian University of Munich

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Abstract

How does globalization affect the balance of power between managers and firm owners? This paper studies the effect of economic integration on governance practices within firms. I propose a theory of endogenous corporate governance investments in industry equilibrium with monopolistic competition. Firms can use investments into better corporate governance as a cheap substitute to performance compensation to mitigate agency problems. International integration alters the demand for managers in the economy such that firms may reduce their corporate governance investments and offer higher performance payments. This globalization-induced deterioration of corporate governance in the economy diminishes the welfare gains from globalization. Using data on governance practices in U.S. manufacturing corporations, I provide empirical evidence that conforms to the model predictions. Firms in industries that experienced substantial trade liberalization between 1990 and 2006 have changed their governance practices allowing for more managerial slack and offered higher equity payments to their CEOs. These effects are particularly large in relatively dynamic industries that are characterized by large exit rates.

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Department of Economics, LMU Munich, E-mail: jan.schymik@econ.lmu.de
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1 Introduction

Real compensation of executives in S&P 500 firms increased by more than 350 percent on average between 1990 and 2006. Meanwhile, improvements in corporate governance to prevent or punish adverse managerial behavior have been rather scarce.[1] These developments have led to widespread concerns among academics and policy makers that managers are rewarded independently of firm performance. During good times, executives are rewarded with high payments and whenever firms perform poorly, executives frequently do not need to fear any severe consequences. Many economists have argued that increases in the level of executive compensation are due to tougher competition for managerial talent. Competition for managerial talent between firms has been rising over time, extensively due to globalization.[2] However, there is also substantial concern that the rise of executive pay partly originates from managers that are so powerful that they can skim away rents and entrench themselves against punishments by shareholders.[3]

The contribution of this paper is twofold. I first present a model that introduces agency problems with endogenous corporate governance investments into an industry equilibrium model with monopolistic competition. I use the model to illustrate that globalization can

[1] See for instance Frydman and Jenter (2010) who document the historical development of U.S. executive compensation. Moreover, for instance the managerial entrenchment index from Bebchuk et al. (2009) indicates that governance provisions working in favor of managers typically have not been removed but rather augmented in public U.S. firms during the last two decades.

[2] See for example Gabaix and Landier (2008), Edmans et al. (2009), Terviö (2008) and Monte (2011).

[3] See for example Bebchuk and Fried (2003) and Bertrand and Mullainathan (2001).

account for a deterioration of corporate governance in the economy and a reliance on performance payments to incentivize managers. Additionally, the model suggests that this globalization-induced organizational response of firms can reduce the welfare gains from globalization as it mutes the entry of additional firms and raises price levels. Since managerial agency problems can impose substantial costs on society,[4] it is crucial to understand the mechanisms how markets shape the decisions of firms to provide incentives. Second, I use data on corporate governance provisions in a sample of large U.S. corporations in the manufacturing sector between 1990 and 2006 to provide empirical evidence that is consistent with the model predictions.

My model combines an agency problem, where firms can use corporate governance as a cheap substitute for performance payments à la Acharya et al. (2013) and an industry equilibrium framework with monopolistic competition like in Melitz and Ottaviano (2008). The economy consists of managers and production workers and firms need to hire a manager in order to enter the market. Furthermore, firms face a moral hazard problem at the management level as the effort of the manager is incontractible. Both, the competition for managers on the executive labor market and the need to provide incentives to overcome the agency problem shape the quality of corporate governance investments inside the firms in the economy.

Firms can make ex ante investments in corporate governance quality and the role of governance is to reduce agency problems. I model that in the following way: a higher level of corporate governance reduces the benefits for adverse managerial behavior because well governed firms can detect and punish bad performances more easily. Consequently, good governance allows firms to incentivize managers at lower levels of compensation. From the perspective of an individual firm, the firm can substitute between good corporate governance or performance compensation to provide sufficient incentives.[5] However, the compensation that each manager receives is an equilibrium outcome that is determined

[4]Taylor (2010) estimates that the agency costs due to managerial entrenchment are substantial in U.S. firms and correspond on average to 4.6% of the firm asset value.

[5]This is consistent with the empirical evidence on the relation between firm governance and executive compensation. For example, Core et al. (1999) and Fahlenbrach (2009) find that CEOs in firms with less effective governance structures earn greater compensation.

on the labor market and therefore exogenous from the perspective of an individual firm. I show that an increase in a manager's equilibrium compensation crowds out investments into corporate governance. Intuitively, a firm is forced to pay the manager a higher level of compensation and whenever the level of compensation is sufficiently large to provide sufficient incentives for the manager, firms save the additional costs of corporate governance investments.

This stylized agency problem of the firm is then introduced into a simplified Melitz and Ottaviano (2008) framework. The equilibrium compensation of a manager is determined by free entry of firms into the market and given the simple structure of the agency problem, the equilibrium compensation of a manager determines firm investments into corporate governance. The paper proceeds with a comparative static exercise where I study the effects of globalization. As in Krugman (1980), trade increases the size of the home market.[6] An increase in market size produces two effects: a demand-effect due to market expansion and a competition-effect due to additional entry of firms. I find that globalization can lead to a rise in performance pay to managers and a deterioration of corporate governance, especially in industries where firm failure is particularly likely and when managers are relatively scarce in the economy. Furthermore, I find that this deterioration of corporate governance can mute the welfare gains from globalization since lower corporate governance dampens firm entry and competition. Therefore, the model provides an economic rationale for the adverse effects of rising inequality. When globalization triggers a tougher competition for managers and when firms respond to competition for managers with lower investments into corporate governance, consumers suffer due to lower rates of firm success.

In order to take the testable predictions of the model to the data, I use information on corporate governance practices for a sample of large U.S. companies across different manufacturing industries. The corporate governance data are obtained from the ISS

[6]This comparative statics exercise could also be interpreted as either an increase in the number of countries in the world when abstracting from geographical barriers to trade or as general economic growth. Several papers have used this comparative statics exercise to study firm adjustments to globalization in models with endogenous markups (see e.g. Eckel and Neary (2010), Dhingra (2013) or Marin and Verdier (2014)).

Riskmetrics database and CEO compensation data from Compustat Execucomp. To obtain preferably exogenous variation in the foreign demand that firms face, I focus on firms within manufacturing industries and exploit variation in import tariffs that W.T.O. member countries impose vis-à-vis U.S. products and vice versa.

Overall, I find that firms in industries that experienced tariff reductions have shifted the balance of power towards managers by introducing additional corporate governance practices in favor of managers. This has been particularly the case for corporate governance practices that are associated with adverse managerial behavior. To show that this governance effect of trade liberalization is indeed driven by a larger market size that firms face, I also instrument firm exports and industry exports with the tariff data. Since the model predicts that a globalization-induced deterioration of corporate governance is stronger when the probability of firm failure is larger, I also show that the estimated effects of tariff reductions are larger in sectors with higher exit rates. Furthermore, lower tariffs are positively associated with higher option grants, particularly in industries with high exit rates.

The paper covers a question at the intersection of organizational and international economics and thus relates to various strands of the literature on the effects of trade on firm organization and corporate finance. First, I contribute to the literature that considers incentive compensation in general equilibrium trade models. Wu (2011) and Chen (2014) focus on the managerial incentive provision in firms with moral hazard in general equilibrium models of intra-industry trade and firm heterogeneity à la Melitz (2003). Gersbach and Schmutzler (2014) show how the global integration of product and labor markets increases the heterogeneity of CEO remuneration in a model with Cournot competition. While these models study a trade-induced dispersion of compensation, the focus of this paper is on the endogenous choice of the channel how firms offer incentives: either with investments into corporate governance or via performance compensation.

Second, the paper relates to the literature that links the decision to delegate authority inside firms to product markets. Marin and Verdier (2008, 2012, 2014) show that globalization affects the delegation of formal authority in organizations. They embed the

allocation of formal decision authority à la Aghion and Tirole (1997) into models of international trade and explain how economic integration leads to the delegation of power inside firms. However, since agents are infinitely risk-averse with respect to income, performance payments cannot be used to create incentives. Consequently, these models do not draw inferences on the choice between managerial discretion and performance pay. Marin et al. (2015) investigate how the allocation of power inside firms is affected by offshoring managers or production tasks in a small open economy model. Caliendo and Rossi-Hansberg (2012) show that exporting firms increase the control span of managers and the number of management layers within their hierarchies after trade liberalizations. Acemoglu et al. (2007) analyze how technology diffusion affects firm decentralization. I add an integrated view to this literature that considers both, the choice between corporate governance and performance payments to provide incentives which are subject to labor market outcomes. This allows to draw novel conclusions about the effects of globalization on the substitution patterns between payments and governance to provide incentives.

Third, the empirical analysis in this paper relates to several empirical studies on the effects of product markets on managerial power or incentive compensation. Here, the literature has primarily focused on the delegation of decision authority as a particular dimension of managerial power. Bloom et al. (2010) and Guadalupe and Wulf (2010) use data on the organization of firms to show how more import penetration leads to flatter firm hierarchies and more decentralized decision making. Marin and Verdier (2014) show that German and Austrian multinationals have a more decentralized organization when they are faced by a stronger trade exposure. Cuñat and Guadalupe (2005) consider the appreciation of the British Pound as a quasi-natural experiment to quantify the effect of product market competition on executive performance pay within a panel of British manufacturing firms. They find that the implied import competition shock led to a higher pay to performance sensitivity for managers in more open sectors. Mion and Opromolla (2014) find that firms pay a premium to attract managers with export experience and that attracting experienced managers increases the likelihood of becoming an exporting firm.

Fourth, the paper is also related to recent research in corporate finance on adverse effects of the managerial labor market. Eisfeldt and Kuhnen (2013) present a model where CEOs and firms form matches based on multiple characteristics to explain low turnover rates in an industry equilibrium. **?** analyze the impact of labor market competition and skill-biased technological change on the structure of compensation in a Hotelling framework. They demonstrate that competition for talent shifts effort from less easily contractible tasks, like long-term investments, towards more easily contractible tasks. In addition Baranchuk et al. (2011), Edmans et al. (2009) and Falato and Kadyrzhanova (2012) develop industry equilibrium models with moral hazard problems to show how CEO compensation interacts with the industry environment of firms. Dicks (2012) establishes a role for corporate governance regulation in an industry equilibrium model with moral hazard and assignment of CEOs to firms. Acemoglu and Newman (2002) consider the impact of labor supply and demand on the corporate structure of firms and show how the outside option of production workers affects production worker monitoring.

Acharya and Volpin (2010) and Acharya et al. (2012) also consider the trade-off between industry-wide CEO compensation and firm governance. By embedding this trade-off into an industry equilibrium framework, the model allows to study how welfare gains from globalization differ when one takes this organizational choice within firms into account. Since a deterioration in governance reduces the number of available varieties and increases the price level in the economy, the trade-off dampens the welfare gains from globalization that typically arise in models of international trade with variable markups. Furthermore, the paper contributes to this literature by exploiting within-industry variation in trade liberalization over time to empirically measure how globalization affects corporate governance decisions.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework, section 3 presents the empirical analysis. Finally, section 4 concludes.

2 Theory

In this section, I present a model that introduces corporate governance investments à la Acharya et al. (2013) into an industry equilibrium framework with monopolistic competition like in Melitz and Ottaviano (2008). Firms face an agency problem at the management level: production requires managerial effort which is not directly contractible. Stricter corporate governance incentivizes managers to provide effort and can be used as a cheap substitute for performance payments. Globalization increases the equilibrium compensation of managers and thus alters corporate governance investments and performance payments that firms offer to mitigate agency problems.

2.1 Basic Framework

Preferences and Endowments: Consider an economy that is endowed with a mass of $L+M$ risk neutral agents. L agents are production workers and M agents are managers. Each agent's preferences can be described by a workhorse linear-quadratic utility function à la Melitz and Ottaviano (2008). Preferences are defined over a homogeneous numéraire good 0 and a mass of N differentiated varieties i:

$$U = x_0 + \alpha \int_0^N x\left(i\right) di - \frac{1}{2}\int_0^N x\left(i\right)^2 di - \frac{1}{2}\left(\int_0^N x\left(i\right) di\right)^2, \qquad \alpha > 1, \tag{1}$$

where x_0 and $x\left(i\right)$ are the consumed quantities of the numéraire good 0 and the varieties i, respectively.

The numéraire good is sold on a perfectly competitive market and produced with a constant returns to scale technology that requires one unit of production labor per unit of output. Consequently, the production worker wage rate is pinned down at $w = 1$ and the numéraire is sold at a price equal to $p_0 = 1$. Furthermore, since the numéraire enters the utility function additively, it also pins down the marginal utility of income to one such that all income effects arising from managers earning higher wages will be absorbed by additional consumption of the numéraire good, leaving the consumption bundle of

differentiated varieties unchanged.[7]

Given these preferences, each differentiated variety i faces the following linear demand curve:

$$q(i) \equiv (L+M)\, x(i) = \frac{\alpha (L+M)}{1+N} + \frac{N}{1+N}(L+M)\,\overline{p} - (L+M)\, p(i), \qquad (2)$$

where $q(i)$ is the sold quantity and $p(i)$ the charged price for variety i, respectively and $\overline{p} \equiv \frac{1}{N}\int_0^N p(i)\, di$ is the mean price level.[8]

Contracting between Firms and Managers: Firms in the differentiated sector need to hire a manager and face an agency conflict. Firms cannot contract on managerial effort since effort is not directly observable for outsiders and managers face limited liability. In addition, there is some conflict of interest between firms and managers: while firm output requires managerial effort, managers can obtain private benefits from shirking. I define effort here very broadly, as any action or decision that increases the likelihood that the firm finds a suitable project to produce. When the manager provides effort, he finds a suitable project with probability ε such that profits π are realized. Alternatively, the manager can choose to shirk. Shirking is beneficial for the manager as he can then obtain a private benefit b when he remains uncaught. A shirking manager cannot find a suitable project.

A contract between a firm and a manager specifies both, performance payments $r \geq 0$ and the level of corporate governance $g \in [0,1]$. Performance payments r are paid to the manager whenever he finds a suitable project. Corporate governance investments create additional incentives since better corporate governance allows to monitor more efficiently.

[7] Since $p_0 = 1$, spending an additional unit of income on the numéraire increases consumer utility by one unit. Additionally, agents have love for variety in differentiated goods such that additional consumption of a particular variety reduces the agent's marginal utility. In equilibrium, consumers will balance consumption of the numéraire and differentiated varieties such that the marginal utility gain from expenditures on each individual variety also equals one. Thus, higher-income individuals (i.e. managers) will consume the same amount $\int_0^N x(i)\, di$ but choose a higher amount x_0 compared to lower-income individuals.

[8] Accordingly to Melitz and Ottaviano (2008), I assume that $I > \int_0^N p(i)\, x(i)\, di$ in order to ensure positive demand for the numéraire good 0.

I follow Acharya et al. (2013) in assuming that the benefit of stricter corporate governance is that firms can identify (and displace) managers that did not find a project more easily. Before profits are realized, firms observe a signal on the expected output with probability g. After observing this signal, managers that did not come up with a project can be displaced. The firm can then try to find a project on its own and will succeed with probability θ.[9] Therefore, a higher value of g disciplines the manager because stricter corporate governance decreases his expected benefits from shirking. On the other hand, investments in corporate governance are costly for the firm and reduce the firm's payoff by mg. These costs reflect the firms' ex-ante costs to monitor managers ex-post.

Summarizing, the objective function of a firm is given by

$$\max_{r,g} \varepsilon (\pi - r) + (1 - \varepsilon) g\theta\pi - mg. \tag{3}$$

When the firm incentivizes the manager to provide effort, the manager will find a project such that the firm realizes profits π and pays the manager with probability ε. When the manager does not succeed (which happens with probability $1 - \varepsilon$), the manager does not get his performance pay. However, the firm will be able to displace the manager with probability g and obtain profits π with the likelihood θ. In an industry that is characterized by a small ε and θ, the odds that a firm does not succeed and exits are relatively high.

In order to motivate a manager to work, the choice of r and g need to be incentive compatible such that the expected compensation under effort provision covers the expected benefits that the manager would obtain from shirking:

$$\varepsilon r \geq (1 - g) b. \tag{4}$$

Furthermore, managers are only willing to be employed if their expected earnings are at

[9] An alternative interpretation would be that the firm displaces the manager and the firm is liquidated and the liquidation value of the firm is $\theta\pi$. This liquidation rent induces firm owners to displace managers whenever they receive a negative signal on output production.

least as large as their outside option O such that the participation constraint requires

$$\varepsilon r \geq O. \tag{5}$$

For now, I will treat the value of the outside option O as exogenous. Later, the outside option will be endogenized by the expected level of payments that managers receive in equilibrium.

Trade-Off between Corporate Governance and Performance Pay: From the perspective of an individual firm, corporate governance and performance pay are substitutes with respect to the provision of incentives. According to equation (4), a higher level of corporate governance reduces the manager's chances to obtain private perks such that incentive compatibility is achievable with lower levels of performance pay. Vice versa, higher performance pay makes effort provision more attractive such that less governance is required. However, this substitutive relationship is impaired by the participation constraint (5): when the outside option O for managers is high, firms cannot substitute away from compensation towards governance since they are required to meet the equilibrium market compensation for managers.[10]

When will the equilibrium market compensation for managers affect the trade-off between the strictness of corporate governance and incentive compensation? Suppose that the costs of strict corporate governance are very low for the firm such that $m < (1-\varepsilon)\,\theta\pi$. From the firm's objective function (3) it becomes clear that the firm's payoff strictly increases with g such that in equilibrium, all firms will choose $g = 1$ and there is no trade-off between performance pay and corporate governance. Alternatively, suppose that the costs

[10]The agency problem here abstracts from risk-aversion or a continuous choice of the effort level that the manager chooses. These simplifications greatly facilitate the study of the trade-off between governance and incentive pay in an equilibrium setting. Under risk-aversion and a continuous effort choice, there are additional effects to consider that might as well strengthen or dampen this trade-off. First, under risk-aversion, managers will expect a risk-premium on their expected level of compensation to compensate for their exposure to any income risk. Depending on whether stricter governance or steeper performance pay contributes more to this income risk, firms would substitute away from governance investments more or less severely. Second, with a continuous choice of effort, the interplay between the manager's effort costs and the firm's costs of governance investments and performance pay would affect the optimal contract as well.

of corporate governance are very high such that $m > (1-\varepsilon)\,\theta\pi + b$. In this situation, firm payoff strictly decreases with the level of g such that all firms will choose $g = 0$ in equilibrium and there is again no trade-off between performance pay and corporate governance.

During the remainder of the paper I will focus on the situation with a trade-off between corporate governance and incentive pay. This is stated in the following Assumption 1.

Assumption 1. *Suppose that the costs of corporate governance m are in an intermediate range $m \in ((1-\varepsilon)\,\theta\pi, (1-\varepsilon)\,\theta\pi + b)$. Then there will be a trade-off between corporate governance and performance pay that depends on the equilibrium market compensation for managers.*

This assumption is satisfied whenever the agency problem in the firm is sufficiently large such that firms have a low chance of finding a way to produce when they displace the manager (low θ) and the private perks for managers are sufficiently large (high b). Proposition 1 describes the contract that firms choose to optimally balance corporate governance with performance payments.

Proposition 1. *Suppose that there exists a trade-off between corporate governance g and performance pay r such that $m \in ((1-\varepsilon)\,\theta\pi, (1-\varepsilon)\,\theta\pi + b)$. The optimal contract between a firm and a manager is:*

$$\begin{aligned} r &= \frac{O}{\varepsilon} \\ g &= \begin{cases} 1 - \frac{O}{b} & \text{if } O \leq b \\ 0 & \text{if } O > b. \end{cases} \end{aligned}$$

Proof. See Appendix. □

Intuitively, the optimal level of corporate governance depends on the value of the manager's outside option. If the manager has a relatively large outside option $O > b$, the incentive compatibility constraint becomes redundant since the compensation is already

sufficiently large to incentivize the manager to work. This makes investments in corporate governance inefficient such that firms choose $g = 0$. If the manager has a relatively low outside option $O \leq b$, firms optimally choose the cheapest contract that keeps both constraints binding in equilibrium such that they set incentives with a mix between corporate governance and compensation to balance the incentive compatibility and the participation constraint in equilibrium.

Product Markets: Firms that found a project produce each variety with unit costs c, where $c < \alpha$. Given the linear demand function (2), equilibrium monopolistic operating profits π are given by

$$\pi = \frac{L + M}{4} (c_D - c)^2 , \tag{6}$$

where c_D is the maximum unit cost level for that firms would make positive operating profits. Hence, c_D is an inverse measure of product market competition in the industry and it can be shown that

$$c_D = \frac{2\alpha + Nc}{N + 2}, \tag{7}$$

where N is the mass of *active* firms in the market.[11] Intuitively, competition toughens when the number of firms N increases (c_D falls). Plugging c_D from (7) into (6) pins down the operating profits curve:

$$\pi = (L + M) \left(\frac{\alpha - c}{N + 2} \right)^2 . \tag{8}$$

Profits increase with the mass of consumers (i.e. agents) in the economy $L + M$ and fall with the mass of competing firms N.

Industry Equilibrium: There is free entry of firms into the product market and each firm that wants enter the differentiated sector needs to hire one manager from the mass of M managers. This constrains the number of potential entrants to M and entering firms will compete for the scarce manager resources in the economy. Since there is free entry

[11] Remember that due to the agency problem, not all entering firms will actively produce since some firms will not succeed to find a suitable project.

into the differentiated sector, firms enter until all managers are hired by entrants. This determines the expected compensation that managers receive in equilibrium. Entrants will compete for managers and bid up compensation until the costs of market entry correspond to the operating profits that firms make in the market such that the net value of entry is driven to zero. I denote the operating profits and performance payments in equilibrium by π^* and r^*, such that the market clearing outside option of a manager is $O = \varepsilon r^*$: a manager can always leave the firm and get hired by another entrant such that firms have to offer the equilibrium level of performance pay.[12]

Since contracts between firms and managers depend on O, the free entry condition requires a case distinction. When $\varepsilon r^* > b$, the managers' incentive compatibility constraints become redundant such that all firms will choose not to invest into corporate governance ($g^* = 0$). Free entry thus requires that

$$\varepsilon \left(\pi^* - r^*\right) = 0 \text{ if } r^* > \frac{b}{\varepsilon}. \tag{9}$$

However when $\varepsilon r^* \leq b$, firms will choose their investments into corporate governance to keep both, the incentive compatibility and the participation constraint binding in equilibrium. Free entry then requires that

$$\varepsilon \left(\pi^* - r^*\right) + (1 - \varepsilon) g^* \theta \pi^* - m g^* = 0 \text{ if } r^* \leq \frac{b}{\varepsilon}. \tag{10}$$

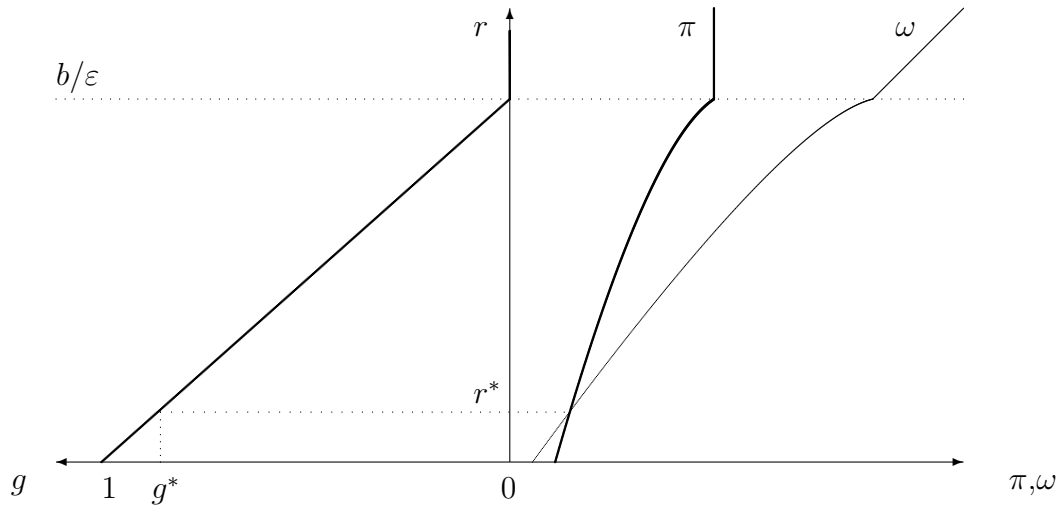
The free entry condition can therefore be stated as

$$\pi \left(r\right) = \omega \left(r\right), \tag{11}$$

where $\omega \left(r\right)$ are the *effective costs of market entry*. Using equations (9) and (10) and

[12] I restrain here from any job search costs or other labor market frictions that could arise from looking for alternative employment.

Figure 1: Equilibrium and Optimal Choice of Corporate Governance



substituting $g^* = 1 - \frac{\varepsilon r^*}{b}$ if $r^* \leq \frac{b}{\varepsilon}$, these effective costs of market entry are given by

$$\omega(r) = \begin{cases} \frac{\left(1-\frac{m}{b}\right)\varepsilon r + m}{(\varepsilon+\theta-\varepsilon\theta)-(1-\varepsilon)\frac{\varepsilon\theta}{b}r} & \text{if } r \leq \frac{b}{\varepsilon} \\ r & \text{if } r > \frac{b}{\varepsilon}. \end{cases} \tag{12}$$

Figure 1 illustrates the equilibrium graphically. The left panel of the graph depicts the optimal choice of corporate governance according to Proposition 1. When incentive compensation in the market equilibrium is below b/ε, a higher level of r implies a lower level of corporate governance g: firms can use corporate governance as a cheaper substitute for performance pay and balance g and r in order to keep both, the incentive compatibility and the participation constraint binding. The higher the equilibrium incentive compensation r is, the less the firms will invest in strict corporate governance. When r is above b/ε, the incentive compatibility constraint becomes redundant: all incentives are provided with the high level of performance pay such that it is optimal for firms not to invest into corporate governance.

The right panel of the graph depicts the product market. When incentive compensation in the market equilibrium is below b/ε, operating profits π increase with r. Intuitively, a higher value of r is associated with a lower level of governance which in turn reduces the success probability of firms to produce and sell output. Hence, the lower level of corporate governance in equilibrium leads to weaker competition since less firms are active in the

market. Since all firms that try to enter need to hire a manager, there will be M potential entrants. Therefore, the number of active firms in the market is equal to

$$N = \begin{cases} M\left[\varepsilon + (1-\varepsilon)\,\theta\left(1 - \frac{\varepsilon r^*}{b}\right)\right] & \text{if } r^* \leq \frac{b}{\varepsilon} \\ \varepsilon M & \text{if } r^* > \frac{b}{\varepsilon}, \end{cases} \tag{13}$$

since a higher level of $g^* = 1 - \frac{\varepsilon r^*}{b}$ in equilibrium increases the probability of firms to find projects and produce. Plugging the number of active firms into the inverse measure of competition c_D gives

$$c_D = \begin{cases} \frac{2\alpha + M\left[\varepsilon + (1-\varepsilon)\theta\left(1 - \frac{\varepsilon r^*}{b}\right)\right]c}{2 + M\left[\varepsilon + (1-\varepsilon)\theta\left(1 - \frac{\varepsilon r^*}{b}\right)\right]} & \text{if } r^* \leq \frac{b}{\varepsilon} \\ \frac{2\alpha + \varepsilon M c}{2 + \varepsilon M} & \text{if } r^* > \frac{b}{\varepsilon}. \end{cases} \tag{14}$$

Also the effective costs of market entry ω increase with r because managers become more expensive. As long as r is below $\frac{b}{\varepsilon}$, an increase in r reduces the optimal corporate governance level such that firm success becomes less likely.

Free entry into the product market requires $\pi(r) = \omega(r)$ such that the intersection of the π- and the ω-curve determines the equilibrium profits π^* and incentive compensation r^*. Given the equilibrium level of performance pay, the optimal choice of governance g^* is depicted in the left panel.

Lemma 1. *There always exists an equilibrium solution.*

The existence of an equilibrium can be shown intuitively with the help of Figure 1. Note that the costs of entry curve ω intersects the profit curve π from the left since the net value of market entry $\pi - \omega$ is positive for values of $r < r^*$ and negative for $r > r^*$. If both curves do not intersect for values of r between 0 and b/ε, there will always be an intersection of both curves for values of r above b/ε since the profit curve is a vertical line and ω increases with slope 1. The following Lemma gives a sufficient condition for this equilibrium to be unique.

Lemma 2. *When an increase in managers' performance compensation r has a larger effect*

on the costs of firm entry ω than on profits due to weaker product market competition such that $\frac{\partial \omega}{\partial r} > \frac{\partial \pi}{\partial c_D}\frac{\partial c_D}{\partial r}$, the equilibrium is unique.

If $\frac{\partial \omega}{\partial r} > \frac{\partial \pi}{\partial r}$, the costs of entry curve in Figure 1 is always steeper than the profit curve. This rules out the situation where both curves may intersect twice for values of r between 0 and b/ε. In the following analysis, I will always refer to the case where $\frac{\partial \omega}{\partial r} > \frac{\partial \pi}{\partial r}$. This corresponds to a situation, where increases in managerial compensation have a stronger effect on the costs of firms than on the profits of firms via lower levels of product market competition due to lower economy-wide corporate governance investments.

2.2 Globalization and Corporate Governance

How does globalization affect the balance of power between managers and firm owners? In this subsection, I analyze the comparative statics of an increase in the size of the world market, modeled as an increase in the mass of agents by some factor $k > 1$. Equivalently, this corresponds to an increase in the number of countries trading with each other. Such a globalization shock operates through two different channels. First, as the mass of agents in the world economy increases, firms face more demand for their products due to a proportional increase of consumers. Second, when the mass of agents in the world economy increases, there is also scope for additional firm entry since there are more managers available. This second effect increases the toughness of product market competition. The net effect of an increase in k is the sum of both effects and I will first consider each effect separately.

The Demand-Effect: Consider the effect of an increase in market size by some factor $k > 1$. When the number of firms in the economy remains fixed, this corresponds to a proportional profit increase for each firm such that the profit curve in Figure 1 shifts by factor k to the right. Firms can obtain higher profits due to higher demand and will bid up the compensation for managers.

Lemma 3. *An increase in demand due to a larger number of consumers in the world economy increases firm profits and intensifies the competition for available managers.*

Proof. This result follows directly from Proposition 1, the free entry condition (11) and the proportional increase in operating profits (8) due to the increased demand. □

The Competition-Effect: Next, I turn to the competition-effect that arises from entry of additional firms due to the larger supply of managers. When the size of the world economy increases, there will be entry of new firms since the world economy is now endowed with more managers. Thus, there will be more active firms: $kM\left[\varepsilon + (1-\varepsilon)\,\theta\left(1-\frac{\varepsilon r^*}{b}\right)\right]$ when $r^* \leq b/\varepsilon$, respectively $kM\varepsilon$ when $r^* \geq b/\varepsilon$. Isolating this increase in the number of active firms makes product markets more competitive such that c_D falls and firm markups and operating profits decrease. Consequently, free entry is satisfied at a lower level of performance payments r^* and firms rather use investments into corporate governance as a cheap substitute for performance compensation.

Lemma 4. *An increase in product market competition due to a larger number of managers in the world economy reduces markups and firm profits. Consequently, the performance payments for managers r^* fall such that investments into corporate governance g^* become a cheap substitute for performance compensation and increase.*

Proof. This result follows directly from Proposition 1, the free entry condition (11) and the decrease of c_D (equation (14)) due to the increase in available managers. □

There are two factors that govern the size of the competition-effect. First, the competition-effect is small when the economy integrates with another economy where managers are scarce such that the fraction of managers in the integrated world economy becomes sufficiently small (low $\frac{M}{L+M}$). Such a scenario would arise when an economy that is relatively abundant in managers integrates with economies where managers are relatively scarce. Second, the competition-effect is particularly small in industries that are characterized by small ε and/or θ. In an industry with small ε and θ, the odds that firms have to exit since they did not find suitable projects are relatively high.

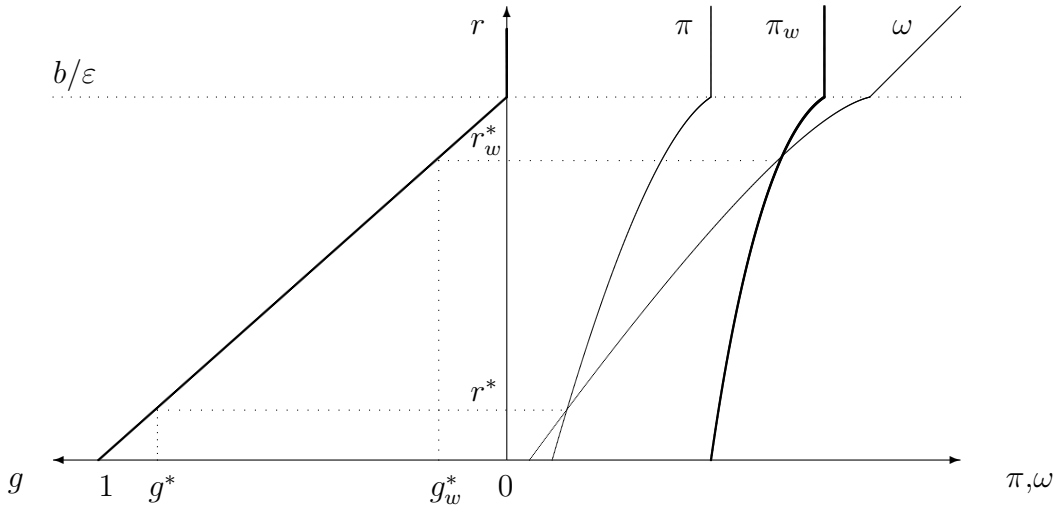
Altogether, globalization will lead to tougher competition for managers, higher performance pay and a deterioration of corporate governance when the demand-effect dominates the competition-effect such that operating profits increase. Then, firms will bid up the compensation that accrues to managers such that the effective costs of market entry will rise as well in equilibrium. Whenever managers are scarce (small $^{M}/_{L+M}$) and the industry is characterized by a small ε or θ such that the likelihood of coming up with a suitable project is low, globalization will increase the power of managers as firms compete for managerial talent and therefore offer higher performance payments and reduce their investments into corporate governance. This is summarized by the following Proposition.

Proposition 2. *Consider an increase in the mass of agents by some factor $k > 1$. This leads to a deterioration of corporate governance and a rise in equilibrium performance pay when managers become relatively scarce in the world economy (smaller $\frac{M}{L+M}$). Governance deteriorates the more, the smaller ε and θ.*

Proof. See Appendix. □

Proposition 2 contains the main result of the model. Intuitively, when managers are scarce (small $^{M}/_{L+M}$) and it is hard to find a project (small θ, ε) an increase in market size entails relatively large demand increases and relatively little entry of additional firms such that operating profits rise. This rise in operating profits makes firm entry more profitable such that firms compete for the existing managers and bid up the effective costs of market entry. When the agency problem in the firm is sufficiently large, globalization induces firms to compete for managers offering higher compensation which makes corporate governance investments less attractive for the individual firm. This situation is depicted in Figure 2. When market size increases, the new operating profits π_w are higher for any given level of performance payments r. Consequently, the operating profits curve intersects the costs of entry curve at a larger level of performance compensation $r_w^* > r^*$ due to free entry and the entailed tougher competition for managers. These higher performance payments induce firms to provide incentives with compensation and save on corporate governance investments $g_w^* < g^*$.

Figure 2: Globalization and the Evolution of Corporate Governance



2.3 Welfare

Why does the balance of power between managers and firm owners matter in the context of globalization? In many models, increases in market size (e.g. via trade integration) entail a rising earnings inequality across occupations such that particularly agents in high-skilled, managerial positions obtain a higher level of compensation.[13] This aspect of globalization is also present in my model. Managers are a fixed production factor and when firms can reach a larger mass of consumers, they bid up the wages of managers, thereby increasing the wage gap between managers and production workers.

The innovation of the model is that the globalization-induced increase in competition for managers triggers an organizational response within firms which has consequences for aggregate welfare. Therefore, the paper presents an economic channel why increasing inequality can be detrimental to welfare beyond general fairness arguments. In the model, corporate governance yields a signal on the expected firm surplus and therefore provides some insurance for firms against production failure: strict corporate governance makes managerial entrenchment more difficult and firms are more likely to find a project and realize profits when managers fail to do so. When firms in equilibrium invest a lot into cor-

[13] Among others, the literature on CEO assignments to firms predict that CEO pay depends on aggregate market size and firm size (see Gabaix and Landier (2008) or Terviö (2008)). Furthermore, the theoretical literature on international trade and labor markets suggests that trade integration entails higher inequality between managers and production workers (see Monte (2011) or Manasse and Turrini (2001)).

porate governance, less firms will fail to produce. This organizational response therefore affects the number of available varieties (remember that consumer have "love for variety" preferences) and the aggregate price level due to tougher competition and thus matters for aggregate welfare. While the expected income increase for managers contributes to a welfare increase, the associated deterioration of corporate governance reduces welfare gains from globalization.

I evaluate these welfare implications of corporate governance using the indirect utility function V associated with (1):

$$V = I + \frac{1}{2}\left(1 + \frac{1}{N}\right)^{-1}(\alpha - \overline{p})^2, \tag{15}$$

where I is an agent's income and $I_{prod} = 1$ for production workers and $I_{man} = \varepsilon r^*$ for managers. Consumer preferences exhibit "love for variety" as welfare increases with the number of active firms in the market N. Furthermore, welfare rises when prices fall (lower $\overline{p}$).

Consider the welfare implications of globalization when the competition for managers increases such that corporate governance investments are reduced. This has three consequences for welfare. First, when the global economy grows by factor k, scarce managers earn more performance compensation and will gain additional utility from consumption of the numéraire good ($I_{man} \uparrow$). Second, when the global economy grows by factor k, all consumers gain from the increase in the number of varieties that is due to a larger mass of potential managers in the economy ($N \uparrow$). This positive welfare effect is muted by the reduction of corporate governance quality in the economy. When g^* falls, the number of firms increases by less than factor k. Third, when the global economy grows by factor k, all consumers gain from the increase in product market competition as it translates into lower prices ($\overline{p} \downarrow$). Also this effect is reduced by the reduction of corporate governance quality in the economy. The following Proposition summarizes the welfare implications of corporate governance in the context of globalization.

Proposition 3. *Consider an increase in the mass of agents by some factor $k > 1$. The*

welfare gains from globalization can be muted due to weaker corporate governance when managers become relatively scarce in the economy (small $\frac{M}{L+M}$*). Welfare gains are muted the more, the smaller* ε *and* θ*.*

Proof. See Appendix. □

Intuitively, production workers gain from globalization due to increases in the number of varieties to choose from and due to price reductions, which itself depend on the number of available varieties. Whenever the increase in varieties (13) is small, the increase in welfare is also small. This occurs whenever the fall in g^* due to competition for managers is strong.

3 Empirical Analysis

The model delivers predictions for the effects of trade liberalization on corporate governance decisions and performance pay. Based on a sample of U.S. manufacturing firms, I study these predictions empirically. The U.S. are likely to be one of the most management abundant economies in the world, both in terms of their skill endowment and in the quality of management within firms (see Bloom and Van Reenen (2007) who find that U.S. firms are on average better managed than e.g. European firms). Hence, from the perspective of U.S. corporations, globalization will likely decrease the relative endowments with managers inside their markets such that firms compete more fiercely for managerial talent.

Based on the theory, I empirically test the following predictions:

1. U.S. firms that experience a trade liberalization implement weaker corporate governance rules allowing for more managerial slack.

2. This globalization-induced deterioration in corporate governance quality is more severe in U.S. industries with a relatively high probability of firm failure.

3. U.S. firms that experience a trade liberalization offer more equity payments to incentivize their managers.

These predictions are the empirical counterparts to Proposition 2 in the theory. Prediction 1 is based on the assumption that from the perspective of U.S. corporations, the demand effect of trade liberalization exceeds the increase in competition since the U.S. is relatively management abundant. Additionally, firms within industries that are characterized by a technology with a high rate of firm failure (small parameters ε and θ in the model) are particularly likely to implement weaker governance rules. This is incorporated into Prediction 2. Prediction 3 postulates that trade liberalization leads to higher performance payments r.

The remainder of the section describes the empirical strategy, data and results.

3.1 Empirical Strategy

To evaluate the formulated predictions empirically, I exploit variation in the trade policy that U.S. firms face vis-à-vis W.T.O. partner countries over time and across industries. Regressing measures of corporate governance directly on proxies of product demand such as exports will likely lead to endogeneity bias due to reversed causality or unobserved productivity shocks at the firm level or industry level affecting both, product demand and the demand for managers alike. Instead, I use variation in tariff rates at the industry level over time as a proxy for trade liberalization. Specifically, I consider ad valorem equivalent average tariff rates that W.T.O. countries charge on U.S. products within each 4-digit SIC industry.

Since tariff rates are the outcome of bilateral bargaining processes, there is still some chance that tariff reductions are not fully exogenous to firm governance decisions. U.S. policy makers might try to bargain lower tariffs in favor of some specific domestic industries that allow U.S. corporations to sell their products abroad more easily.

However, fully predicting the outcomes of U.S. trade policy during my sample period between 1990 and 2006 was rather implausible for firms. During the 1990s, the United

States had accomplished several trade deals and compiled one of the most impressive records on forging trade agreements with regional and bilateral partners that had profound implications for U.S. firms. Nevertheless, the outcomes of U.S. trade negotiations where relatively uneven and hardly foreseeable. On the one hand, U.S. policy makers seized opportunities and finalized the Uruguay Round, implemented NAFTA as a replacement of the Canadian-U.S. Free Trade Agreement (CUSFTA), supported China's W.T.O. accession and launched various other regional trade agreements such as the Free Trade Area of the Americas (FTAA), the US-Jordan Free Trade Agreement (FTA) and the US-Vietnam bilateral trade agreement. On the other hand, several policy initiatives failed to succeed such as the collapse of W.T.O. negotiations in Seattle and the defeat of fast track authority in 1997 (which was then reintroduced again in 2002).[14] Furthermore, even though firms might have been aware which trade agreements were likely to succeed, the timing and the specific level of changes in tariff schedules would still be difficult to foresee.

Figure 3 plots the average tariff rate that W.T.O. partner countries charge on imported U.S. goods (solid line) and the average tariff rate that the U.S. charge on imported goods from W.T.O. partner countries (dashed line).[15] While tariffs have been falling substantially over the sample period on average, there is variation in the development of tariff schedules across industries. To illustrate this, Figure 4 plots the tariff rates on U.S. goods for 3 selected 4-digit SIC industries (semiconductors, jewelry and publishing). To mitigate potential sources for endogeneity bias, I additionally control for different industry characteristics such as capital- and skill-intensity, firm concentration or domestic industry size in various specifications.

To evaluate Prediction 1, I specify empirical models of the following type:

$$Gov_{fit} = \beta_0 + \beta_1 \ln \left(tariff^{WTO} \right)_{it} + \beta_2 \ln \left(tariff^{USA} \right)_{it} + \gamma \Delta_{fit} + \lambda_f + \lambda_t + \varepsilon_{fit}. \qquad (16)$$

The dependent variable Gov_{fit} measures the corporate governance quality of a firm f within a primary 4-digit SIC industry i during year t. A high value of Gov_{fit} means that

[14] See Brainard (2001) for a discussion of U.S. trade policy in the 1990s.
[15] The Figure plots *sample* averages.

Figure 3: Average U.S.-W.T.O. Ad Valorem Tariffs

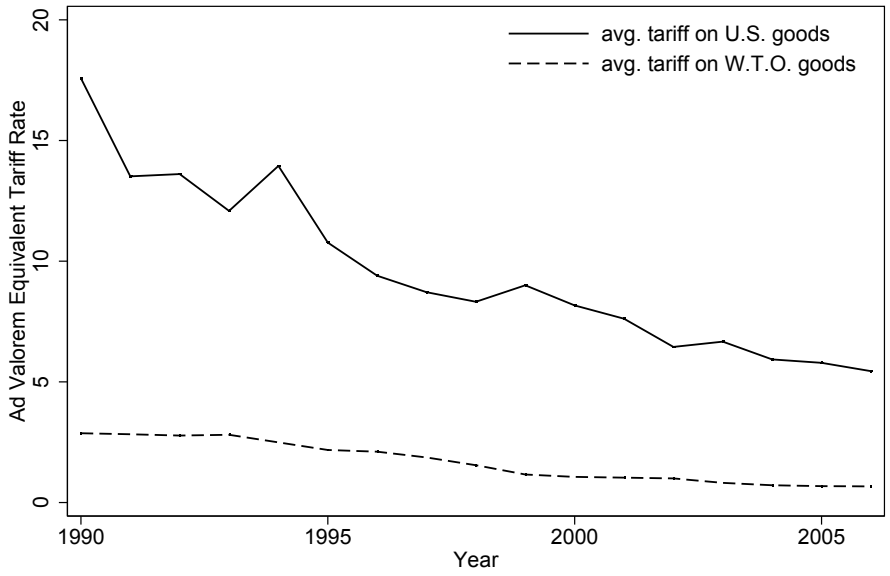
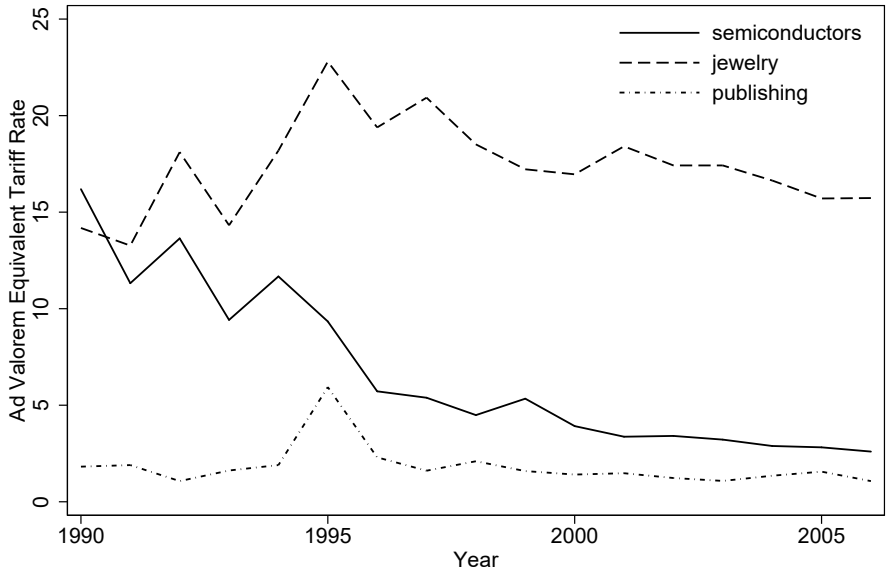


Figure 4: Selected W.T.O. Tariff Schedules on U.S. Goods



there are more governance rules in place that work in favor of managerial slack. The regressor $\ln\left(tariff^{WTO}\right)_{it}$ is the average ad valorem tariff rate with that U.S. goods from industry i are taxed in W.T.O. countries abroad during year t (in logs). Since tariffs are a bilateral bargaining outcome, I include $\ln\left(tariff^{USA}\right)_{it}$, which is the average ad valorem tariff rate with that the U.S. taxes goods imported from W.T.O. countries abroad (in logs). The vector Δ_{fit} includes a set of control variables; λ_f and λ_t are firm and year fixed effects. Standard errors are clustered at the industry level to correct for autocorrelation of the error terms within industries across years. As the model predicts that trade liberalization leads to weaker corporate governance standards, Prediction 1 suggests that $\beta_1 < 0$.

To study if the governance changes induced by tariff reductions are indeed driven by an increase in the market size that firms face, I also regress Gov_{fit} on firm or industry level exports:

$$Gov_{fit} = \vartheta_0 + \vartheta_1 \ln\left(exports\right)_{fit} + \gamma\Delta_{fit} + \lambda_f + \lambda_t + \varepsilon_{fit}, \tag{17}$$

where $\ln\left(exports\right)_{fit}$ are either the firm-specific exports or industry exports (in logs). To address the discussed endogeneity issues of exports, I use the W.T.O. tariffs as an instrumental variable, here. Prediction 1 suggests that $\vartheta_1 > 0$.

Prediction 2 postulates that industries with a relatively high probability of firm failure are more likely to be affected by this globalization-induced deterioration in corporate governance quality. When the model parameters ε and θ are small, it is more likely that firms have to exit the market. To proxy for small ε and θ, I use the average establishment exit rate ($exit_i$) at the 4-digit SIC level from the U.S. Census. In light of Prediction 2, I expect stronger governance adjustments for firms in more dynamic industries with a larger exit probability. To test this, I estimate the following variant of (16):

$$Gov_{fit} = \rho_0 + \rho_1 exit_i \times \ln\left(tariff^{WTO}\right)_{it} + \rho_2 exit_i \times \ln\left(tariff^{USA}\right)_{it} + \gamma\Delta_{fit} + \lambda_f + \lambda_t + \varepsilon_{fit}, \tag{18}$$

where $exit_i$ is a vector that indicates whether the firm is in an industry that is characterized by low, intermediate or high exit rates. Prediction 2 postulates that $\rho_1 < 0$ for industries with large exit rates.

To evaluate Prediction 3, I specify empirical models similar to (16) to study the effect of trade liberalization on payment policies within firms:

$$Pay_{fit} = \delta_0 + \delta_1 \ln \left(tariff^{WTO} \right)_{it} + \delta_2 \ln \left(tariff^{USA} \right)_{it} + \gamma \Delta_{fit} + \lambda_f + \lambda_t + \varepsilon_{fit}. \qquad (19)$$

Here, the dependent variable Pay_{fit} measures the level of option grants (in logs) that the CEO of a firm f received during year t. The model predicts that an decrease in $\ln \left(tariff^{WTO} \right)_{it}$ leads to higher performance compensation such that I expect that $\delta_1 < 0$.

3.2 Data

Firm Sample: I consider a sample of large publicly traded U.S. manufacturing companies between 1990 and 2006. The sample includes the set of S&P 500 manufacturing firms and other large firms from the annual lists of the largest companies from Fortune, Forbes and Businessweek. Firm level information is obtained from the S&P Compustat database. The major primary industries of these firms are drugs (SIC group 283 7.4%), electronic components (SIC group 367 7.2%), computer equipment (SIC group 357 5.8%) and medical instruments (SIC group 384 4.2%).

Balance of Power between Managers and Firm Owners: I use the ISS Riskmetrics data to obtain different proxies for Gov_{fit}. These data have been provided by the Investor Responsibility Research Center (IRRC) and track the existence of 24 different governance provisions within those firms over time, based on corporate legal documents as well as state and federal laws. Provisions are coded as "present" or "not present" and the data make no distinction within provisions (e.g. supermajority voting could require different percentage thresholds).[16] I construct four different proxies for Gov_{fit} that have been widely used in the corporate finance literature. Generally, higher index values correspond to a higher level of managerial power vis-à-vis the firms' owners.

First, I use the *Entrenchment* index from Bebchuk et al. (2009) as my main proxy of

[16] See Gompers et al. (2003) for a detailed definition of the individual governance provisions.

Gov_{fit}. This index combines information on the following six governance provisions that aim to capture managerial entrenchment opportunities and are associated with adverse managerial behavior: *(i)* staggered (classified) boards where directors serve overlapping terms and therefore cannot be displaced collectively, *(ii)* limits to shareholder bylaw amendments, *(iii)* poison pills that provide special rights in the case of a hostile takeover event, *(iv)* golden parachutes, and supermajority requirements for *(v)* mergers as well as for *(vi)* charter amendments. Four of these six provisions are associated with limited voting power of shareholders (staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, supermajority requirements for charter amendments), while the two remaining provisions (poison pills and golden parachutes) are salient measures taken in preparation for hostile offers which can be used by the executive board to prevent an unpopular merger leading to their displacement. Bebchuk et al. (2009) argue that these six provisions are the most relevant ones since they play a key role in the relation between corporate governance and firm value.

Second, I use the *Protection* index from Gompers et al. (2003). The *Protection* index contains six provisions that insure managers against job-related liability: *(i)* compensation plans that allow managers to cash out early should there be a change in control, *(ii)* contracts that indemnify managers from certain legal expenses and judgments resulting from lawsuits, *(iii)* golden parachutes, *(iv)* manager indemnification included in the firm's charter or bylaws, *(v)* charter amendments that limit managerial liability to the extent allowed by state law and *(vi)* severance agreements that assure managers of their positions or some compensation and that are not contingent upon control changes.

Third, I use the *GIM* index from Gompers et al. (2003). This index counts the total number of these up to 24 provisions that are active in a certain firm-year to proxy for the balance of power between managers and firm owners.

Fourth, as a robustness check, I use the O index from Bebchuk et al. (2009), defined as the difference between the *GIM* and the *Entrenchment* index. As these other provisions contained in the O index do not necessarily reflect managerial entrenchment opportunities, I do not expect that globalization affects the O index as much as the other indices.

Furthermore, I obtain data on the value of CEO compensation from the S&P Compustat Execucomp database. Additional control variables at the firm level are from Compustat and include the firm sales, leverage, Tobin's Q and a dummy that indicates whether the firm has changed its state of incorporation during the particular year compared to the year before.

Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Entrenchment Index	11,847	2.14	1.32	0	6.00
GIM Index	11,847	9.18	2.78	1	19.00
Protection Index	11,847	2.31	1.24	0	6.00
O Index	11,847	7.04	2.02	1	14.00
Value of Option Grants (in '000 $)	7,901	2,043	8,496	0.00	600,347
Sales (in '000,000 $)	11,170	3,948	12,486	0.00	335,086
Leverage	11,171	0.55	0.28	0.02	11.39
Q	11,146	1.95	1.42	0.22	34.37
Changed State (0/1)	11,847	0.01	0.07	0	1.00

Industry Data: Tariff data are obtained from the UN TRAINS database on tariffs. I use effectively applied tariff rates in ad valorem equivalents at the 4-digit SIC level. To control for industry characteristics over time, I use data from the NBER CES manufacturing database at the 4-digit SIC level. I obtain the total value of industry shipments (in logs), skill intensity (the fraction of non-production workers in employment) and capital intensity (capital stock per employee). In order to control for the level of competition within each industry, I construct a Herfindahl-Hirschman concentration index for each industry-year pair, based on the universe of Compustat firms. Furthermore, I use industry level exports in some specifications. These are also measured at the 4-digit SIC level and obtained from Peter Schott's website.[17] To proxy for a low ε and θ, I use the average rate of establishment exits per industry (exits per total number of establishments). Exit rates are obtained from the U.S. Census Statistics of U.S. Businesses (SUSB) for the ye-

[17]U.S. trade data where downloaded from `http://faculty.som.yale.edu/peterschott/sub_international.htm`.

ars 1990-1997 and averaged over this period per 3-digit SIC.[18] The Data Appendix B.1 provides more detailed descriptions of the constructed variables.

3.3 Results

Globalization and Corporate Governance Provisions:

Table 2 presents the baseline results using variation in tariffs over time. All specifications include a full set of firm and year fixed effects. At the firm level, I control for leverage, Tobin's Q and changes in the state of incorporation throughout all specifications. In columns 1-4, I use the entrenchment index as the dependent variable. The main coefficient of interest β_1 is negative throughout all specifications. Specification 1 only includes the tariff rate imposed by W.T.O. members on imports from the United States. In Specification 2, I also include the tariff rate imposed by the U.S. to control for the fact that both tariffs might move into similar directions and that a lower $\ln\left(tariff^{USA}\right)_{it}$ raises the level of competition for U.S. firms. The magnitude of the coefficient of interest increases and β_1 is significant at the 5% level. In columns 3-4, I additionally control for time-varying industry characteristics such as industry size (log shipments), competition (log HHI), capital- and skill-intensity. The coefficient estimate for β_1 is still negative and now significant at the 1% level. Column 4 estimates the same specification as in column 3 but restricts the sample to firms that report positive exports according to Compustat. Almost 50% of the firms in the sample report positive exports. Also here, the significance level of the coefficient estimate for β_1 is at the 1% level but the magnitude is a bit larger. In columns 5-8, I estimate the same empirical models as in columns 1-4 but use the protection index as the dependent variable instead. While the entrenchment index captures opportunities of the executive board to entrench themselves against displacement, the protection index captures governance provisions that reduce the legal liability of managers. Also here the coefficient estimates for β_1 are negative and significant at the 1-5% level with the exception

[18]The SUSB is an annual series that provides data about enterprises by industry and covers all U.S. business establishments with paid employees. The data where downloaded from `https://www.sba.gov/advocacy/firm-size-data`.

of column 8, where I only consider the smaller sample of exporters.

Insert Table 2 about here

Table 3 presents estimation results of (16) based on the GIM and the O index. The set of control variables corresponds to the specifications 3-4 and 7-8 in the previous Table 2. In columns 1-2, I use the GIM index as the dependent variable. The GIM index subsumes the entrenchment index (which ranges between 0 and 6) and includes up to 18 additional governance provisions which form the O index. Also here, reductions in the tariff burden faced by U.S. firms are associated with weaker corporate governance standards. The estimated coefficient is significant at the 1% level and its magnitude roughly doubles compared to specifications that use the entrenchment index. However, this increase in the magnitude of β_1 is moderate when considering that the entrenchment index ranges between 0 and 6 (sample mean 2.14) while the GIM index varies between 0 and 24 (sample mean 9.18). Therefore, I use the O index as a sort of placebo test in columns 3-4. According to Bebchuk et al. (2009) the O index measures provisions that are not necessarily reflecting managerial entrenchment opportunities. Consequently, I do not expect that tariff changes have a particular strong effect on the O index. In fact, the coefficient estimates are by construction the difference between those in columns 1-2 and those in columns 3-4 from Table 2. Indeed, the estimated coefficient magnitude remarkably drops compared to the specifications using the GIM index.

Insert Table 3 about here

To study whether these estimated associations between tariffs and firms' governance choices are indeed driven by changes in foreign product demand, Table 4 exploits variation in exports. In columns 1-3, I use the exports at the firm level (in logs), reported by Compustat. Consequently, the sample comprises only exporter firms. The estimated first stage coefficient of $\ln\left(tariff^{WTO}\right)_{it}$ is negative as expected since firms increase their exports as tariffs decrease. The first stage coefficient is significant at the 1% level. The first stage F-Test statistic (Cragg-Donald) equals 30.57. In the second stage, I estimate $\vartheta_1 > 0$

throughout specifications 1-3. The coefficient estimates are significant at the 5-10% level depending on which governance index is used.[19] Alternatively, I use exports at the industry level as a proxy for foreign demand in specifications 4-6. Here, the association between tariffs and exports in the first estimation stage is stronger since both are measured at the 4-digit SIC level such that the first stage F-statistic is larger at 117.5. Also for the industry exports, I estimate $\vartheta_1 > 0$ throughout all specifications. The second stage estimates of ϑ_1 are larger, however the estimated standard errors are also higher.

Insert Table 4 about here

Prediction 2 postulates stronger effects of trade liberalization on firm governance for industries with higher probability of firm failure. I study this with empirical models (18). The results are presented in Table 5.[20] I split the firms in the sample into three groups of equal size to differentiate between low, intermediate or high exit rates. Low exit rates correspond to industries with exit rates below 6.7%. Industries with exit rates between 6.7% and 8.3% are defined as industries with intermediate exit rates and those above 8.3% are high exit rate industries (the maximum is 21.5%). Table 5 presents the results of tariff variation for each of these three subgroups. In accordance with Prediction 2, the magnitude of ρ_1 is always largest for firms in industries with high exit rates independently of the governance index used. When using the protection or the GIM index as governance proxy (columns 2-3), I only estimate significant effects of trade liberalization (at the 5% level) for the group of firms in industries with high exit rates. In order to evaluate these coefficient differences statistically, I test the null hypothesis that the coefficient for the

[19] In subsection B.2 of the Appendix, I alternatively use a Bartik-type instrumental variable instead of the tariff rates to instrument for firm exports. Following the approach by Bartik (1991), Hummels et al. (2014) and Autor et al. (2013), I measure fluctuations in world demand conditions for the industry where each firm is active in. The instrumental variable world import demand ($\ln(WID_{it})$) is the log total value of imports of industry i during year t from and to the rest of the world except from/to the U.S. Since trade flows in the rest of the world might be partially driven by U.S. based technological developments, I regress the world import demand (in logs) on a full set of year and 4-digit SIC dummies and use the residuals to net out any joint time trends or industry-specific level effects. The idea of this world import demand instrument is to isolate the U.S. export that is driven by foreign demand shocks to address the endogeneity problem. The results are presented in Table 9. The first stage coefficient for $\ln(WID_{it})$ is positive and significant at the 5% level and the first stage F-Statistic equals 29.65. Also here, I estimate that $\vartheta_1 > 0$ (significant at the 5% level). Compared to the estimates based on tariffs presented in Table 4, the coefficient estimates are $\sim$50% larger.

[20] In order to save table space, the estimated coefficients for the firm control variables are not reported.

tariff interactions with the low exit rate group equal those interactions with the high exit rate group. The p-values for these tests are 5.6% for the entrenchment index, 51.5% for the protection index and $< 0.1\%$ for the GIM index.[21]

Insert Table 5 about here

Globalization and Financial Incentives:

According to the theoretical model, the deterioration of corporate governance due to globalization is accompanied by a reliance on performance related payments as an alternative incentive device. The majority of incentive payments that are made to U.S. CEOs are paid in terms of option grants. Prediction 3 therefore states that trade integration should raise option grants to incentivize managers. In Table 6, I use the natural logarithm of the firms' CEO's value of option grants (valued using a Black-Scholes formula) as the dependent variable to study this prediction.[22] In specification 1, I use the tariff variables $\ln\left(tariff^{WTO}\right)_{it}$ and $\ln\left(tariff^{USA}\right)_{it}$ to proxy for trade liberalization. In accordance with Prediction 3, I estimate a negative elasticity of option grants with respect to W.T.O. tariff changes. The estimated elasticity equals 0.229 and is significant at the 10% level. Similar to Table 5, I interact the tariffs with the exit rates to see if the negative elasticity also hinges on the industries with large exit rates. Indeed, I only estimate a significantly negative elasticity (at the 5% level) for the industries with a relatively high exit rate. To see, if the association between the tariffs and the option grants is also present when using fixed parts of CEO compensation, I use the fixed salary of the firms' CEOs (in logs) as the dependent variable in columns 3-4. Here, the estimated coefficient magnitudes are a lot smaller compared to those for the value of option grants. This suggests that trade liberalization indeed has stronger effects on the incentive parts of compensation. Testing the null hypothesis that the interaction terms between tariffs and high exit rates are similar across models 2 and 4 can be rejected with a p-value of 2.3%.

[21] A different interpretation of the parameters ε and θ is the importance that managers have on firm profitability by finding good projects. In a previous version of the paper, I used sectoral averages of a proxy that measures CEOs' contribution to firm profitability by Demerjian et al. (2012) leading to the result that governance deteriorates more in industries where managers contribute a lot to firm profit.

[22] In order to save table space, the estimated coefficients for the firm control variables are not reported.

Insert Table 6 about here

4 Conclusion

In this paper, I argue that globalization can be an important factor when it comes to explain the governance choices of firms. I present a theoretical framework that analyzes how corporate governance is influenced by changes in market size. The model predicts that globalization toughens the competition for managerial talent such that firms allow for more managerial slack and create incentives with executive performance pay packages. Using data on governance provisions in a sample of large U.S. manufacturing firms and exploiting variation in tariffs, I find support for this prediction in the data. Trade liberalization in the 1990s has contributed to lower governance standards in manufacturing firms and larger values of CEO option grants. These developments suggest that welfare gains from globalization might be diminished as firms endogenously allowed for more managerial slack when faced by larger foreign demand.

Table 2: Corporate Governance and Trade Liberalization

Notes: The dependent variables are the entrenchment index from Bebchuk et al. (2009) (columns 1-4) or the protection index from Gompers et al. (2003) (columns 5-8). *Ln(W.T.O. tariffs)* is the log ad valorem effectively applied average tariff charged by W.T.O. countries on imports from the U.S. *Ln(U.S. tariffs)* is the log ad valorem effectively applied average tariff charged by the U.S. on imports from W.T.O. countries. Firm controls are *Firm Leverage*, *Ln(Tobin's Q)* and a dummy that indicates whether the firm has changed its state of incorporation (*Changed State*). Industry controls are the log HHI concentration index, log industry shipments, skill intensity and capital intensity. All industry variables including tariffs are measured at the 4-digit SIC industry level. See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the 4-digit SIC industry level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Entrenchment Index (0-6)				Protection Index (0-6)			
Ln(W.T.O. tariffs)	-0.0823*	-0.154**	-0.171***	-0.225***	-0.123***	-0.114**	-0.0943*	-0.0678
	(0.0440)	(0.0607)	(0.0587)	(0.0710)	(0.0377)	(0.0524)	(0.0488)	(0.0664)
Ln(U.S. tariffs)		0.0117	0.0106	0.00647		-0.0222	-0.0230*	-0.0151
		(0.0117)	(0.0122)	(0.0196)		(0.0139)	(0.0121)	(0.0170)
Firm Leverage	-0.000348	0.00356	0.00623	-0.0773	0.0339	0.0419	0.0451	0.139
	(0.0528)	(0.0501)	(0.0497)	(0.186)	(0.0452)	(0.0444)	(0.0446)	(0.113)
Ln(Tobin's Q)	-0.0729**	-0.0291	-0.0324	0.00722	-0.119***	-0.119***	-0.124***	-0.134***
	(0.0363)	(0.0366)	(0.0360)	(0.0470)	(0.0257)	(0.0305)	(0.0304)	(0.0425)
Changed State	0.102	0.0572	0.0634	0.212***	0.129*	0.168**	0.159*	0.112
	(0.0935)	(0.119)	(0.119)	(0.0784)	(0.0725)	(0.0831)	(0.0855)	(0.110)
Industry Controls			yes	yes			yes	yes
Firm F.E.	yes	yes	yes	yes	yes	yes	yes	yes
Year F.E.	yes	yes	yes	yes	yes	yes	yes	yes
Number of Observations	7,513	5,434	5,407	2,944	7,513	5,434	5,407	2,944
Number of Firms	856	667	665	327	856	667	665	327
Number of Industry Clusters	111	103	103	80	111	103	103	80
Sample	All	All	All	Exporter	All	All	All	Exporter

Table 3: Corporate Governance and Trade Liberalization - Alternative Governance Indices

Notes: The dependent variables are the GIM index from Gompers et al. (2003) (columns 1-2) or the O index from Bebchuk et al. (2009) (columns 3-4). *Ln(W.T.O. tariffs)* is the log ad valorem effectively applied average tariff charged by W.T.O. countries on imports from the U.S. *Ln(U.S. tariffs)* is the log ad valorem effectively applied average tariff charged by the U.S. on imports from W.T.O. countries. Firm controls are *Firm Leverage*, *Ln(Tobin's Q)* and a dummy that indicates whether the firm has changed its state of incorporation (*Changed State*). Industry controls are the log HHI concentration index, log industry shipments, skill intensity and capital intensity. All industry variables including tariffs are measured at the 4-digit SIC industry level. See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the 4-digit SIC industry level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)	(4)
Dependent Variable:	GIM Index (0-24)		O Index (0-18)	
Ln(W.T.O. tariffs)	-0.344***	-0.365***	-0.173**	-0.140
	(0.0894)	(0.110)	(0.0794)	(0.0954)
Ln(U.S. tariffs)	0.0107	0.0281	0.000111	0.0217
	(0.0253)	(0.0345)	(0.0219)	(0.0268)
Firm Leverage	-0.000166	0.0490	-0.00640	0.126
	(0.0799)	(0.273)	(0.0596)	(0.177)
Ln(Tobin's Q)	-0.218***	-0.166**	-0.186***	-0.173***
	(0.0616)	(0.0727)	(0.0451)	(0.0594)
Changed State	0.806	1.474**	0.743	1.262**
	(0.495)	(0.625)	(0.454)	(0.622)
Industry Controls	yes	yes	yes	yes
Firm F.E.	yes	yes	yes	yes
Year F.E.	yes	yes	yes	yes
Number of Observations	5,407	2,944	5,407	2,944
Number of Firms	665	327	665	327
Number of Industry Clusters	103	80	103	80
Sample	All	Exporter	All	Exporter

Table 4: Corporate Governance and Exports

Notes: The dependent variables are the entrenchment index from Bebchuk et al. (2009) (columns 1, 4), the protection index from Gompers et al. (2003) (columns 2, 5) or the GIM index from Gompers et al. (2003) (columns 3, 6). *Ln(Exports)* are the log firm level exports (columns 1-3) or the log industry level exports (columns 4-6). Exports are instrumented by *Ln(W.T.O. tariffs)*, the log ad valorem effectively applied average tariff charged by W.T.O. countries on imports from the U.S. First stage coefficients of *Ln(W.T.O. tariffs)* are < 0 and the Cragg-Donald F-Statistic is 30.57 (columns 1-3) and 117.5 (columns 4-6). Firm controls are *Firm Leverage*, *Ln(Tobin's Q)* and a dummy that indicates whether the firm has changed its state of incorporation (*Changed State*). See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the 4-digit SIC industry level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Entrench. Index (0-6)	Protection Index (0-6)	GIM Index (0-24)	Entrench. Index (0-6)	Protection Index (0-6)	GIM Index (0-24)
	Firm Exports			*Industry Exports*		
Ln(Exports)	0.334*	0.432*	1.249**	0.567*	0.612*	1.774*
	(0.173)	(0.238)	(0.543)	(0.342)	(0.356)	(0.952)
Firm Leverage	0.0454	0.353*	0.569*	0.0637	0.103	0.212
	(0.182)	(0.185)	(0.336)	(0.0708)	(0.0640)	(0.173)
Ln(Tobin's Q)	-0.0398	-0.0716	-0.140	-0.0743*	-0.132***	-0.287***
	(0.0506)	(0.0758)	(0.149)	(0.0409)	(0.0307)	(0.0755)
Changed State	0.0672	0.100	1.278**	0.0597	0.115	0.637*
	(0.0646)	(0.126)	(0.609)	(0.116)	(0.0886)	(0.369)
IV First Stage F-Statistic		30.57			117.5	
IV First Stage Coeff. < 0 and significant at 1% level		yes			yes	
Firm F.E.		yes			yes	
Year F.E.		yes			yes	
Number of Observations		2,129			6,534	
Number of Firms		313			795	
Number of Industry Clusters		80			107	
Sample		Exporter			All	
Sample Years		1990 - 2006			1990 - 2005	

Table 5: Corporate Governance and Trade Liberalization - Differences Across Sectors

Notes: The dependent variables are the entrenchment index from Bebchuk et al. (2009) (column 1), the protection index from Gompers et al. (2003) (column 2) or the GIM index from Gompers et al. (2003) (column 3). *Ln(W.T.O. tariffs)* is the log ad valorem effectively applied average tariff charged by W.T.O. countries on imports from the U.S. *Ln(U.S. tariffs)* is the log ad valorem effectively applied average tariff charged by the U.S. on imports from W.T.O. countries. *Low/interm./high exit rates* correspond to the lowest/middle/highest third of establishment exit rates between 1990-1997 per 3-digit SIC from the Census Statistics of U.S. Businesses. Firm controls are *Firm Leverage*, *Ln(Tobin's Q)* and a dummy that indicates whether the firm has changed its state of incorporation (*Changed State*). Industry controls are the log HHI concentration index, log industry shipments, skill intensity and capital intensity. All industry controls are measured at the 4-digit SIC industry level. See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the 4-digit SIC industry level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)
Dependent Variable:	Entrench. Index (0-6)	Protection Index (0-6)	GIM Index (0-24)
Ln(W.T.O. tariffs) x industry exit rates:			
Ln(W.T.O. tariffs) x low exit rates	-0.127*	-0.0619	-0.176
	(0.0698)	(0.0675)	(0.111)
Ln(W.T.O. tariffs) x interm. exit rates	-0.141	-0.0837	-0.218
	(0.0927)	(0.0753)	(0.144)
Ln(W.T.O. tariffs) x high exit rates	-0.269***	-0.147**	-0.658***
	(0.0898)	(0.0639)	(0.106)
Ln(U.S. tariffs) x industry exit rates:			
Ln(U.S. tariffs) x low exit rates	-0.0155	-0.0351**	-0.0218
	(0.0193)	(0.0153)	(0.0217)
Ln(U.S. tariffs) x interm. exit rates	0.0783	0.0264	0.0363
	(0.0481)	(0.0484)	(0.0898)
Ln(U.S. tariffs) x high exit rates	0.0410**	-0.0179	0.0591
	(0.0184)	(0.0160)	(0.0371)
Firm Controls	yes	yes	yes
Industry Controls	yes	yes	yes
Firm F.E.	yes	yes	yes
Year F.E.	yes	yes	yes
Number of Observations	5,407	5,407	5,407
Number of Firms	665	665	665
Number of Industry Clusters	103	103	103
Sample Years	1990 - 2006	1990 - 2006	1990 - 2006

Table 6: Option Grants and Trade Liberalization

Notes: The dependent variables are the entrenchment index from Bebchuk et al. (2009) (columns 1-4) or the protection index from Gompers et al. (2003) (columns 5-8). *Ln(W.T.O. tariffs)* is the log ad valorem effectively applied average tariff charged by W.T.O. countries on imports from the U.S. *Ln(U.S. tariffs)* is the log ad valorem effectively applied average tariff charged by the U.S. on imports from W.T.O. countries. *Low/interm./high exit rates* correspond to the lowest/middle/highest third of establishment exit rates between 1990-1997 per 3-digit SIC from the Census Statistics of U.S. Businesses. Firm controls are *Firm Leverage*, *Ln(Tobin's Q)* and a dummy that indicates whether the firm has changed its state of incorporation (*Changed State*). Industry controls are the log HHI concentration index, log industry shipments, skill intensity and capital intensity. All industry controls are measured at the 4-digit SIC industry level. See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the 4-digit SIC industry level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)	(4)
Dependent Variable:	Ln(Value of Option Grants)		Ln(Fixed Salary)	
Ln(W.T.O. tariffs)	-0.229*		-0.0508	
	(0.129)		(0.0898)	
Ln(W.T.O. tariffs) x industry exit rates:				
Ln(W.T.O. tariffs) x low exit rates		0.173		-0.0700
		(0.191)		(0.138)
Ln(W.T.O. tariffs) x interm. exit rates		-0.208		-0.114
		(0.165)		(0.0955)
Ln(W.T.O. tariffs) x high exit rates		-0.581**		0.0563
		(0.228)		(0.119)
Ln(U.S. tariffs)	0.00772		-0.00494	
	(0.0185)		(0.0132)	
Ln(U.S. tariffs) x industry exit rates:				
Ln(U.S. tariffs) x low exit rates		-0.0364**		-0.0277*
		(0.0179)		(0.0157)
Ln(U.S. tariffs) x interm. exit rates		0.0487		-0.0646
		(0.0738)		(0.0531)
Ln(U.S. tariffs) x high exit rates		0.0451		0.0705
		(0.0369)		(0.0649)
Firm Controls	yes	yes	yes	yes
Industry Controls	yes	yes	yes	yes
Firm F.E.	yes	yes	yes	yes
Year F.E.	yes	yes	yes	yes
Number of Observations	2,892	2,892	4,115	4,115
Number of Firms	476	476	543	543
Number of Industry Clusters	97	97	100	100

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APPENDIX

A Theory Appendix

A.1 Proof of Proposition 1

The firm's problem is given as follows:

$$\max_{r,g} \varepsilon(\pi - r) + (1-\varepsilon) g\theta\pi - mg$$

$$s.t.$$

$$\varepsilon r \geq (1-g) b$$

$$\varepsilon r \geq O$$

with $m \in ((1-\varepsilon)\theta\pi, (1-\varepsilon)\theta\pi + b)$. To find the optimal contract, the following case distinction is necessary:

Case *i)* $O > b$**:** in that case the incentive constraint is slack whenever the participation constraint is satisfied. Consequently, the incentive constraint may be neglected and the manager receives a performance payment $r = O/\varepsilon$. To save on governance costs, the firm chooses $g = 0$ (since $(1-\varepsilon)\theta\pi - m < 0$).

Case *ii)* $O \leq b$**:** This case is somewhat less trivial since here it depends on the level of governance g which constraint will bind. More governance increases the probability to displace a manager and find an alternative project when the manager fails ($(1-\varepsilon) g\theta\pi$) but also rises monitoring costs (mg). Since $m > (1-\varepsilon)\theta\pi$, more governance is costly. Nevertheless, stricter governance creates incentives for the manager to exert effort and thus can be a cheap substitute for performance payments. Suppose that the firm sets governance so weak such that $g < 1 - O/b$. Then, the incentive constraint would require that $r \geq (1-g) b/\varepsilon$. Thus, it is inefficient to reduce governance because it requires a relatively stronger increase in performance pay r. Next, suppose that $g > 1 - O/b$ such that only the participation constraint binds. Since governance bears a cost for the firm,

firm payoff can be increased by reducing g such that both constraints are satisfied.

A.2 Proof of Proposition 2

The equilibrium level of managerial compensation r^* rises in response to globalization if the profit curve shifts rightwards in Figure (2). Algebraically, we have to show under which conditions $\frac{\partial \pi}{\partial k} > 0$ (i.e. the demand-effect dominates the competition-effect). Then, the equilibrium level of managerial compensation r^* will rise in response to globalization and according to Proposition 1, g^* will fall.

Consider $\frac{\partial \pi}{\partial k}$. Denote the fraction of managers in the society with $\kappa \equiv M/(L+M)$ and define $\triangle$ as

$$\triangle \equiv \begin{cases} \varepsilon + (1-\varepsilon)\,\theta\left(1 - \frac{\varepsilon r^*}{b}\right) & \text{if } r^* \leq \frac{b}{\varepsilon} \\ \varepsilon & \text{if } r^* > \frac{b}{\varepsilon}. \end{cases}$$

Operating profits from equation (8) can be written as

$$\pi = k(L+M)\left(\frac{\alpha - c}{k\kappa(L+M)\triangle + 2}\right)^2,$$

where $k > 1$ is the market size shifter.

Next, I show that an increase in k increases operating profits whenever managers are scarce (κ small) or when the technological parameters ε, θ are small such that the chances of finding a project are low. Then, there is not too much entry of additional firms into the market such that the positive demand-effect dominates the negative competition-effect.

To see this, consider the derivative of π with respect to k *for any fixed value of* r^*:

$$\begin{aligned} \frac{\partial \pi}{\partial k} &= (L+M)\left(\frac{\alpha - c}{k\kappa(L+M)\triangle + 2}\right)^2 - (L+M)\frac{(\alpha - c)^2}{(k\kappa(L+M)\triangle + 2)^2}\frac{2k\kappa(L+M)\triangle}{k\kappa(L+M)\triangle + 2} \\ &= (L+M)\left(\frac{\alpha - c}{k\kappa(L+M)\triangle + 2}\right)^2\left[1 - \frac{2k\kappa(L+M)\triangle}{k\kappa(L+M)\triangle + 2}\right]. \end{aligned}$$

This derivative is positive whenever

$$k\kappa\left(L+M\right)\triangle<2.$$

This implies that for any given value of r^* operating profits increase in response to an increase in k if managers are particularly scarce such that $\kappa \to 0$. Furthermore, for $r^* \leq \frac{b}{\varepsilon}$, the derivative is positive whenever $\theta \to 0$ and $\varepsilon \to 0$ since then the function $\triangle \to 0$ for any given value of r^*.[23] Under these conditions, the equilibrium level of managerial compensation r^* rises due to the rightward shift of the profit curve and g^* falls according to Proposition 1.

Furthermore, the demand-effect is particularly large (and therefore, the rightward shift of the π-curve in Figure 2 is particularly strong) for small values of $\triangle$ as $\frac{\partial \pi^2}{\partial k \partial \triangle} < 0$. It is straightforward to see that $\frac{\partial \triangle}{\partial \theta} \geq 0$ for all values of r^* and $\frac{\partial \triangle}{\partial \varepsilon} > 0$ if $r^* > \frac{b}{\varepsilon}$. To see if $\frac{\partial \triangle}{\partial \varepsilon} > 0$ for $r^* \leq \frac{b}{\varepsilon}$, rewrite $\triangle = \varepsilon + (1-\varepsilon)\,\theta g\left(\varepsilon\right)$ such that

$$\begin{aligned}
\frac{\partial \triangle}{\partial \varepsilon} &= 1+\theta g'\left(\varepsilon\right)-\theta g\left(\varepsilon\right)-\varepsilon\theta g'\left(\varepsilon\right) \\
&= 1-\theta\frac{r^*}{b}-\theta\left(1-\varepsilon\frac{r^*}{b}\right)+\varepsilon\theta+\frac{r^*}{b} \\
&\geq 1+\left(1-\theta\right)\frac{r^*}{b}+\varepsilon\theta-\theta \\
&\geq 0.
\end{aligned}$$

A.3 Proof of Proposition 3

To proof Proposition 3, I first derive the indirect utility function (15) and show that indirect utility increases in N. Second, I show that when governance falls due to globalization as suggested by Proposition 2, this mutes additional firm entry such that welfare gains

[23] In order to match the observed data on establishment exit rates used in the empirical analysis (exit rates are on average smaller than 10%), the parameters ε and θ would have to be close to 1. This implies that $k\kappa\left(L+M\right)\triangle$ would be larger than 2 for many parameter combinations. In order to fit the data on exit rates quantitatively, one would need to introduce a more general utility function with an additional parameter governing the degree of product differentiation across varieties. That parameter would govern the size of the competition-effect (see Melitz and Ottaviano (2008) for such a more general utility function). As the aim of theory is merely to illustrate the economic mechanism and not to fit the data quantitatively, the model sticks to a simplified quadratic utility function.

from globalization are smaller.

Indirect Utility: An individual consumer's demand for variety i is

$$p(i) = \alpha - X^c - x(i),$$

where $X^c = \int_0^N x(i)\,di$ is an agent's aggregate consumption of varieties. Plugging this demand function back into utility yields

$$U = I + \frac{1}{2}\left(X^c\right)^2 + \frac{1}{2}\int_0^N x(i)^2\,di.$$

Since all output producing firms charge the same price $p(i) = \overline{p} = \frac{1}{2}(c_D + c)$ and produce the same quantities, we can plug $(X^c/N)^2$ into the utility function instead of $x(i)^2$:

$$U = I + \frac{1}{2}\left(1 + \frac{1}{N}\right)\left(X^c\right)^2.$$

Replacing $\left(X^c\right)^2$ by $\left(1 + \frac{1}{N}\right)^{-2}(\alpha - \overline{p})^2$ finally gives indirect utility

$$V = I + \frac{1}{2}\left(1 + \frac{1}{N}\right)^{-1}(\alpha - \overline{p})^2.$$

Besides changes in incomes I, indirect utility is affected by the number of varieties N and the price level $\overline{p}$. After replacing $\overline{p}$ and using equation (7) for the cutoff costs c_D, the term can be stated as a function of N:

$$\begin{aligned}\frac{1}{2}\left(1 + \frac{1}{N}\right)^{-1}(\alpha - \overline{p})^2 &= \frac{1}{2}\left(1 + \frac{1}{N}\right)^{-1}\left[\alpha - \frac{1}{2}(c_D + c)\right]^2 \\ &= \frac{1}{2}(\alpha - c)^2\left(1 + \frac{1}{N}\right)^{-1}\left[\frac{N+1}{N+2}\right]^2,\end{aligned}$$

such that

$$\frac{\partial V}{\partial N} = \frac{1}{2}(\alpha - c)^2\left[\frac{3N+2}{(N+2)^3}\right] > 0.$$

Governance and Firm Entry: Agents realize welfare gains if N rises. According to (13), the number of active firms increases when there are more managers available to start a firm. However, when g^* falls (according to Proposition 2), these welfare gains for production workers are muted. To see this, consider how the number of firms N changes with respect to a change in market size $k > 1$. Again, denote the fraction of managers in the society with $\kappa \equiv M/(L+M)$ and define $\triangle$ as

$$\triangle \equiv \begin{cases} \varepsilon + (1-\varepsilon)\,\theta\left(1 - \frac{\varepsilon r^*}{b}\right) & \text{if } r^* \leq \frac{b}{\varepsilon} \\ \varepsilon & \text{if } r^* > \frac{b}{\varepsilon}. \end{cases}$$

The number of firms N then equals $k\kappa(L+M)\triangle$ such that the change in the number of firms due to globalization is

$$\frac{\partial N}{\partial k} = \kappa(L+M)\left(\triangle + k\frac{\partial \triangle}{\partial k}\right).$$

The term $k\frac{\partial \triangle}{\partial k}$ characterizes the effect of governance on muted firm entry. According to Proposition 2, r^* increases in response to globalization whenever

$$k\kappa(L+M)\triangle < 2,$$

which is satisfied when $\kappa \to 0$ and/or $\theta \to 0$ and $\varepsilon \to 0$. Then, we have $\frac{\partial \triangle}{\partial k} \leq 0$ since

$$\frac{\partial \triangle}{\partial k} = \begin{cases} -(1-\varepsilon)\,\theta\left(\frac{\varepsilon r^*}{b}\right) & \text{if } r^* \leq \frac{b}{\varepsilon} \\ 0 & \text{if } r^* > \frac{b}{\varepsilon}. \end{cases}$$

Such that firm entry is smaller and welfare gains are lower than without considering the agency problem within firms.

B Empirical Appendix

B.1 Variable Definitions

Entrenchment Index:
index (between 0-6) combines information on the following six governance provisions: *(i)* staggered (classified) boards where directors serve overlapping terms and therefore cannot be displaced collectively, *(ii)* limits to shareholder bylaw amendments, *(iii)* poison pills that provide special rights in the case of a hostile takeover event, *(iv)* golden parachutes, and supermajority requirements for *(v)* mergers as well as for *(vi)* charter amendments
Source: ISS Riskmetrics, Bebchuk et al. (2009)

Protection Index:
index (between 0-6) combines information on the following six governance provisions that insure managers against job-related liability following Gompers et al. (2003); the Protection index is a subset of the GIM index: *(i)* compensation plans that allow managers to cash out early should there be a change in control, *(ii)* contracts that indemnify managers from certain legal expenses and judgments resulting from lawsuits, *(iii)* golden parachutes, *(iv)* manager indemnification included in the firm's charter or bylaws, *(v)* charter amendments that limit managerial liability to the extent allowed by state law and *(vi)* severance agreements that assure managers of their positions or some compensation and that are not contingent upon control changes
Source: ISS Riskmetrics, Gompers et al. (2003)

GIM Index:
index (between 0-24) combines information on 24 governance provisions following Gompers et al. (2003); index counts how many of up to 24 provisions are active in a certain firm-year to proxy for the balance of power between managers and firm owners
Source: ISS Riskmetrics, Gompers et al. (2003)

O Index:
O Index (between 0-18) = GIM index - Entrenchment index; index of "other" provisions suggested by Bebchuk et al. (2009); these 18 provisions were historically uncorrelated with either reduced firm valuation or negative abnormal returns
Source: ISS Riskmetrics, Bebchuk et al. (2009)

Value of Option Grants:
natural logarithm of the aggregate value of stock options *granted* to the CEO of firm f during the year t as valued using Standard & Poor's Black-Scholes methodology; Execucomp item `option_awards_blk_value`
Source: Execucomp

Fixed Salary:
natural logarithm of the base salary earned by the CEO of firm f during the year t; Execucomp item `salary`
Source: Execucomp

$Tariff^{WTO}$:
natural logarithm of the average effectively applied ad valorem equivalent tariff rate charged by W.T.O. countries on imports with U.S. origin for a 4-digit SIC industry i in year t
Source: UN TRAINS

$Tariff^{USA}$:
natural logarithm of the average effectively applied ad valorem equivalent tariff rate charged by the U.S. on imports from other W.T.O. countries for a 4-digit SIC industry i in year t
Source: UN TRAINS

Exports (industry level):
natural logarithm of the total value of U.S. exports for a 4-digit SIC industry i in year t; obtained from aggregating item `x` across all countries for each industry-year pair; data obtained from `http://faculty.som.yale.edu/peterschott/sub_international.htm`
Source: Schott Trade Data

World Import Demand:
residual from regressing a set 4-digit SIC industry and year dummies on the total value of imports (in logs) from and to the rest of the world after excluding trade with the U.S. for a 4-digit SIC industry i in year t
Source: UN Comtrade

HHI:
natural logarithm of the Herfindahl-Hirschman concentration index for a 4-digit SIC industry i in year t, based on the universe of Compustat firms; this concentration index is defined as follows:

$$HHI_{it} = \ln \left[\sum_{f \in firms\, in\, i} \left(\frac{sales_{ft}}{\sum_{f \in firms\, in\, i} sales_{ft}} \right)^2 \right]$$

Source: Compustat

Skill-Intensity:
share of non-production workers in total employment for a 4-digit SIC industry i in year t; `(emp - prode) / emp`
Source: NBER CES Manufacturing Database

Capital-Intensity:
capital stock over total employment for a 4-digit SIC industry i in year t; `cap / emp`
Source: NBER CES Manufacturing Database

Industry Shipments:
natural logarithm of item `vship` for a 4-digit SIC industry i in year t
Source: NBER CES Manufacturing Database

Low/Interm./High Exit Rates:
data on average establishment exit rates for each 3-digit SIC industry i are obtained from the U.S. Census Statistics of U.S. Businesses for the periods 1990-1997; exit rates are defined as (# establishment exits / # establishments) for each given year and then rates are averaged over the data period; in order to create low/interm./high dummies, the firm level data sample is split into three equal groups sorted by their 3-digit SIC average exit rate, see Table 7 for average exit rates; data obtained from `https://www.sba.gov/advocacy/firm-size-data`
Source: U.S. Census Statistics of U.S. Businesses

Exports (firm level):
natural logarithm of the total value of U.S. exports of firm f in year t
Source: Compustat

Leverage:
firm f's sales in year t; defined as debt over total assets and calculated using Compustat items; `(at - ceq) / at`
Source: Compustat

Tobin's Q:
natural logarithm of firm f's Tobin's Q in year t; defined as market over book value; market value is calculated as `csho` $\times$ `prcc_f + (at - ceq)`, book value is the value of corporate assets `at` using Compustat items
Source: Compustat

Gross Profits (t+1):
natural logarithm of firm f's gross profits in year $t+1$; Compustat item `gp`
Source: Compustat

Changed State:
a dummy variable equal to 1 if the firm f changed its state of location in year t using Compustat item `state`
Source: Compustat

Table 7: Average Establishment Exit Rates by Group

Notes: The Table lists the top ten 4-digit SIC industries according to their occurrence in the firm sample for each establishment exit rate group (either *low*, *intermediate* or *high*).

Low Exit Rates - Sample Mean Exit Rate 5.9% (between 0% and 6.7%)				
#	**Obs**	**Industry (4-digit SIC)**	**SIC Code**	**Exit Rate**
1	506	Pharmaceutical Preparations	2834	6.6%
2	251	Biological Products, Except Diagnostic Substances	2836	6.6%
3	242	Petroleum Refining	2911	6.5%
4	194	Steel Works, Blast Furnaces (Including Coke Ovens), and Rolling Mills	3312	6.1%
5	118	Plastics Materials, Synthetic Resins, and Nonvulcanizable Elastomers	2821	5.6%
6	116	Paper Mills	2621	4.3%
7	105	Paperboard Mills	2631	2.5%
8	100	Pumps and Pumping Equipment	3561	5.6%
9	86	In Vitro and In Vivo Diagnostic Substances	2835	6.6%
10	85	Paints, Varnishes, Lacquers, Enamels, and Allied Products	2851	6.3%
Intermediate Exit Rates - Sample Mean Exit Rate 7.5% (between 6.7% and 8.3%)				
#	**Obs**	**Industry (4-digit SIC)**	**SIC Code**	**Exit Rate**
1	272	Motor Vehicle Parts and Accessories	3714	8.1%
2	183	Special Industry Machinery, Not Elsewhere Classified	3559	7.1%
3	162	Orthopedic, Prosthetic, and Surgical Appliances and Supplies	3842	7.7%
4	158	Electromedical and Electrotherapeutic Apparatus	3845	7.7%
5	149	Laboratory Analytical Instruments	3826	7.0%
6	129	Air-Conditioning, Warm Air Heating Equipm. and Refrigeration Equipm.	3585	7.9%
7	127	Surgical and Medical Instruments and Apparatus	3841	7.7%
8	115	Newspapers: Publishing, or Publishing and Printing	2711	7.3%
9	112	Instruments for Measuring and Testing of Electricity and Electrical Signals	3825	7.0%
10	105	Motor Vehicles and Passenger Car Bodies	3711	8.1%
High Exit Rates - Sample Mean Exit Rate 10.3% (between 8.3% and 21.5%)				
#	**Obs**	**Industry (4-digit SIC)**	**SIC Code**	**Exit Rate**
1	548	Semiconductors and Related Devices	3674	8.5%
2	172	Telephone and Telegraph Apparatus	3661	8.8%
3	172	Radio and Television Broadcasting and Communications Equipment	3663	8.8%
4	157	Computer Storage Devices	3572	12.2%
5	129	Electronic Computers	3571	12.2%
6	106	Electronic Components, Not Elsewhere Classified	3679	8.5%
7	80	Printed Circuit Boards	3672	8.5%
8	75	Computer Peripheral Equipment, Not Elsewhere Classified	3577	12.2%
9	72	Books: Publishing, or Publishing and Printing	2731	10.1%
10	66	Calculating and Accounting Machines, Except Electronic Computers	3578	12.2%

B.2 Additional Results

Table 8: Corporate Governance, Firm Valuation and Future Profits

Notes: The dependent variable is *Ln(Tobin's Q)* (columns 1, 2) or the natural logarithm of gross profits in the subsequent fiscal year *Ln(Gross Profits)*$_{t+1}$ (columns 3, 4). Standard errors are cluster-robust at the firm level. See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)	(4)
Dependent Variable:	Ln(Tobin's Q)		Ln(Gross Profits)$_{t+1}$	
Entrenchment Index	-0.0215**		-0.0267*	
	(0.0107)		(0.0138)	
Protection Index		-0.0281**		-0.0120
		(0.0113)		(0.0123)
Ln(Assets)	-0.110***	-0.110***	0.686***	0.686***
	(0.0176)	(0.0176)	(0.0216)	(0.0216)
Firm F.E.	yes	yes	yes	yes
Year F.E.	yes	yes	yes	yes
Number of Observations	11,042	11,042	9,605	9,605
Number of Firms	1,190	1,190	1,083	1,083

Table 9: Corporate Governance and Exports - Exploiting Variation in the World Import Demand

Notes: The dependent variables are the entrenchment index from Bebchuk et al. (2009) (column 1), the protection index from Gompers et al. (2003) (column 2) or the GIM index from Gompers et al. (2003) (columns 3). *Ln(Exports)* are the log firm level exports. Exports are instrumented by *Ln(World Import Demand)*, the log value of trade in the industry after excluding trade with the U.S. and after netting out industry and year fix effects. First stage coefficients of *Ln(World Import Demand)* are > 0 and the Cragg-Donald F-Statistic is 29.65. Firm controls are *Firm Leverage*, *Ln(Tobin's Q)* and a dummy that indicates whether the firm has changed its state of incorporation (*Changed State*). See Appendix B.1 for a more detailed description of the data. Standard errors are cluster-robust at the 4-digit SIC industry level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)
Dependent Variable:	Entrench. Index (0-6)	Protection Index (0-6)	GIM Index (0-24)
Ln(Exports)	0.485**	0.640**	2.055**
	(0.239)	(0.304)	(0.814)
Firm Leverage	0.0911	0.423*	0.812
	(0.225)	(0.246)	(0.570)
Ln(Tobin's Q)	-0.0477	-0.0823	-0.183
	(0.0570)	(0.0839)	(0.202)
Changed State	0.0579	0.0876	1.227**
	(0.0737)	(0.131)	(0.577)
IV First Stage F-Statistic		29.65	
IV First Stage Coeff. > 0 and significant at 5% level		yes	
Firm F.E.		yes	
Year F.E.		yes	
Number of Observations		2,110	
Number of Firms		311	
Number of Industry Clusters		79	
Sample Years		1990 - 2006	