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Economics and Politics of Alternative Institutional Reforms

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Abstract
We compare the economic consequences and political feasibility of reforms aimed at reducing barriers to entry (deregulation) and improving contractual enforcement (legal reform). Deregulation fosters entry, thereby increasing the number of firms (entrepreneurship) and the average quality of management (meritocracy). Legal reform also reduces financial constraints on entry, but in addition it facilitates transfers of control of incumbent firms, from untalented to talented managers. Since when incumbent firms are better run entry by new firms is less profitable, in general equilibrium legal reform may improve meritocracy at the expense of entrepreneurship. As a result, legal reform encounters less political opposition than deregulation, as it preserves incumbents' rents, while at the same time allowing the less efficient among them to transfer control and capture (part of) the resulting efficiency gains. Using this insight, we show that there may be dynamic complementarities in the reform path, whereby reformers can skillfully use legal reform in the short run to create a constituency supporting future deregulations. Generally speaking, our model suggests that "Coasian" reforms improving the scope of private contracting are likely to mobilize greater political support because — rather than undermining the rents of incumbents — they allow for an endogenous compensation of losers. Some preliminary empirical evidence supports the view that the market for control of incumbent firms plays an important role in an industry's response to legal reform.

Keywords: financial economics, deregulation, meritocracy
JEL Classifications: G34, O11, O16

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1 Introduction

There is a near consensus, among academics and policymakers, that a priority for emerging economies is to enact institutional reforms fostering entrepreneurship [e.g. De Soto (1989), Rajan and Zingales (2003a), International Monetary Fund (2003), World Bank (2005)]. The benefits of encouraging firm creation include increased competition and allocative efficiency, as well as more rapid rates of innovation. Two institutional frictions have been empirically shown to hinder access to private enterprise: regulatory barriers to entry, such as government licensing and bureaucratic set up costs [Djankov et al. (2002), Klapper et al. (2004)], and poor access to credit [Banerjee and Duflo (2005)]. The former increase the cost of complying with regulation, while the latter increases the financial burden of talented but non-wealthy outsiders who wish to set up a new enterprise. In the presence of these frictions entrepreneurial activity will be dominated by the wealthy, instead of the talented [Evans and Jovanovic (1989)].

In light of this evidence, it is not surprising that both "deregulation," and "legal reform," are close to the top of the development reform agenda. Deregulation lowers (excessive) regulatory barriers to entry, by eliminating unnecessary red tape, and reducing the number of government agencies involved in the licensing process. These steps lower entry costs directly, and indirectly by limiting opportunities for public officials to extract bribes.[1] Legal reform improves the infrastructure through which the government enforces private contracts, by improving the selection and training of judges and increasing the resources of the judicial system, as well as through clearer and easier-to-interpret contractual law. The idea is that better outside enforcement of private contracts can stimulate private lending and borrowing and, more generally, financial-market development.[2] Since deregulation lowers entry costs, and legal reform makes it easier to borrow and finance those entry costs, these reforms are often viewed as close substitutes, i.e. as having similar economic and political consequences.

In this paper we re-examine the economic and political implications of deregulation and legal reform. Our emphasis is on general equilibrium effects that have been overlooked by the previous literature. These effects come about through the reallocation of managerial talent on the *market*

[1] More generally, a variety of product-market regulations, including those mandating quality standards, limiting opening hours, and confining certain activities to the members of professional associations, are widely deemed to have an anti-competitive effect, and their reform to facilitate access to private enterprise.

[2] Legal reform may also target the financial sector directly, by providing better legal protection to investors through more effective regulation of managerial self-dealing [e.g. Djankov et al. (2006a)] or bankruptcy reform [e.g. Djankov et al. (2006b), Gennaioli and Rossi (2006)].

for control, i.e. the market where control rights over *incumbent firms* are traded. By affecting the quality of management in incumbent firms, with whom prospective entrants will have to compete, deregulation and legal reform may have additional effects on the incentives to enter over and beyond the direct ones of lowering entry cost and facilitating borrowing. Once these additional incentives are taken into account the substitutability between deregulation and legal reform breaks down.[3]

Our main positive findings are best previewed by distinguishing the effects of reform on the number of entrants, which we call *entrepreneurship*, from their effect on the average quality of management, which we call *meritocracy*. When regulatory entry barriers are high, and contract enforcement is imperfect, both the equilibrium number and the average talent of entrepreneurs are low relative to the first best. Consistent with the existing literature, deregulation and legal reform have partial-equilibrium effects that tend to increase the ability of talented outsiders to set up new firms. In the case of deregulation, this effect turns out to be robust in general equilibrium. In the case of legal reform, however, an additional effect of improved contract enforcement is that, on the market for control, untalented incumbents and talented outsiders find it easier to transfer existing firms from the former to the latter, with mutually beneficial gains from trade. This increases meritocracy, but it also implies that potential entrants will face tougher competition from more talented incumbents. Often, this effect more than compensates for the direct enhanced ability to enter, so that – in contrast with standard accounts – entrepreneurship is likely to actually *decline* following legal reform.

The negative effect of legal reform on entrepreneurship does not imply that this reform is not beneficial: we find that both deregulation and legal reform are always welfare improving. What it does mean, however, is that the social benefits of legal reform do not necessarily accrue mainly by fostering entry of new firms, but rather by improving the allocation of control in *existing* firms. Having a clear understanding of how reform works in theory is obviously critical in assessing their empirical effects. More importantly, we show that it is critical in deciding which welfare-enhancing reforms are more politically feasible.

The greatest obstacle to reform the world over is the opposition of powerful entrenched interests, who stand to lose from more openness and competition. One of the goals of this paper is to establish which, of deregulation and legal reform, will face the most intransigent opposition. We find that legal reform is more politically viable, because it faces less opposition from incumbents. While all

[3]Rossi and Volpin (2004) show that – by boosting financial contracting – legal reform facilitates the reallocation of control of existing firms.

incumbents firmly oppose deregulation, because it reduces the value of their firms, some incumbents may support legal reform. Legal reform may benefit untalented incumbents by increasing the price at which they are able to sell their firm. This occurs not only because legal reform directly activates the market for control, but also because – in general equilibrium – it reduces entry, thus preserving the value of incumbent firms.[4] We also show that the greater political feasibility of legal reform in the short run can be leveraged to smooth the way for deregulation in the long run. This dynamic complementarity between legal reform and deregulation comes about because legal reform today allows untalented incumbents to sell their firms at a high price, while deregulation in the future allows them to share in the benefits that outsiders experience when competition among entrepreneurs goes up. Hence, a two-stage reform path may be more feasible than a one shot deregulation (i.e. deregulation not accompanied by legal reform) or than a "big-bang" reform attempting to deregulate and reform the legal system simultaneously.[5]

Conceptually, the key political difference between legal reform and deregulation is that, through higher firm prices on the marker for control, the former *endogenously* compensates (some of) the incumbents, while the latter represents a pure destruction of rents for all firm owners. When the opposition of entrenched interests is a serious obstacle to reform, governments should try to identify reforms that, like legal reform, have these "Coasian" ability to provide endogenous compensation to the losers, and begin with them. This principle may help shed light on the design of optimal reform packages for emerging economies, where political constraints are known to be large.[6]

Since our paper highlights the importance of the market for control for understanding the economics and politics of reform, we also present some empirical evidence on the role of this market. A novel prediction of our model is that, by activating the market for control, better contract enforcement (the outcome of legal reform) should exert a positive impact on firms' average productivity, but a negative impact on entry. We present a preliminary test of this hypothesis that uses cross-country and cross-industry variation. Consistent with our predictions, we find that

[4] Occasionally, legal reform may even benefit talented incumbents, who gain from the possibility of expanding their scale of operations through take-overs of untalented-run firms.

[5] See Dewatripont and Roland (1992a, 1992b, and 1995) for other, complementary mechanisms – based on the progressive revelation of information – by which gradual reform is more feasibile because it creates political momentum for further reforms. See also Aghion and Blanchard (1994) for another argument in favor of gradual reform.

[6] We are not the first ones to study the political economy of deregulation and legal (or financial-market) reform. Perotti and Volpin (2004) and Acemoglu (2005) look at the political economy of entry barriers, while Rajan and Zingales (2003a) and Biais and Mariotti (2006) study the political economy of financial development. Yet, these papers do not compare the effects and political feasibility of different reforms. Other political-economy models of reform [Alesina and Drazen (1991), Dewatripont and Roland (1992a, 1992b, 1995), Fernandez and Rodrik (1991)] emphasize uncertainty and/or asymmetric information, from which we completely abstract in this paper. Again, none of these papers compare the relative feasibility of alternative reforms.

improvements in legal enforcement increase the number of firms *less* (or indeed reduce the number of firms) in industries that rank high in a proxy for the importance of the market for control.

The road map of the paper is as follows. In Section 2 we set up a model where there are incumbents, outsiders, a market for control, and an "entry market" through which outsiders can set up new firms. In Section 3 we develop the positive implications of the model: we describe how equilibrium levels of meritocracy, entrepreneurship, and social welfare vary as functions of the efficiency of legal enforcement and the severity of regulatory barriers to entry. Section 4 extends the results of Section 3 to allow the market for control to be used by incumbents to implement mergers. Section 5 explores the political-economy implications of the model. It first identifies winners and losers from various reform paths. It then establishes the greater political feasibility of legal reform over deregulation, both under direct democracy and when incumbents exert disproportionate political power through lobbies. It also shows that the greater political feasibility of legal reform can be leveraged in the short-run to create a constituency in favor of deregulation in the long-run. Section 6 returns to the positive results to present some empirical evidence. Section 7 contains concluding thoughts.

2 The Model

We study a static economy. There is a continuum (of measure 1) of wealthless individuals. Each agent has a project to produce final output. If the project is implemented it becomes a firm that combines its owner's managerial services with homogeneous labor input. An individual's managerial talent is $\theta \in \{\underline{\theta}, \overline{\theta}\}$, with $\overline{\theta} \geq \underline{\theta}$. Individuals with $\overline{\theta}$ are more talented than those with $\underline{\theta}$, and λ is the fraction of agents of type $\overline{\theta}$. If a manager with talent θ hires l units of labor his output is

$$y = \theta l^{1-\alpha}.$$

Without loss of generality we normalize $\overline{\theta} = 1$.

To implement a project and run a firm an agent needs to hold a government-issued license. Agents can obtain these licenses in three ways. A fraction η of agents is randomly given a license at the outset (without replacement). We call these agents the incumbents. Random allocation of licencies implies a talent-ownership mismatch: $\eta\lambda$ incumbent firms are owned by managers with talent $\overline{\theta}$ ("talented managers" henceforth), $\eta(1-\lambda)$ by managers with talent $\underline{\theta}$ ("untalented managers"). In a developing-country context, where the vast majority of businesses are family

owned and dynastically run [La Porta et al. (1999)], this initial allocation reflects the inheritance of firms by children of past entrepreneurs. Since managerial talent is not perfectly inheritable, many incumbent firms will be initially controlled by untalented agents [Caselli and Gennaioli (2005)]. In transition economies the initial allocation reflects the haphazard allocation of control rights over formerly state-owned firms to political insiders, many of whom are wholly incompetent to steer the business in a market environment [Barberis et al. (1996), Djankov (1997)].[7]

An agent who is not an incumbent (an "outsider") can become an entrepreneur in two ways. First, he may set up a new firm in what we call the "entry market." In the entry market individuals set up their own firm by bearing a set-up cost k (a technological parameter) and by buying a licence directly from the government at a fee r. r is an exogenous parameter reflecting the government's competition policy. The simplest interpretation is that r is an entry tax, but in practice it stands for the monetary value of all the bureaucratic set up costs faced by entrants. To be sure, some of these costs are deadweight losses to society, but several others are transfers from entrepreneurs to government officials, not least because entrepreneurs overcome the waste associated with entry regulation by negotiating appropriate side payments with bureaucrats [Djankov et al. (2002)].

The other way an outsider can become entrepreneur is by buying the firm of an incumbent in what we call the "market for control." On the market for control incumbents transfer their licenses to outsiders at price p. It is not difficult to foresee that transfers of licenses on the market for control will typically feature untalented sellers and talented buyers.

In principle, there could yet be a fourth mechanism to transfer managerial control to talented agents: untalented incumbents could retain ownership of their firms, but hire a talented agent as a manager. A well-functioning "market for managers" may therefore be another channel to improved meritocracy. In the Appendix, however, we show that in our model the conditions under which the market for managers operates are identical to the conditions under which the market for control operates. In other words whenever it is possible for untalented incumbents to sell their firms to talented outsiders it is also possible for them to hire a talented manager, and vice versa. The reason is that the contract between the firm owner and the manager is an equity contract (the manager issues equity to the owner and runs the firm), while the purchase of the firm is supported by a debt contract (the manger issues debt and buys the firm). In the absence of uncertainty

[7] The problem of initial mismathc between talent and control also arises in mature market economies. Many firms are controlled by their founders, but over the life-cycle of the firm the relevant skill set changes: mature firms are different from startups, and a change at the helm may be efficient. A change in management may also be needed if the technological or institutional environment has changed.

(which is the case in our model), equity contracts and debt contracts are the same thing. Hence, countries where the courts have a difficult time enforcing debt contracts, will also have a difficult time enforcing equity contracts preventing managers from stealing a firm's profits from the owner. This implies that explicit consideration of the market for managers is irrelevant for establishing the effects of institutional reform on entrepreneurship, meritocracy, or any other macroeconomic variable of interest: we can re-interpret all transactions on the market for control as transactions on the market for managers, or as an arbitrary combination of transactions occurring on these two markets.[8]

The following sequence of events takes place. First, outsiders can decide to become entrepreneurs by setting up a new firm in the entry market or by buying an existing one in the market for control. Because individuals are born wealthless, in order to enter these markets they need to borrow either the total set up cost $\varepsilon = k + r$, or the price of an existing firm p. Agents can borrow from foreign lenders, the supply of foreign funds is perfectly elastic, and the interest rate is normalized to zero.

When the entry market and the market for control close, each firm owner turns to the labor market and hires workers at a competitive wage, w. Agents who do not run firms inelastically supply their endowment of labor, normalized to 1. Furthermore, we make the simplifying assumption that, besides providing managerial services, a firm's owner also provides remunerated labor services. This implies that aggregate labor supply is 1. It also implies that the opportunity cost of becoming an entrepreneur is 0.

The resources of the economy having thus been allocated, production takes place, giving rise for each firm to output y and profits (i.e. output less wages) π. It is here that the contractual frictions bite. Agents who have financed a new firm's set up cost or the acquisition of an existing firm with debt must decide whether or not to repay their debts. We assume that courts in this economy have the ability to seize a fraction ϕ of the profits of an entrepreneur who defaults on his debts.

Notice that in our model two exogenous parameters capture the quality of a country's institutional infrastructure: ϕ captures the quality of the legal system, r the extent of regulatory entry

[8] Development economists will recognize the isomorphism in the contract-enforcement conditions that support equity and debt contracts, since the same isomorphism applies to the renting and selling of land in models of agrarian economies [e.g. Banerjee, Ghatak, and Gertler (2002)]. To be sure, our model's isomorphism between equity and debt contracts, and hence between the market for control and the market for managers, is not a general result. Besides uncertainty, other extensions that would break it include asymmetries in the enforcement of credit and equity contracts, and asymmetries in the nature of the private monitoring technologies available to creditors and shareholders. Pursuing these extensions would allow us to provide a theory of the capital structure of the firm, but would not change the fundamental relationships between contract enforcement, meritocracy, and entrepreneurship, particularly because in the data creditor rights and shareholder rights are highly positively correlated [La Porta et al. (1998)].

restrictions. *We call legal reform an increase in ϕ, deregulation a decrease in r.* Given that $\varepsilon = k + r$, and k is a constant, we will also very often refer to deregulation as a decline in ε.

3 Economic Consequences of Deregulation and Legal Reform

The strategy of this section is first to characterize the equilibrium of the model for given institutional parameters (ϕ, ε), and then analyze the consequences of changes in these two dimensions of policy. To characterize the equilibrium, we first derive the payoff of running a firm (profits), and then derive conditions under which outsiders can get access to such profits either by entering or by buying a license from an incumbent. It turns out that all the results of the paper are mediated by two key endogenous variables: the total number of operating firms f, which is our measure of *entrepreneurship*, and the share of those firms which is run by talented manager, s, a measure of *meritocracy*.

3.1 Wages, Profits and Output

We solve the model backward starting with the labor market. Each manager maximizes his firm's profits, equal to $\pi = \theta l^{1-\alpha} - wl$, taking the wage w and his own talent θ as given. Aggregating the resulting labor demand functions, and setting aggregate labor demand equal to 1 (i.e. labor supply), one finds that the equilibrium wage is

$$w(f, s) = (1 - \alpha) f^{\alpha} [s + (1 - s)g]^{\alpha}, \tag{1}$$

where we have defined $g \equiv \underline{\theta}^{1/\alpha} \leq 1$. The wage depends positively on the number of active firms, f, and, through the productivity term $[s + (1 - s)g]$, on the average quality of management s. The effect of f and s on the wage directly translate into their effect on firms' profits, which are

$$\pi^H(f, s) = \alpha f^{\alpha-1} [s + (1 - s)g]^{\alpha-1}, \text{ and} \tag{2}$$

$$\pi^L(f, s) = g\pi^H(f, s), \tag{3}$$

where π^H and π^L are the profits enjoyed by talented and untalented managers, respectively. As the expressions show, both s and f reduce profits. The intuition is that higher f and s increase wages, thus reducing entrepreneurs' residual income.

Aggregating across firms' outputs we find total income

$$Y(f,s) = f^{\alpha}\left[s + (1-s)g\right]^{\alpha}, \tag{4}$$

which is increasing in f and s. Decreasing returns to firm size (i.e. on the size of a firm's labor force) imply that having more firms increases the productivity of labor. Aggregate productivity also goes up with s, the fraction of firms controlled by talented managers. Gross aggregate output increases in entrepreneurship and meritocracy.

Finally, we define net output, or gross output net of the set-up costs of entry:

$$Y(f,s) - (f-\eta)k \tag{5}$$

This will be our measure of welfare, as the set-up costs of entry are a resource cost for the economy.[9]

The following two parametric assumptions prove useful:

Assumption 1: $\eta < \lambda < 1$.

Assumption 2 : $k = \pi^{H}(\lambda, 1)$.

Assumption 1 says that talent is abundant relative to the initial number of firms (though not everybody is talented). Talent may be scarce in some economies but in this paper we are interested into institutional impediments to the efficient allocation of control rights. Hence, talent is plentiful and the question is whether the economy succeeds in assigning firms to good managers.

Assumption 2 then allows us to pinpoint particularly starkly the first best of the model. This is because given assumptions 1 and 2 we have:

Lemma 1 *At the first best,* $f = \lambda$ *and* $s = 1$.

The lemma is proved trivially by maximization of (5) with respect to s and f, using the two assumptions and the definition of π^{H}. It says that the bliss point for society is reached when all of its talented individuals manage firms, and all of its untalented ones are workers. This is a convenient and plausible benchmark for welfare calculations. Note, in particular, that in our economy both the initial number of firms ($f = \eta < \lambda$) and the quality of management ($s = \lambda < 1$) are suboptimal. In other words, we start out with an economy that has both a deficit of entrepreneurship and a

[9] Recall that we treat the entry tax r as a transfer to the government, or to government officials. This is a fairly innocuous simplification.

deficit of meritocracy. The question then arises, to what extent do the "entry market" and the "market for control" boost entrepreneurship and meritocracy**?**

3.2 Market for Control

The market for control can increase meritocracy (s) by allowing talented individuals to bid for the firms owned by untalented incumbents. A licence yields π^H to a talented manager, but only $\pi^L < \pi^H$ to an untalented one. Thus, the exchange of a firm among these two individuals generates a surplus of $\pi^H - \pi^L$, that could be suitably shared among the parties through an appropriate price p. Clearly, only transfers of property from low- to high-ability individuals will take place. For now we assume that a manager can run at most one firm, so demand for licenses only comes from outsiders. We relax this assumption in Section 4.

Because agents are born wealthless, buyers need to borrow to finance the purchase of existing licenses. Hence, the market for control is vulnerable to the consequences of poor contract enforcement. Since courts are only able to seize a fraction ϕ of the resources of a party in default of contractual obligations, the most the buyer can borrow from international markets is $\phi\pi^H$, which also represents the maximum price he can pay to the seller.[10] As a result, a transaction in the market for control can only take place when

$$\pi^L(f,s) \leq \phi\pi^H(f,s).$$

When this condition holds, it is possible to find a price p, $\pi^L \leq p \leq \phi\pi^H$ such that the seller is keen to sell (the seller's participation constraint is satisfied) and the buyer can credibly promise to repay the funds he borrowed (the buyer's incentive-compatibility constraint is satisfied). Notice that since $\phi \leq 1$ when the buyer's incentive compatibility constraint holds then his participation constraint $p \leq \pi^H$ also holds. Because $\pi^L = g\pi^H$, transfers of control only occur if

$$\phi \geq g,$$

Intuitively, an increase in g reduces the gains from trade and thus the scope for the exchange of firms. More importantly, an increase in ϕ improves the ability of buyers to fnance the takeover, and this favors exchanges on the market for control.[11]

[10] Firms' exchanges can also be financed by having the seller extend a credit of $\phi\pi^H$ to the buyer.

[11] We have implicitly assumed that entrepreneurs cannot pledge the wage they earn as workers as security for their

Because outsiders can also become entrepreneurs by paying a set up cost ε to found a new firm, for the market for control to operate it must also be that $\pi^L(f,s) \leq \varepsilon$. This insures that there exists a price that induces untalented insiders to sell, and at the same time gives buyers at least as good a deal on the market for control as they would get by starting up a new firm. It will turn out, however, that this constraint is never binding in general equilibrium.

3.3 Entry Market

Potential entrants can set up a new firm by paying a grand total of $\varepsilon = k + r$ between set-up costs and entry fees. Because the entry cost ε must be incurred before the firm produces profits, an entrant with potential profits π will be able to borrow the funds for the fixed entry cost ε and set up a new firm if and only if

$$\phi\pi(f,s) \geq \varepsilon. \tag{6}$$

This expression captures the "substitutability" between regulatory restrictions to entry and financial frictions emphasized by the existing literature on entry. Indeed, the effective set up cost for an entrant is ε/ϕ, which increases with entry regulations (a larger ε) and falls with enforcement (a larger ϕ). An important point of the paper, however, is that the effects of ε and ϕ on $\pi(f,s)$ are quite different, and this can break the substitutability between the two.[12]

Condition (6) implies that entry of new firms improves meritocracy. The reason is that talented managers generate higher profits ($\pi^H \geq \pi^L$) and are thus more eager to set up new ventures than untalented ones. Indeed, Assumption 2 affords us an additional, realistic simplification:

Lemma 2 *Untalented outsiders never set up new firms.*

This lemma follows directly from Assumption 2, condition (6), and the fact that $\pi^L = g\pi^H$.[13]

debts. This amounts to assuming limited liability on the part of the entrepreneur, so that creditors can only seek repayment by seizing the firm's property, or its profits. We studied the model under the assumption that entrepreneurs can also pledge their wage. The analysis is more complicated but our main results are unaffected.

[12] If condition (6) holds, so does the participation constraint $\pi \geq \varepsilon$. For entry by talented agents we also need $\pi^L \geq \varepsilon$ (otherwise talented agents would only take over existing firms). Again, this condition does not bind in equilibrium.

[13] If we relaxed Assumption 2, for ε low enough we could have untalented outsiders enter in equilibrium. However, entry by the untalented would only take place after all of the talented have entered, so it would still be the case that lower ε is associated with greater meritocracy.

3.4 Equilibrium

We now move to general equilibrium and study how the interaction of the entry market and the market for control determines the state of the economy (f, s), as a function of the policy vector (ϕ, ε). It turns out to be useful to define the following scenarios. An "All Sell" equilibrium is one in which all of the untalented incumbents sell their licences on the market for control, while a "No Sales" equilibrium is one where no incumbent sells his license. An "Entry" equilibrium is one where at least some of the talented outsiders set up new firms, while a "No Entry" equilibrium is one where none does. Then, we can establish the following result.

Proposition 1 *At every (ϕ, ε) an equilibrium (f, s) exists and is unique. Furthermore, if $\phi < g$ the equilibrium is No Entry-No Sales for $\phi < \varepsilon/\pi^H(\eta, \lambda)$, and Entry-No Sales otherwise. If $\phi \geq g$ the equilibrium is No Entry-All Sell for $\phi < \varepsilon/\pi^H(\eta, 1)$, and Entry-All Sell otherwise.*

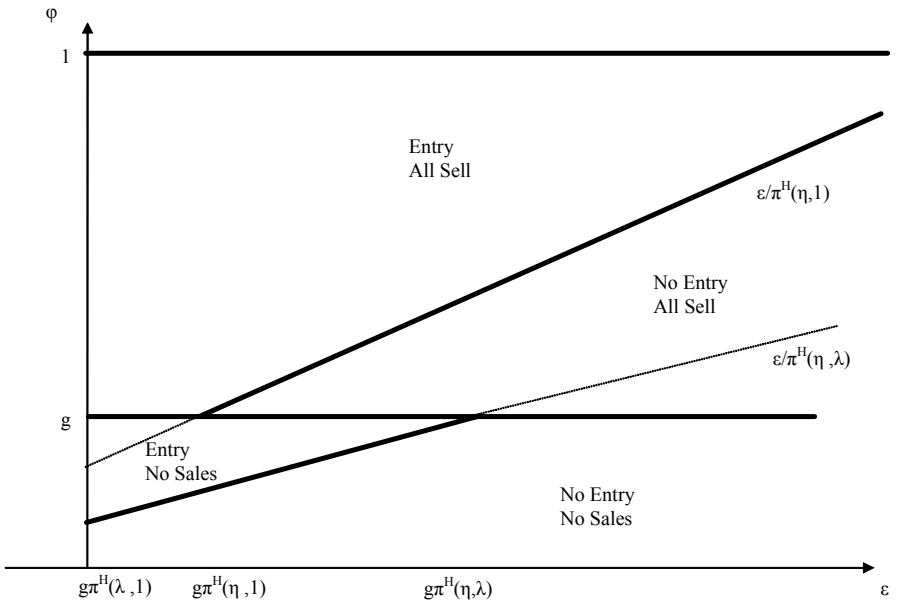

Figure 1: Illustration of Proposition 1

Figure 1, whose construction is also described in the Appendix, provides a graphical illustration of Proposition 1. The figure divides the (ε, ϕ) space in regions supporting outcomes with and

without entry, and with and without sales, respectively. When $\phi < g$ the market for control does not work and the equilibrium is always of the No Sales type: the difficulties of borrowing (low ϕ) are too severe relative to the gains from trade. Conversely when $\phi \geq g$ the market for control is active, and the equilibrium is All Sell, as all the untalented sell their firms.[14]

On either side of the $\phi = g$ line, entry occurs if ε is low and ϕ is high. Low ε makes entry affordable and high ϕ makes it easier to borrow to finance entry. This is the substitutability effect at work: as long as changes in ϕ and ε do not trigger changes in the control of incumbent firms, then both deregulation (lower ε) and legal reform (higher ϕ) enhance entrepreneurship. However, increases in ϕ that trigger a transition from No Sales to All Sell have very different implications for the number of entrants. If the transition is from No Entry, No Sales into No Entry, All Sell there is no change in the number of firms. More importantly, if the transition is from Entry, No Sales into either of the All Sell regions entrepreneurship actually declines. This is obvious from Figure 1 when the transition is from Entry, No sales to No Entry, All Sell, but the proof of Proposition 1 establishes that the same is true when the transition is to an Entry, All Sell equilibrium. When untalented incumbents begin selling their firms to talented outsiders, other talented outsiders who wish to enter see their prospective profits shrink, and this reduces entry despite the improved access to finance. If ε is initially sufficiently high, entry disappears altogether.

Figures 2 and 3 give a more detailed visual representations of the effects of reform on entrepreneurship and meritocracy. In both figures the two horizontal dimensions are ϕ and ε, (though in each figure the axes are rotated so us to maximize the visual informativeness of the graphs). In Figure 2 we plot entrepreneurship, f, and in Figure 3 we plot meritocracy, s. Specific parameter values have been chosen to draw these figures, but the proof of Proposition 1 makes it clear that the qualitative properties are independent of this particular choice.[15] If the economy starts in the No Entry-No Sales region, reductions in ε and increases in ϕ have initially no effect on either f or s. Eventually, however, both deregulation and legal reform begin to trigger entry by the talented. As a result, for $\phi < g$ legal reform and deregulation eventually increase both entrepreneurship (f) and meritocracy (s). A similar scenario arises when initially $\phi \geq g$. Now the equilibrium in the

[14] A notable feature of Proposition 1 is that there are no equilibria where only some, but not all, of the untalented incumbents sell their licenses. The intuition for this is that an untalented incumbent's incentive to sell his license is invariant to the number of other incumbents who sell their license. In particular, there are two general equilibrium effects: on the one hand, if more incumbents sell, the value of the license falls, thereby reducing outsiders' incentive to buy. On the other hand, the incumbents' payoff from not selling also falls, which increases incumbents' incentive to sell. In our model these two effects cancel each other. As a result, if one untalented incumbent wishes to sell, then all wish to sell.

[15] The parameters in the figures are $\alpha = 0.33$, $g = 0.8$, $\eta = 0.10$, and $\lambda = 0.20$.

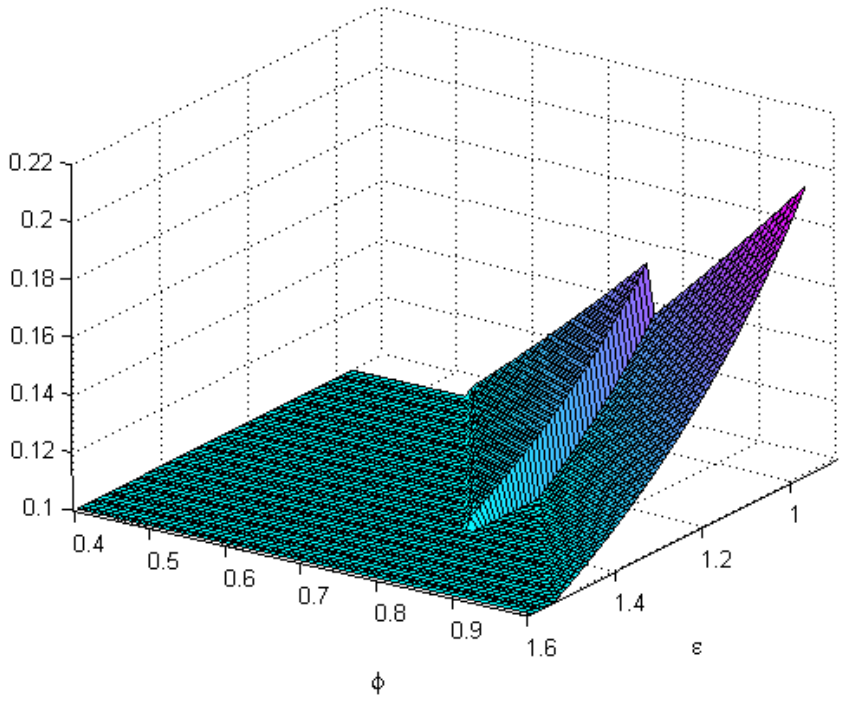

Figure 2: Entrepreneurship as a function of ϕ and ε.

market for control is All Sell. If the economy starts from No Entry, reductions in ε and increases in ϕ eventually trigger entry by the talented and thus increase entrepreneurship (meritocracy is already maximized because we start in an All Sell equilibrium). However, when legal reform causes a transition from $\phi < g$ to $\phi \geq g$, meritocracy jumps up from λ to 1, but entrepreneurship is at best unchanged, and indeed for many vaues of ε it jumps down.[16]

Hence, when the role of the market for control is taken into account then legal reform and deregulation are no longer substitutes: the former exerts a much weaker effect on entrepreneurship and may even reduce it**.** Deregulation cannot reduce entry, as it increases meritocracy *because* it fosters entry by the talented, not by affecting the market for control.[17]

We summarize this discussion as follows:

[16] Since entrepreneurship is non-monotonic in ϕ an interesting question is whether f is higher when $\phi = 1$ or when $\phi = g$ (or rather just below g). The answer depends on parameter values. Hence, it is possible that the entrepreneurship-maximizing level of ϕ is g, not 1.

[17] To be precise, we find that the net general equilibrium impact of deregulation on the market for control is zero. Indeed, deregulation reduces both the profits of untalented incumbents (thus increasing their incentive to sell) and the profits that buyers would make (thus reducing their willingness to buy).

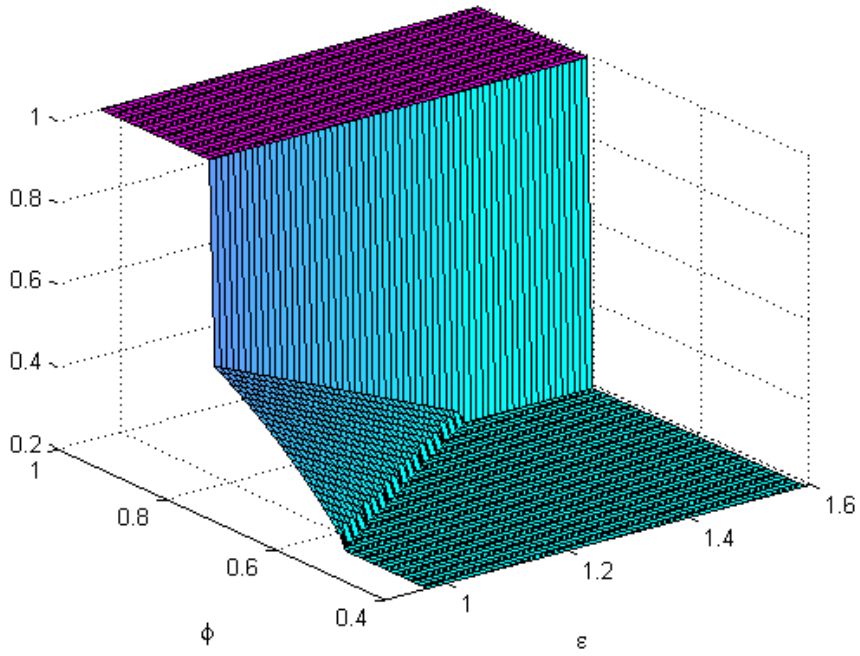

Figure 3: Meritocracy as a function of ϕ and ε.

Corollary 1 *Meritocracy is (weakly) decreasing in ε and increasing in ϕ. Entrepreneurship is (weakly) decreasing in ε. Entrepreneurship is (weakly) increasing in ϕ for $\phi < g$, and for $\phi > g$, but jumps down discretely at $\phi = g$.*

3.5 Welfare

It is clear that any reform that increases meritocracy without reducing entrepreneurship, or entrepreneurship without reducing meritocracy, is welfare improving. However, Corollary 1 implies that sometimes legal reform improves one at the expense of the other. We therefore need to study formally the welfare effects of reform. Recall that our welfare criterion is given by equation (5). We then have the following reassuring result:

Corollary 2 *Both deregulation and legal reform (weakly) increase social welfare. The first best is attained if and only if $(\varepsilon = k, \phi = 1)$.*

Corollary 2 is illustrated by Figure 4, which is read in a manner similar to the previous figures, except that the vertical axis measures social welfare. Importantly, in our model the first best is

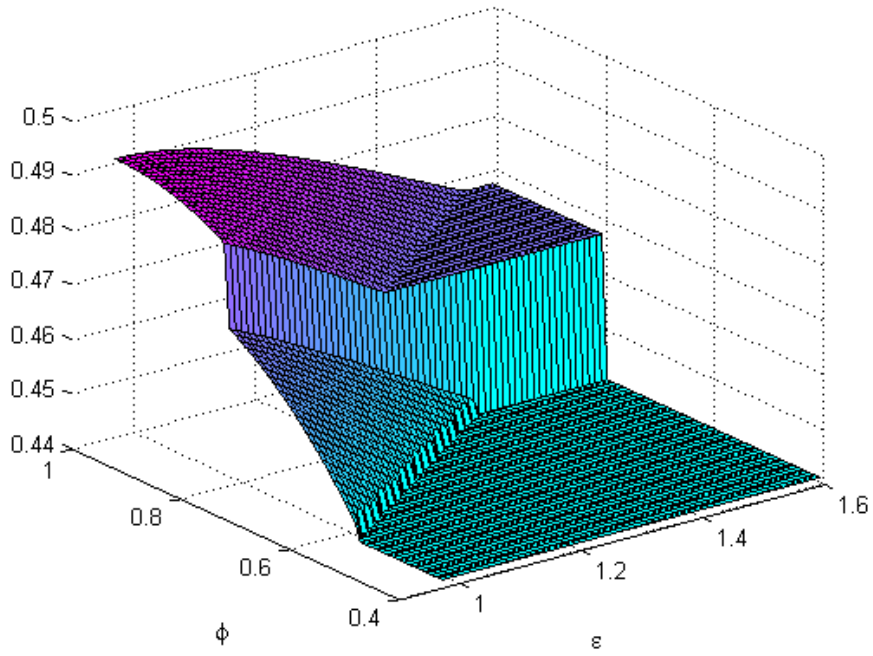

Figure 4: Welfare as a function of ϕ and ε.

attained if and only if the legal system is perfectly efficient and there are no regulatory entry barriers. Imperfect enforcement or excessive entry barriers will lead either to failures of entrepreneurship, $f < \lambda$, or to failures of meritocracy, $s < 1$, or both. As a result, a government's ability to foster efficiency depends on its ability to undertake deregulation, legal reform, or both. We will turn to this issue shortly.

3.6 Discussion

Our results on the effects and benefits of lower entry barriers and better contracting institutions are consistent with a variety of empirical findings on the effects of reforms in developing and transition economies. For example, one common finding of the empirical literature on enterprise restructuring in transition is that better financial-contracting and greater product market competition improve firm-level Total Factor Productivity [e.g. Djankov and Murrell (2002)]. This is consistent with our predictions that legal reform and deregulation (which is synonimous of greater competition) increase the quality of management. In addition, Klapper et al. (2004) and Fisman and Sarria-Allende (2004) find a sizable negative effect of regulatory entry barriers on firm entry. This is

consistent with our result that deregulation increases entrepreneurship.

Overall, in terms of the macroeconomic efficiency of the country, our Corollary 2 stresses the importance of pro-competitive policies and of the rule of law for the performance of transition economies, confirming the idea that privatization alone may be insufficient. Our model can help rationalize the view that the "great divide" between successful and unsuccessful transitions was precisely due to the ability of certain countries, such as Poland, to strengthen pro-market institutions [Berglof and Bolton (2002), Estrin (2002), Beck and Laeven (2006)]. In countries where entry barriers forced many potential entrepreneurs to remain "latent," and where weak mechanisms for contract enforcement entrenched incumbent and inefficient managers, not much restructuring was to be expected from formerly state-owned enterprises. As a result, our analysis suggests that a key attribute of a successful reform strategy is its ability to foster firm creation and managerial turnover.

Although our model is consistent with the empirical findings discussed above, it also contains the novel insight that – by activating the market for control – legal reform may improve meritocracy but deter entry. In Section 5 we show that this specific effect of legal reform has important political-economy implications; in Section 6 we attempt a test of this prediction.

4 Mergers

In our baseline model, legal reform expands the opportunities of talented outsiders by making it easier for them to set up new firms or to gain control of existing ones. In practice, legal reform also expands the opportunities of talented incumbents, by increasing their ability to take over badly managed firms. So far, we ruled this possibility out by assuming that each individual can only manage one project. We now relax this assumption and study the impact of legal reform in a version of the model where incumbent firms can merge.

The simplest way to allow for mergers is to reinterpret licenses as licenses to run a plant, as opposed to a firm, so that firms can be multi-plant, as long as they own multiple licenses. This introduces a distinction between the number of plants, which we call o, and the number of firms, which we continue to call f, where $f \leq o$. For simplicity, and to minimize deviations from the baseline model, we assume that the initial η licenses are distributed randomly, so each incumbent starts out with just one plant (in other words, the initial number of firms equals the number of plants, η). Always for simplicity we also assume that any potential entrant enters with just one

plant, so the final number of plants, o, equals the number of entrants plus the initial stock η. It seems realistic that entrants will "start small," though we do not model explicitly the reasons for this. At any event this allows us to focus on mergers among incumbents as the only way that a firm will be constituted by multiple plants.[18]

Now it is immediate that given our *plant-level* production function $\theta l^{1-\alpha}$, the *firm-level* output of a firm that operates n plants and a total of $\tilde{l}$ workers spread across its plants is

$$y = \theta n^{\alpha} \tilde{l}^{1-\alpha}.$$

Not surprisingly, when firms can replicate their operation in multiple plants they enjoy constant returns to scale. This property is very convenient because it makes the rest of the analysis very close to the baseline model. In particular, wages are the same as in (1), with o instead of f, and s reinterpreted as the fraction of well-managed *plants*; and a firm's total revenues minus labor costs are $y - w\tilde{l} = n\pi^i$, where π^i is the same as in (2) and (3) with, again, o instead of f. Hence, a manager's profit rate π^i is multiplied by the total number of plants he owns.

The version of the model that allows for mergers turns out to be harder to solve in closed form than the baseline model. The exception is the special case where $\lambda = 1/2$. Since we think this case conveys most of the relevant insights, we focus on it for the rest of the section.

Proposition 2 *When mergers are allowed, and $\lambda = 1/2$, at every (ϕ, ε) an equilibrium (f, s, o) exists and is unique. Furthermore, if $\phi < g/2$ the equilibrium is No Entry, No Sales for $\phi < \varepsilon/\pi^H(\eta, \lambda)$, and Entry, No Sales otherwise. If $\phi \geq g/2$ the equilibrium is No Entry, All Sell for $\phi < \varepsilon/\pi^H(\eta, 1)$, and Entry, All Sell otherwise. In All Sell equilibria each talented incumbent buys out one and only one untalented incumbent, and outsiders become entrepreneurs only through entry.*

Proposition 2 is almost identical to Proposition 1, implying that allowing for mergers does not alter the main properties of the model (at least when $\lambda = 1/2$). In particular, the graphical

[18] Implicitly this rules out the possibility that talented incumbents purchase plant-building licenses from the government. In other words we assume that only outsiders can set up new plants and that the supply of plants for mergers is limited by the number of incumbent plants. This assumption can be justified as follows. Imagine that each plant embodies the organizational capital that its founder has been able to infuse into it. Organizational capital is the set of formal and informal relationships that are at the core of the organization. Creating this organizational capital is distinct from running the firm once the capital is in place, and indeed once the capital is in place, e.g. in a plant, it is transferrable. We assume, therefore, that each agent only has it in himself to create the organizational capital embodied in a firm once in his lifetime, that such organizational capital takes one period to become embodied in the plant, and that if he is going to operate a multi-plant firm the organizational capital of plants other than his initial one will have to be created by others.

representation of the equilibrium under mergers is essentially unchanged from Figure 1, except for the fact that the horizontal border between No Sales and All Sell equilibria is now given by the line through $\phi = g/2$, instead of g. This means that when mergers are possible the market for control becomes active for a broader range of contract-enforcement parameters ϕ. This is because talented incumbents are in a better position to take over other firms than outsiders, as they can pledge their own firms as collateral towards the purchase of the target firm. As a result, it is not surprising that the market for control is "less demanding" in the required level of ϕ needed for successful takeovers.

Our key Corollaries 1 and 2 apply to the model with mergers without amendment. Entrepreneurship decreases in ε, but can increase or decreases in ϕ depending on whether the change in ϕ activates the market for control. Both reforms improve welfare and the first best is attained at and only at $(\varepsilon = k, \phi = 1)$. Quantitatively, however, a legal reform shifting the equilibrium from No Sales to All Sell causes a sharper reduction in the number of firms f than in the case without mergers. This is best seen when the economy moves from No Entry, No Sales to No Entry, All Sell: now f falls from η to $\eta/2$, while in the case without mergers it stayed constant at $f = \eta$. Allowing talented incumbents to take over the plants of untalented incumbents reduces f because the same number of plants can be concentrated in fewer firms.

5 The Political Economy of Deregulation and Legal Reform

Corollary 2 shows that the first best in our model is only attained under full legal reform and full deregulation $(\varepsilon = k, \phi = 1)$. Thus, in a world without political frictions the optimal reform strategy would be to follow a big bang approach where both reforms occur at once.

Unfortunately, no country in the world is governed by unconstrained benevolent social planners, much less those developing and transition economies where entrepreneurship and meritocracy fail particularly egregiously. In practice reform typically occurs, if it occurs at all, gradually, partially, and slowly. Some of the reasons why reform is piecemeal are technical. Policy makers have limited energy, time, and attention span. But the most important reason why reform is partial or gradual is the opposition of enthrenched interests. Even a reform minded government may fail to implement the first best when confronted by opposition from the reform's losers. To design an optimal reform strategy in the presence of political constraints we must answer questions such as: which of legal reform and deregulation is a more politically feasible one-shot reform? Can policy makers ultimately overcome political constraints and attain the first best by optimally sequencing these reforms?

In this section we assume that there is a status quo (ε_0, ϕ_0), and investigate the relative political feasibility of various reforms (ε', ϕ'), where $(\varepsilon' \leq \varepsilon_0, \phi' \geq \phi_0)$. To fix ideas and keep things straightforward we assume:

Assumption 3: In the status quo the economy is in a No Entry-No Sales equilibrium.

With reference to Figure 1, the initial state (ε_0, ϕ_0) is a point in the lower-right region, where contract enforcement is lousy, so that incumbents hold on to their firms, and entry costs are large, so that outsiders do not set up new firms. In other words we look at economies that badly need reform, as indeed a large majority of economies in the world are widely deemed to do. However, there is no substantial loss of generality in focusing on No Entry-No Sales equilibria: it is easy to use the insights developed in this baseline case to extract lessons about the feasibility of reform starting from alternative initial states.

5.1 Winners and Losers

Any analysis of the political feasibility of reform must begin by identifying the winners and losers of alternative reform proposals. We do this beginning with the case in which mergers are not allowed. It turns out that in order to fully characterize the effects of legal reform on untalented incumbents' payoffs we need to be specific about the process of determination of the price p at which licenses are traded.[19] In particular, we make the following assumption:

Assumption 4: In All Sell equilibria the price of a license maximizes sellers' payoffs.

This is akin to assuming that sellers have all the bargaining power. This is a plausible assumption: in All Sell equilibria there is excess demand for licenses, and buyers are rationed (this is because $\lambda > \eta$), so it is natural that the sellers will capture all the available rents. Nevertheless, Assumption 4 is not crucial for our results: all that is needed is that the price of licenses is increasing in a talented agent's ability to pay for it, $\phi\pi^H$.

We now can state the following proposition.

Proposition 3 *When mergers are not allowed, (i) Any deregulation and any legal reform weakly benefits outsiders. (ii) Any deregulation and any legal reform weakly hurts talented incumbents. (iii) Any deregulation weakly hurts untalented incumbents. There exists an* $\widetilde{\varepsilon}_1$ *such that, for* $\varepsilon \leq \widetilde{\varepsilon}_1$,

[19] Up to now all that was necessary was to show that a price p that satisfied both parties' participation and incentive-compatibility constraints existed. In practice, when such a price exists, it is not unique, and the specific price the parties will agree upon depends on each side's bargaining power.

any legal reform weakly hurts untalented incumbents, and for $\varepsilon > \widetilde{\varepsilon}_1$ *a legal reform setting* $\phi' = 1$ *benefits untalented incumbents.* $\widetilde{\varepsilon}_1 \in [k, \pi^H(\eta, 1))$.

Both deregulation and legal reform benefit outsiders, because the real wage – the lower bound on their payoff – increases in f and s. In addition, these reforms allow outsiders to become entrepreneurs and earn the profits associated with running firms.[20] By contrast, talented incumbents are always losers from both deregulation and legal reform. These reforms increase the number and/or quality of an incumbent's competitors, eroding its profits.

The "swing" constituency in shaping the political feasibility of legal reform and deregulation is the group of untalented incumbents. Just like talented incumbents, untalented ones lose from any deregulation because it increases the number and quality of their competitors. However, legal reform has two opposing effects on untalented incumbents' payoffs. As in the case of talented incumbents, it erodes, through greater meritocracy and increased entry, the intrinsic value of owning a license.[21] On the other hand, by activating the market for control, legal reform allows the untalented incumbent to capture some of the extra value brought to the license by a talented manager. Furthermore, the larger the increase in ϕ, the higher is the price of a license, so such beneficial effect increases in the extent of legal reform.

In general, the balance of these effects depends on parameter values, as well as on the extent of the proposed reform. The proposition establishes conditions under which untalented incumbents support a full legal reform, or $\phi' = 1$. If ε_0 is relatively small, then entry under full legal reform is massive, the erosion of the licence's value prevails, and untalented incumbents lose from legal reform. If ε_0 is relatively large, full legal reform becomes attractive to untalented incumbents. The reason for this is that entry by outsiders is less responsive to legal reform for large values of ε (a glance at figures 1 or 2 confirms this**)**. Note however that the set of possible values for the threshold $\tilde{\varepsilon}_1$ includes the minimum possible value of ε_0, or k. Hence, under certain values of the other parameters, the rent-capturing benefit of legal reform dominates the rent-eroding effect at all levels of ε_0.[22]

[20] This does not mean, however, that outsiders typically prefer drastic reforms (e.g. a full dergulation setting $\varepsilon = k$) because they may still want some entry restriction to protect their profits in the event they become entrepreneurs. In general, the optimal deregulation or legal reform from the standpoint of an outsider trades off the resulting wage increase, with the reduction in expected profits he experiences once taking into account the equilibrium probability of becoming an entrepreneur. Still, the proposition establishes that they always prefer any reform to no reform.

[21] Recall that in the status quo there is no entry, so legal reform can either leave the number of firms unchanged, or increase it.

[22] The statement of the proposition, which is dictated by a concern with concision, does not do full justice to the possibility that untalented incumbents prefer legal reform to the status quo. As we show in the Appendix, the payoff

Before drawing the political-economy implications of Proposition 3, we establish the winner-loser status of various groups when mergers are allowed (where we reinstate the assumption $\lambda = 1/2$).

Proposition 4 *When mergers are allowed, and $\lambda = 1/2$, (i) Any deregulation and any legal reform weakly benefits outsiders. (ii) Any deregulation weakly hurts talented and untalented incumbents.* ***(iii)*** *There exists an $\widetilde{\varepsilon}_1$ such that, for $\varepsilon \leq \widetilde{\varepsilon}_1$, any legal reform weakly hurts untalented incumbents, and for $\varepsilon > \widetilde{\varepsilon}_1$ a legal reform setting $\phi' = 1$ benefits untalented incumbents. $\widetilde{\varepsilon}_1 \in [k, \pi^H(\eta, 1))$. (iv) If $\varepsilon_0 \geq 1/2\pi^H(\eta, 1)$, there exists a legal reform ϕ_2', $\phi_2' \in (g/2, 1/2)$, that benefits both talented and untalented incumbents.*

The only difference between Propositions 3 and 4 is in the effects of reform on the payoffs of talented incumbents, or part (iv). If initial entry barriers are sufficiently high, one can find a meritocracy-enhancing legal reform that benefits them (and untalented incumbents at the same time). The reason is that legal reform allows talented incumbents to leverage their wealth and expand their scale of operation (and profits) by taking over firms run by untalented agents. As in the case of untalented incumbents, this benefit of legal reform is counterbalanced by the erosion in the value of licenses, which is more severe when entry is sensitive to legal reform.[23]

Such unanimous support only occurs under admittedly special conditions, and it is thus hard to attain in practice. Yet, Proposition 4 shows that the market for control allows all incumbents, not only untalented ones, to internalize some of the benefits of legal reform. Deregulation and legal reform differ dramatically in how they endogenously distribute the efficiency gains following reform. In addition to improving efficiency, deregulation redistributes resources away from incumbents. In contrast, legal reform allows incumbents to internalize some of the efficiency gains. Highlighting the role of the market for control has thus important consequences for the relative political feasibility of legal reform and deregulation, as the next subsection shows in detail.

5.2 Direct Democracy

Having established who wins and who loses from reform, we can, so to speak, "count votes." In this section we take the following "direct democracy" view: *the political feasibility of a reform*

function from legal reform for untalented incumbents is an increasing function of ε_0, has a minimum at $\varepsilon_0 = k$, and a maximum at $\varepsilon_0 = \pi^H(\eta, 1)$ (beyond which point it remains constant). We show that the maximum always exceeds the payoff under the status quo, and the minimum may exceed the status-quo depending on other parameters.

[23] Note that $\varepsilon_0 \geq 1/2\pi^H(\eta, 1)$ is a sufficient, not a necessary, condition for getting the talented on board. A legal reform enhancing both the welfare of the talented and the untalented may exist also for lower values of ε_0.

is increasing in the number of agents who benefit from it. If reform proposals are decided in referenda, agents will tend to support them when they perceive themselves as doing better under reform than under the status quo. Consequently, the larger the number of people who benefits from a reform, the more likely the reform is to pass. This is the approach taken in most of the political-economy literature on reform: a reform minded government is in control of the agenda, but the most politically viable reform is the one minimizing the number of losers.[24]

Given our definition of political feasibility, Propositions 3 and 4 directly imply:

Corollary 3 *(i) Legal reform is always at least as politically feasible as deregulation, and strictly more feasible for at least some parameter values. (ii) The political feasibility of legal reform is increasing in* ε_0.

For relatively low values of the status quo level of barriers to entry the political landscape takes the same shape in response to both deregulation and legal-reform proposals: outsiders are in favor, incumbents are against. The two types of reform are equally feasible. But for ε_0 large enough the coalition of incumbents breaks down, and the untalented swing in favor of legal reform, while still opposing deregulation. When mergers are allowed, further increases in the initial entry cost ε_0 induce a real landslide in favor of legal reform, as talented incumbents also turn in favor of legal reform. In the latter case there exists a legal reform that is a Pareto improvement over the status quo.

Part (i) of Corollary 3 is one of the key results of the paper: political opposition to legal reform should be less strenuous than political opposition to deregulation. Deregulation enhances efficiency through entry, thereby destroying the rents of all the incumbents. For this reason it is politically costly. Legal reform enhances efficiency primarily by fostering the reallocation of existing firms. Hence, it allows incumbents to share in the benefits by selling their firms or by expanding their scale of operation. In other words, legal reform *endogenously* compensates incumbents for the loss in value of their firms. Generally speaking, this suggests that "Coasian" reforms that foster private contracting – such as legal reform – are more likely to be politically viable than purely

[24] Strictly speaking, in a referendum a reform passes if it clears the required threshold of votes in favor (usually 50%), so if two reforms are both supported by more than 50% of voters they are equally politically feasible even if one benefits from much broader support than the other. However, any realistic model of the political process leading to the choice of which reform to put up for a referendum, of voters' decision to participate in the referendum, and especially of the random and idyosincratic component in individuals' voting decisions will feature the property that the size of the majority matters. We feel that explicit modelling of these considerations would add very litttle to the message of this paper.

rent-dissipating reforms like deregulation. As far as we know this is a novel insight in the literature of reform, where it is common to assume that there is no way of compensating losers.

In reality, successfully enacting and implementing reforms often requires more than simply creating a majority of winners, especially if the losers are politically powerful. In Section 5.4 we address this issue by assessing the robustness of our finding to allowing the reform's losers to form anti-reform lobbies. Nevertheless, Corollary 3 has two important lessons on its own. First, legal reform is more feasible than deregulation because fewer incumbents are willing to use their political power (whatever its source) to oppose it. Second, legal reform allows for an edogenous, nondistortionary, compensation of some of the losers. This last aspect suggests that including legal reform in an optimal reform package may greatly reduce the cost of compensating losers and thus of overcomimg political opposition.

Before proceeding, we linger for a moment on part (ii) of the Corollary, which offers an interesting insight in its own right. Namely, the political opposition to reform becomes progressively weaker the further away the initial state is from the first best (recall that the first best calls for minimizing ε). There is an echo here of the often noted "things have to become worse before they can get better" phenomenon. The most radical reforms often take place in countries that are in deep crisis. Closer to our focus, many transition economies in Europe have leapfrogged the long-established capitalist societies of Western Europe in various dimensions of reform. Indeed, the corollary suggests that a clever government may lure incumbents into signing off to legal reform by simultaneously increasing entry barriers. This makes incumbents better off without making outsiders worse off. In this sense, the political feasibility of legal reform is independent of the initial level of entry barriers.[25]

5.3 Gradual Reform

Corollary 3 offers an important insight on how to choose the path of least resistance towards enhancing the efficiency of the economy. In this subsection we further develop this theme by looking at a possible multi-stage trail towards the first best.

We make the following minimal modification to our baseline setup. The economy lasts for two periods, and agents have two-period lives. The sequence of events and feasible actions within each

[25] This may also give hope to despairing students of France and other continental European economies: their tendency to add instead of removing regulation is often viewed as going in the wrong direction, but perhaps it is all a clever plot to bring ε above $\tilde{\varepsilon}_1$, so that other reforms become possible.

period are identical to those of the baseline model. The initial allocation of licenses *in the first period* also continues to be random. The only change is that the initial allocation of licences *in the second period* is the result of transfers of licenses and entry in the first. Thus, the incumbents in the second period are the incumbents of the first period, less those who sold a firm, plus those who bought or set up a firm. At the beginning of the first period, the government proposes a reform path $(\varepsilon', \phi'; \varepsilon'', \phi'')$, where ε' and ϕ' are the institutions prevailing in period 1 while and ε'' and ϕ'' are the institutions of period 2, if the reform is approved. If the reform is rejected the status quo prevails in both periods. In assessing their support or opposition to reform agents compare the present value of their income under reform and under the status quo, where second-period income is discounted at rate β. The notion of political feasibility is the same as in the previous subsection.[26]

Given this setup, we can state the following result.

Corollary 4 *(i) The gradual reform* $(\phi' = \phi'' = 1, \varepsilon' = \varepsilon_0, \varepsilon'' = k)$ *is always at least as politically feasible as the "big bang" reform* $(\phi' = \phi'' = 1, \varepsilon' = \varepsilon'' = k)$*, and strictly more feasible for some parameter values. (ii) The political feasibility of gradual reform increases in* ε_0 *and declines in* β*.*

Like Corollary 3, Corollary 4 holds both when mergers are ruled out and when they are allowed (with $\lambda = 1/2$). The result is an intuitive consequence of Propositions 3 and 4, and Corollary 3.

In the first period the main swing constituency, untalented incumbents, may favor full legal reform over the status quo. If this passes, by the beginning of the second period all of these agents have sold their firm, and their income coincides with the aggregate salary. Hence, at this point they have nothing to lose, and everything to gain, from deregulation. In other words a gradual reform allows untalented incumbents to realize the full value of their licenses in the first period, and the full value of their labor effort in the second period. In contrast, a big bang reform destroys too much of the value of licences in the first period, and is therefore detrimental to this constituency. The only complication is that the expectation of deregulation in the second period reduces somewhat the price of licenses in the first period. This effect is more pronounced the less agents discount the future, which is why the relative political feasibility of gradual reform declines in β. The political feasibility of gradual reform is maximal when mergers take place. In this case, legal reform can actually reduce the number of firms in the first period, thereby increasing the value of untalented

[26] We assume that agents cannot save. This assumption is irrelevant in the current model, but it simplifies a lot our analysis of the model of Section 5.4. Notice that, given the linear utility function, people do not have a consumption smoothing motive for savings.

incumbents' firms, and hence their political support.[27,28]

These results imply that there exists a dynamic complementarity between legal reform and deregulation. By optimally choosing the structure and timing of efficiency-enhancing reforms, reformers may outmaneuver the opposition to attain full efficiency. The debate on reforms may often take an *either/or* flavor at a given point in time, but in practice one type of reform today may saw the seeds of further reform in the future. The important thing is to find a reform package that endogenously compensates the losers, without requiring the government to provide direct transfers that are typically not credible, too costly, or simply infeasible.

5.4 Lobbying

We have established the greater political feasibility of legal reform over deregulation by appealing to the fact that untalented incumbents may sometimes find it in their interest to support the former, but never the latter. Our argument was based on a sheer head-count of the constituencies pro- and against various reforms. In many situations, however, mere head counts may be very imprecise measures of political feasibility, because certain entrenched interests wield disproprotionate resources which they can mobilize in the political arena to block reforms that threaten their interests, even when these reforms benefit a majority [Olson (1965), and, with particular reference to deregulation, Stigler (1971)]. In our context the more likely group to mount such a challenge are the talented incumbents, who tend to lose from reform (particularly when mergers are not allowed) and have a lot of economic muscle (thanks to the rents they earn). This section looks at the implications of our model when talented incumbents can use an anti-reform lobby.[29]

We assume that talented incumbents can pool resources for the purpose of buying votes against

[27] Corollary 4 assumes that the government can commit to the gradual reform ex-ante. Such commitment might be achieved in practice by passing the reform as a constitutional amendment, as constitutional revisions often require larger majorities. More generally, there is often a status quo bias which implies that opposing a reform before it is approved is easier than reversing it once it has been approved. In the case at hand, the gradual reform is initially opposed only by talented incumbents. In contrast, reversing the second-period deregulation requires overcoming the opposition of all outsiders. The time consistency of gradual reform is strenghtened in the case of mergers. Now the first period legal reform reduces the number of second-period incumbents. As a result, deregulation is more feasible in the second rather than in the first period, confirming the complementarity between current legal reform and future deregulation.

[28] If managerial talent were not persistent, one might conjecture that even talented incumbents may support legal reform today, so as to be able to sell their firms to better managers in the future. Studying this case is beyond the scope of this paper. However, it seems that talented incumbents would have all the incentives to wait and vote in favor of legal reform in the second period, when they turn out to be untalented. This would allow them to sell their firms without exposing themselves to tougher competition in the first period. See Pouyet and Salanié (2005) for a survey of the literature on resale markets, where this issue is relevant.

[29] Nothing of substance changes if untalented incumbents also have their own lobby.

reform, if doing so enhances their payoffs (net of contributions to the lobby). There are no collective-action problems within the lobby (otherwise we return to the direct democracy model): a benevolent (from the point of view of talented incumbents) lobbyist collects contributions from the lobby's members and uses them to induce agents belonging to other groups to vote against reform proposals. Whether this vote-buying is effective depends on how many votes are needed to pass reform proposals. Hence, in this subsection we need to be more precise about the exact rules of the political game. We assume that reforms are put to a referendum and pass if 50%+1 of agents vote in favor; all agents vote; and agents support reform if and only if the reform passing is in their best interest.[30]

With these assumptions, the vote-buying takes place as follows. The lobbyist computes the number of votes he needs to buy to block reform, and the associated payments insuring compliance by the agents whose votes are being bought. If this total cost does not exceed the benefits of having the reform blocked, it then approaches the corresponding number of voters and promises a certain payment conditional on the reform not passing. The conditionality on the reform not passing assures that the agents being approached comply with their promises (if the lobby cannot commit to pay then once again we revert to the direct democracy case).

It turns out that the analysis of this case is somewhat involved. A great simplification is achieved by making the following assumptions:

Assumption 3: $\eta < 1/2, \lambda = \alpha = 1/2$

The assumption $\eta < 1/2$ implies that in the absence of lobbying all efficiency-enhancing reforms would pass: outsiders are a majority. The assumption $\lambda = 1/2$ implies that – in order to block a reform – talented incumbents only need to buy the votes of untalented outsiders, which are the cheapest group to buy: the coalition of talented incumbents plus (bought) untalented outsiders controls $\eta/2 + (1-\eta)/2 = 1/2$ votes. Allowing for $\lambda > 1/2$ would instead highly complicate the analysis because, depending on the gains and losses of different groups, talented incumbents would have to decide whether to bribe also some talented outsiders, untalented incumbents, or both. The assumption $\alpha = 1/2$ only simplifies the algebra.

Since we have assumed $\lambda = 1/2$, we focus on the case with mergers. We can then state the following result.

[30] An alternative interpretation is that decisions over reform are taken by a legislature, where all groups are represented proportionately to their size in the population. Each legislator maximizes his income, which, in the absence of vote-buying (now interpretable as bribes), coincides with the income of any other agent in his group.

Proposition 5 *Suppose that mergers are allowed, and the status quo* (ε_0, ϕ_0) *is such that untalented incumbents support a reform* $(\varepsilon' = \varepsilon_0, \phi' = 1)$*, while talented incumbents oppose all reforms. Then there exist parameter values such that any deregulation* $(\varepsilon' < \varepsilon_0, \phi' = \phi_0)$ *is blocked, while there are no parameter values under which a full legal reform* $(\varepsilon' = \varepsilon_0, \phi' = 1)$ *can be blocked.*

The proposition says that *even when incumbents are a minority*, a well-organized incumbent lobby may be able to block deregulation through vote buying. Instead, at least when the incumbent group is split between pro reform untalented and anti-reform talented, the latter cannot stop legal reform from occurring. This is due to two reasons, one old and one new to the version of the model with lobbying. The old reason is that if ε_0 is large enough, untalented incumbents favor legal reform, so the number of outsiders whose votes need to be bought to block legal reform is larger than the number of votes needed to defeat deregulation. The new reason is that the loss suffered by talented incumbents under legal reform is less severe than their loss under deregulation, implying that their willingness to pay for anti-legal reform votes is less than their willingness to pay for anti-deregulation votes.[31]

To summarize, our analysis of the political economy of deregulation and legal reform yielded two basic messages. First, legal reform is politically more viable than deregulation because it obtains the support of some or all of the incumbents. Generally speaking, reforms improving the scope of voluntary transactions in the market mobilize greater political support because – rather than undermining the rents of incumbents – they allow winners to compensate losers. Second, there is a dynamic complementarity between these reforms, in that the use of legal reform in the short run may help support future deregulations.

6 The Market for Control: Some Evidence

The most distinctive positive and political economy results of our model are linked to the market for control. The existence of this market breaks the substitutability between legal reform and deregulation for two reasons: first, better contract enforcement (following legal reform) directly boosts productivity by fostering the reallocation of control over existing firms; second, the improved productivity of incumbent firms exerts an adverse impact on the creation of new firms. In this section we look for some empirical support for these predictions.

[31] The second mechanism suggests that sometimes legal reform may be harder to block than deregulation even when incumbents are united in their opposition to both, so that the number of votes required to block a legal reform is the same as the number required to block a deregulation.

Given the obvious identification problems involved, it would be hopelessly naive to run a cross-country regression of firm productivity or firm entry on an index of the quality of contract enforcement: the likelihood that the results would be colored by omitted-variable bias would be very large. In addition we could not claim with confidence that the effects uncovered are driven by the market for control.

One way to make progress on empirical identification is to exploit variation across industries. Certain industries are characterized by high levels of turbulence in technology, competitive environment, or demand conditions, making old management obsolete fast and requiring frequent managerial turnover. Other industries enjoy relative low levels of complexity and change, so that relatively untalented management can last a relatively long time by applying old and tested formulas. Now if different industries differ in the importance of the market for control, the effects highlighted in our model should be more prominent in those where the market for control is more important. Specifically, improvements in contract enforcement should increase productivity more, and entry less, in industries where the market for control is more important.

This suggests that a test of our model can be devised along the lines of Rajan and Zingales (1998), by regressing a proxy for the productivity (entry activity) of industry i in country c on the interaction between a proxy for the "natural" importance of the market for control in industry i, and a measure of the quality of contractual enforcement in country c. A positive (negative) coefficient on this interaction says that improvements in contract enforcement have a particularly strong effect on productivity (entry) in industries where the market for control is important, and is therefore consistent with the predictions of our model.

The advantages of this simple test are twofold. First, it looks for evidence of a specific channel (the market for control) by which contract enforcement affects productivity and entry, thus providing a stronger test for causality. Second, it allows for the inclusion in our regression of country and industry fixed effects, thereby allowing us to control for all omitted country- and industry-variables that may be correlated, repsectively, with the industry-level measure of the importance of the market for control, and the country-level measure of contract enforcement. Hence. only omitted variables that are correlated with the interaction between the two can bias the results. While this does not eliminate all issues of endogeneity, it certainly goes most of the way. To further assuage concerns with endogeneity we also include in our regressions other industry-country interactions that may conceivably be correlated with the one between importance of control and enforcement.

We proxy the importance of the market for control in an industry by the level of M&A activity,

i.e. by the frequency with which control over firms changes, in that industry in the U.S.. The idea is that U.S. market institutions are relatively frictionless (i.e. the U.S. has good contract enforcement), so frequent changes of control in a U.S. industry signal a high natural or technological importance of the market for control in that industry. In countries with highly imperfect institutions, observed M&A activity will instead depend both on the "natural" importance of the market for control, and on the level of contract enforcement. Only near the first best are M&As a clean proxy for the "natural" amount of managerial turnover. Under the further assumption that such technological importance of the market for control carries over to ohter countries, we examine whether industries where the market for control is more important exhibit higher productivity and lower entry in countries that have better contract enforcement. The precise variable we use to measure the importance of the market for control in an industry is the number of M&A deals in a US industry over the period 1977-1997, normalized by the average number of firms in that industry over the same period. The source for the M&A data is the Thomson Financial Securities Worldwide M&A Database.

For the country-level measure of contract enforcement we use a measure that is standard in the literature. It measures "the relative degree to which contractual agreements are honored," ranges from 0 to 10 (with a score closer to 10 indicating greater enforceability), and is obtained from Djankov et al. (2003).

Aside from the market for control, the other key determinant of the number and quality of firms in our model is the cost of entry. For completeness, we also include in our regressions an explanatory variable that captures this important margin. Hence, our regressions include an additional interaction term between a proxy for industry-level "natural" entry rates and a measure of country-level regulatory entry costs**.** For an industry-level proxy of the importance of entry we follow Fisman and Sarria-Allende (2004), who build a "natural turnover" indicator, as measured by the sum of the average entry and exit rates for that industry in the US over the period 1963-1982 [from Dunne et al. (1988)]. The idea is that industries with a high value for this variable are industries with a lot of firm entry in the absence of significant regulatory entry costs. For the country-level measure of regulatory entry costs, to be interacted with natural turnover, we use again a standard variable: the total administrative costs, including the value of the entrepreneur's time, of firm start-up as a percentage of per-capita GDP, as measured by Djankov et al. (2002). The dataset covers a maximum of 23 industries and 49 countries. All industry data refer to 1990.

As in Rajan and Zingales (1998) and much of the literature building on their work, our country-

industry dependent variables come from the UNIDO 3-digit manufacturing industry database (and hence exclude primary and tertiary industries).[32] Our measure of productivity is output per worker, while our proxy for entry activity is the number of firms. Neither measure is perfect: for productivity we would have preferred a measure of TFP, while for entry we would have preferred ... entry! Unfortunately neither is available.

We begin with the productivity regression. Using the subscript i to indicate industries, and c for countries, our results are as follows:

$$\begin{aligned} \log(\text{labor productivity}_{ic}) &= 0.00160\ (\text{M\&A}_i \text{ x Enforcement}_c) \\ &\quad +0.922\ (\text{Turnover}_i \text{ x Entry Cost}_c) \\ &\quad +4.155\ (\text{Share in Value Added}_{ic}) + \varepsilon_{ic}, \end{aligned}$$

where all coefficients are highly significant [standard errors are (0.00064, 0.40, and 0.55), respectively]. Hence, improvements in contract enforcement increase productivity disproportionately in industries where reallocation of managerial responsibilities is naturally higher, as predicted by our model.[33]

The results for the number of firms are:

$$\begin{aligned} \log(\text{number of firms}_{ic}) &= -0.00794\ (\text{M\&A}_i \text{ x Enforcement}_c) \\ &\quad -3.823\ (\text{Turnover}_i \text{ x Entry Cost}_c) \\ &\quad +6.750\ (\text{Share in Value Added}_{ic}) + \varepsilon_{ic}, \end{aligned}$$

where all three coefficients are again highly statistically significant [the standard errors are, respectively, (0.0011), (0.77), and (1.09)]. The regression is the same as the one run by Fisman and Sarria-Allende (2004), except for the variable ($\text{M\&A}_i$ x Enforcement_c), which is the new term motivated by our model.[34] All the coefficients are consistent with the predictions of our model. The first coefficient, in particular, does provide some preliminary support to the view that greater

[32] Industry shares in manufacturing value added are also calculated from the UNIDO dataset.

[33] The model does not make firm predictions on the coefficient of (Turnover x Entry Cost). The "natural turnover" measure can be intepreted as an inverse-measure of the set-up cost k, where sectors characterized by lower set-up costs have a higher "natural" turnover. The Entry Cost is of course a measure of r. Now in our model it is possible to show that, depending on parameter values, the second derivative of meritocracy (s) with respect to natural entry barriers (k) and regulatory barriers (r) can be either positive or negative.

[34] See also Klapper et al. (2004), who run a regression of the form

$$\text{entry rate}_{ic} = \alpha(\text{Entry in the US}_i \text{ x Entry Cost}_c) \ + (\text{Share in Value Added}_{ic}) + \varepsilon_{ic},$$

contract enforcement may have the unintended consequence of discouraging entry of new firms.

As a robustness check, we have re-estimated both equations adding as an additional control the interaction term originally employed by Rajan and Zingales, namely an industry-level measure of "natural" reliance on external finance times a country-level index of financial development. The coefficient on the Rajan and Zingales interaction was positive and significant in both cases, but none of our coefficients of interest changed significantly, nor lost significance. We also re-estimated both equations, with and without the additional "Rajan and Zingales" control, using a Poisson Pseudo Maximum Likelihood estimator (PPML), again without appreciable differences in results (results available on request).[35]

In sum, the cross country/cross industry evidence presented is consistent with the predictions of our theory: in industries that seem to be "naturally" characterized by frequent changes of control, improvements in contract enforcement increase the productivity of firms and thus discourage entry by outsiders. Needless to say, a less blunt set of proxies, both for entry and for the industry-level importance of managerial quality, are needed before firm conclusions can be drawn from the data.[36]

7 Conclusions

We have studied the joint determination of the level of entrepreneurship and meritocracy in economies with regulatory barriers to entry and imperfect contract enforcement. We have used

and several variants thereof, where the entry rates in the left-hand come from the Amadeus database. We are unable to use their left-hand-side variable because we do not have a variable analogous to our M&A measure that matches the same industrial classification.

[35] See Santos-Silva and Tenreyro (2006) for a compelling case that Poisson specifications in levels are generally preferable to log-linear ones.

[36] Because we are aware of the loseness of our proxies, all we claim about our empirical results is that they suggest that the market for control is an important determinant of the effects of legal reform. However, charitable readers may also forgive us a more ambitious interpretation. The following results easily descend from Propositions 1 and 2.

Corollary 5 *When legal reform activates the market of control, (i) The average change in productivity is decreasing in g; (ii) The change in the number of firms is increasing in g.*

Part (i) is very intuitive: when legal reform induces a change from a situation where untalented incumbents keep their firms, to one where they sell it to talented agents (whether outsiders or incumbents), there is an increase in productivity. The smaller the difference in productivity of untalented and talented agents, i.e. the larger is g, the smaller this gain. Part (ii) follows from the same intuition that delivers our previous results on the possible anti-entrepreneurship effects of legal reform. The closest the productivity of untalented agents to that of talented agents, the less the quality of management in incumbent firms affects potential entrants' decisions. In the limit, if $g = 1$ legal reform can only increase entry (by facilitating the financing of entry costs). Now notice that g will generally differ across industries, for the reasons discussed above (talent is more or less important depending on the turbulence of the industry's environment). Furthermore, the lower g, the greater the "natural" frequency of transfers of control. As a result, we should expect a higher "natural" level of M&A activity in industries where g is lower. In this sense, one could interpret US M&A as an inverse measure of g, and our regressions as a direct test of Corollary 5.

our framework to uncover the effects of deregulations which reduce entry costs, and legal reforms that make contracts more binding. Finally, we have applied the insights of the model to identifying reform paths that are least likely to encounter insurmountable political opposition. One particularly distinctive feature of our model is a heightened focus on developments occurring on the market for control, where the quality of management in incumbent firms is determined. We presented some empirical evidence that seems consistent with the model's positive predictions relating to this market.

A notable result is that, because of a general-equilibrium interaction between the market for control and outsiders' decisions to enter, legal reform may increase meritocracy at the expense of entrepreneurship. Furthermore, because it activates the market for control, legal reform is likely to be politically more feasible than deregulation. In addition, legal reform today increases the future support for deregulation, so there is a dynamic complementarity, in terms of political feasibility, between legal reform and deregulation.

Broadly speaking, our paper indicates that studying the general equilibrium interaction between alternative institutional reforms may allow researchers and policymakers to better understand the economic consequences and assess the political feasibility of different institutional reforms. Recently, researchers started paying attention to these questions. For example, Giavazzi and Tabellini (2004) empirically examine the economic impact of democratizations and economic liberalizations. Yet, little theoretical work has compared the effects, the mutual interactions, and the political feasibility of alternative institutional reforms. Unfortunately, studying alternative reforms in isolation may conceal static and dynamic interactions among them and thus hinder our ability to understand the economic and political properties of different reform strategies.

Of course, our paper is only a first step towards a systematic analysis of different reform instruments and of the interactions among them. Our analysis can be extended in several directions, but here we wish to emphasize two of them. First, although we focused on their normative content, our political-economy results may allow one to undertake a positive analysis on the causes of institutional frictions around the world. For example, much in the spirit of the "substitutability view," several authors have argued that poor investor protection results from the political pressure of incumbents who try to shield their rents from competition by outsiders [Rajan and Zingales (2003b), Perotti and Volpin (2004)]. But these theories cannot explain why incumbents' pressure should favor poor investor protection (akin to reverse legal reform in our model) rather than direct regulatory constraints on entry. Our theory suggests that whether poor investor protection or prod-

uct market regulation are the more likely outcome of incumbents' pressure, depends on the talent composition of the pool of incumbents as well as on the importance of the market for control.

Second, there are several other institutional dimensions along which most economies, even among the richest, are widely deemed to be away from the first best. Two of these are labor-market regulations and the tax system. Future research may fruitfully extend our framework to investigate the interactions of reforms in these areas, both among themselves and with the reforms analyzed in this paper. Based on our present results we expect a robust insight from this research agenda to be that the most feasible reforms are those whose general equilibrium effects produce an endogenous compensation for the losers, as is the case for legal reform in this paper. Such reforms, which may be termed "Coasian," as private contracting among agents permits them to undo (some of) the distributive consequences without destroying the efficiency gains they bring about, sould be prioritized in emerging economies.

8 Appendix 1: Proofs

Proof of Proposition 1. Throughout this proof it is useful to recall that $\pi^H(f,s) = \alpha\{f[(1-g)s+g]\}^{\alpha-1}$, and $\pi^L(f,s) = g\pi^H(f,s)$. Furthermore, entry occurs iff $\phi\pi^H(f,s) \geq \varepsilon$, while sales occur iff $\phi \geq g$ and $g\pi^H(f,s) \leq \varepsilon$. Define $f^T = \eta + \lambda(1-\eta)$ and $s^T = \lambda/f^T$. f^T is the number of firms, and s^T is the fraction of talented owners, when all the talented enter and none of the incumbents sell. We now establish conditions under which different scenarios arise in equilibrium (if any). "No Entry," "No Sales," and "All Sell" have been defined in the text. "Interior Entry" ("All Enter") defines a situation where some, but not all of the talented outsiders enter. "Partial Sales" defines a situation where some, but not all the untalented incumbents sell their firms. No Entry-No Sales**.** $f = \eta$, $s = \lambda$. Need (i) $\phi\pi^H(\eta,\lambda) < \varepsilon$ for no entry, and either (ii) $\phi < g$ or (iii) $g\pi^H(\eta,\lambda) > \varepsilon$ for no sales. Now if (i) holds and (ii) does not hold then (iii) does not hold either. So (i) and (ii) are necessary and sufficient for this equilibrium. Hence, we need $\phi\pi^H(\eta,\lambda) < \varepsilon$ and $\phi < g$. No Entry-All Sell**.** $f = \eta$, $s = 1$. Need (i) $\phi\pi^H(\eta,1) < \varepsilon$ for no entry, and both (ii) $\phi \geq g$, and (iii) $g\pi^H(\eta,1) \leq \varepsilon$. The first two imply the third, so we just need $\phi\pi^H(\eta,1) < \varepsilon$ and $\phi \geq g$. Interior Entry-All Sell**.** $\phi\pi^H(f,1) = \varepsilon$, $s = 1$. Need (ia) $\phi\pi^H(\eta,1) \geq \varepsilon$, (ib) $\phi\pi^H(\lambda,1) < \varepsilon$ for interior entry, and both (ii) $\phi \geq g$, and (iii) $g\pi^H(f,1) \leq \varepsilon$ for all sell. Since $\phi\pi^H(f,1) = \varepsilon$, (ii) implies (iii), and (iii) implies (ii), so either one of them is necessary and sufficient. Say we focus on (ii). Then the conditions for this equilibrium are $\phi\pi^H(\eta,1) \geq \varepsilon$, $\phi\pi^H(\lambda,1) < \varepsilon$, and $\phi \geq g$. All Enter-All Sell**.** $f = \lambda$,$s = 1$. Need (i) $\phi\pi^H(\lambda,1) \geq \varepsilon$ for all enter, and both (ii) $\phi \geq g$ and (iii) $g\pi^H(\lambda,1) \leq \varepsilon$ for all sell. Now recalling our assumption that $\pi^H(\lambda,1) = k \leq \varepsilon$ we see that (i) can only hold at ($\phi = 1$ and $\varepsilon = k$). At that point (ii) and (iii) hold too. Then the conditions for this equilibrium are ($\phi = 1$ and $\varepsilon = k$). Interior Entry-No Sales**.** $\phi\pi^H(f,s) = \varepsilon$, $s = [f-(1-\lambda)\eta]/f$. Need (ia) $\phi\pi^H(\eta,\lambda) \geq \varepsilon$, (ib) $\phi\pi^H(f^T,s^T) < \varepsilon$ for interior entry, and either (ii) $\phi < g$ or (iii) $g\pi^H(f,s) > \varepsilon$ for no sales. Since $\phi\pi^H(f,s) = \varepsilon$, (ii) implies (iii) and (iii) implies (ii), so either one of them is necessary and sufficient. Using our formula for π^H we have that $\pi^H(f^T,s^T) < \pi^H(\lambda,1)$. Say we focus on (ii). Now recalling our assumption that $\pi^H(\lambda,1) = k \leq \varepsilon$ we see that (ib) always holds, so we can ignore it. Then the conditions for this equilibrium are $\phi\pi^H(\eta,\lambda) \geq \varepsilon$ and $\phi < g$. All Enter-No Sales**.** $f = f^T, s = s^T$. Need (i) $\phi\pi^H(f^T,s^T) \geq \varepsilon$ for all enter, and either (ii) $\phi < g$ or (iii) $g\pi^H(f^T,s^T) > \varepsilon$ for no sales. Using our formula for π^H we have that $\pi^H(f^T,s^T) < \pi^H(\lambda,1)$. Now recalling our assumption that $\pi^H(\lambda,1) = k \leq \varepsilon$ we see that (i) can never hold, so with no sales entry is always interior. Partial Sales-No Entry. $f = \eta$, $g\pi^H(\eta,s) = \varepsilon$. Need (i) $\phi\pi^H(\eta,s) < \varepsilon$ for no entry, and both (ii) $\phi \geq g$

and (iiia) $g\pi^H(\eta,\lambda) \leq \varepsilon$ and (iiib) $g\pi^H(\eta,1) > \varepsilon$ for interior sales. Since $\pi^H(\eta,s)$ is decreasing in s conditions (iiia) and (iiib) are mutually inconsistent, so this cannot be an equilibrium. Partial Sales-All Enter. $f = \lambda + (1-\lambda)\eta - x$, $s = \lambda/f, g\pi^H(f,s) = \varepsilon$, where x is the measure of untalented incumbents selling their firms. Need (i) $\phi\pi^H(f,s) \geq \varepsilon$ for all enter, and both (ii) $\phi \geq g$ and (iiia) $g\pi^H(f^T,s^T) \leq \varepsilon$ and (iiib) $g\pi^H(\lambda,1) > \varepsilon$ for interior sales. Now recall that $\pi^H(\lambda,1) = k \leq \varepsilon$, so (iiib) never holds. Hence this cannot be an equilibrium. Partial Sales-Interior Entry**.** $f = z + \eta$, $s = (z + \lambda\eta - x)/f$, where x is the measure of untalented incumbents selling their firms and z is the measure of talented outsiders starting new firms. Partial sales calls for $g\pi^H(f,s) = \varepsilon$, and interior sales for $\phi\pi^H(f,s) = \varepsilon$. Hence $\phi = g$ is a requirement. The equation $g\pi^H(f,s) = \varepsilon$ defines combinations of z and x that are consistent with this equilibrium. Using the formula for π^H this relationship is given by $z = (g\alpha/\varepsilon)^{1/(1-\alpha)} - (1-g)\lambda\eta - g\eta - (1-g)x$. This can be an equilibrium only if $z \in [0, (1-\eta)\lambda - x]$. In turn, this requires

$$x < \min\left[\frac{(g\alpha/\varepsilon)^{1/(1-\alpha)}}{(1-g)} - \lambda\eta - \frac{g\eta}{(1-g)}, \frac{\lambda}{g} + \eta - \frac{(g\alpha/\varepsilon)^{1/(1-\alpha)}}{(1-g)} - \lambda\eta\right].$$

It is easy to verify that one of the two terms in the min must be negative, so x must be negative, which is a contradiction.

To draw Figure 1, we make use of the fact that $\pi^H(f^T,s^T) < \pi^H(\lambda,1) < \pi^H(\eta,1) < \pi^H(\eta,\lambda)$, where these inequalities can be verified using the formula for π^H. There is an ambiguity concerning whether a Entry, No Sales equilibrium exists. We draw Figure 1 by assuming that it exists, i.e. by assuming that $g\pi^H(\eta,\lambda) > \pi^H(\lambda,1)$.

Proof of Corollary 1. Subsumed in Proof of Proposition 1.

Proof of Corollary 2. Deregulation increases welfare by Corollary 1. By the same corollary**,** legal reform increases welfare within No Sales and within All Sell equilibria. We now show that legal reform increases welfare when it triggers a shift from No Sales to All Sell. Because f is constant if the initial No Sales equilibrium is of the No Entry type, we only have to considers transitions originating in the Entry-No Sales region. Such transitions can lead to the No Entry, All Sell region or into the Entry, All Sell region. Consider transitions into the No Entry, All Sell region. In the region of origin we have $\phi \leq g$ and $\varepsilon \geq g\pi^H(\eta,1)$, so the maximum level of output, Y, is reached when $\phi = g$ and $\varepsilon = g\pi^H(\eta,1)$. From the proof of Proposition 1 this implies $f = \eta$ and $s = 1$, so the corresponding level of output is $Y(\eta,1)$. In the destination region, No Entry implies $f = \eta$ and All Sell implies $s = 1$, so output is also $Y(\eta,1)$. Thus, gross output cannot

fall in crossing from Entry-No Sales to No Entry-All Sell**.** Net output increases because of saving in entry costs, so welfare discretely jumps up. Now consider transitions from Entry-No Sales to Entry-All Sell (assuming that these two regions share a border, as we did in Figure 1). For every ε, output South of the border is maximized at $\phi = g$, and output North of the border is minimized at $\phi = g$. Because on both sides we have interior entry, the relationship $g\pi^H(f,s) = \varepsilon$ holds, so π^H is the same on both sides of the border. Equations (2) and (4) imply that there is a one-to-one relationship between π^H and Y, so if the former is the same on both sides of the border, so is the latter**.** Net output must be greater to the North because of the lower entry.

Proof of Proposition 2. Consider the demand for plants by incumbents. If incumbent i buys I_i plants, his payoff is $(1 + I_i)\pi^i - pI_i$, where p is the price of a plant on the market for control. If $p \leq \pi^i$ he wishes to buy as many plants as possible. His demand for plants is constrained by his collateral. In particular, incumbent i can buy I_i plants as long as:

$$\phi(1 + I_i)\pi^i \geq pI_i. \tag{7}$$

If $p \leq \phi\pi^i$, an incumbent with talent i demands an infinite number of plants. Hence, in equilibrium $p > \phi\pi^H$. Consider the demand for existing plants by entrants**.** $p > \phi\pi^H$ implies that no outsider enter by buying an existing firm: they would have no incentive to repay. These outsiders can only credibly promise to repay if they concurrently set up their own venture, at cost ε. That is, an entrant of type i can acquire control of E_i incumbent firms provided that

$$\phi(1 + E_i)\pi^i \geq pE_i + \varepsilon. \tag{8}$$

Conditions (7) and (8) imply that entrants run smaller firms than incumbents (entrants do not own licencies and must pay the set up cost). Turning to the supply of plants by incumbents, condition (7) implies that if the equilibrium price of a plant is p, an incumbent of type i sells his own unit iff $p \geq \pi^i$. This implies that $p \leq \pi^H$, otherwise there would be excess supply of firms. On the other hand, it may be that $p < \pi^L$, which may occur for very low ϕ. In sum, firm exchanges occur iff $\pi^L \leq p \leq \pi^H$. In view of (7) a talented incumbent can buy up to $I_H^* \equiv \phi\pi^H/(p - \phi\pi^H)$ plants. This number is greater than 1 if $p \leq 2\phi\pi^H$. Thus, the market for control breaks down when $2\phi\pi^H < \pi^L$, i.e. iff $\phi < g/2$. If $\phi \geq g/2$ some reallocation always takes place, but the exact number of traded licences and their distribution depend on entry. With e talented entrants, each demanding $E_H(p)$ licences, and with incumbents demanding $I_H(p)$ licences, the equilibrium

condition in the market for licences is $\lambda\eta I_H(p) + eE_H(p) = \eta(1-\lambda)$. We can derive closed-form solutions for the special case $\lambda = 1/2$. Now there are as many talented as untalented incumbents. Since talented incumbents buy more firms than talented entrants, with $\lambda = 1/2$ the only possibility is that each talented incumbent buys exactly 1 plant, i.e. $I_H = 1$, and none of the outsiders buys any firm in the market for control, or $E_H = 0$. In conclusion, the conditions for transfers on the market for control are $\phi < g/2$ and $g\pi^H(o,s) \leq \varepsilon$. The condition for entry is unchanged relative to the model without mergers: it is $\phi\pi^H(o,s) \geq \varepsilon$. From this point on, the proof repeats the proof of Proposition 1, except that f is replaced by o, where appropriate, and the No Sales and All Sell regions are separated by a line through $g/2$ instead of g.

Proof of Proposition 3. (i) In the status quo outsiders' payoff is $w(\eta,\lambda)$. With a reform it is at least $w(f,s)$. Since $w(f,s) = (1-\alpha)Y(f,s)$, and the latter always (weakly) increases with reform (Corollary 2), outsiders support any proposed reform. (ii) Talented insiders never sell their firms, so their payoff is $w(f,s) + \pi^H(f,s) = w(f,s) + \alpha(1-\alpha)^{\frac{1-\alpha}{\alpha}}/w(f,s)^{\frac{1-\alpha}{\alpha}}$. As a function of w this is first decreasing, reaches a minimum at $w(f,s) = (1-\alpha)$, and then it is increasing. The maximum value that $w(f,s)$ can reach is $w(\lambda,1) = (1-\alpha)\lambda^\alpha < (1-\alpha)$. Hence, the payoff of talented incumbents is always decreasing in the wage. Now, since any reform (weakly) increases the wage, talented incumbents are always made worse off by any reform.

(iii) Consider now the preferences of untalented incumbents, starting with deregulation. If $\pi^H(\lambda,1) > g\pi^H(\eta,\lambda)$ then deregulation changes nothing (the Entry-No Sales equilibrium does not exist) so untalented incumbents are no better off (nor is anyone else). If instead $\pi^H(\lambda,1) \leq g\pi^H(\eta,\lambda)$ a sufficiently large deregulation moves the economy to an Entry-No Sales equilibrium. Let us write the payoff of untalented incumbents $w(f,s) + g\pi^H(f,s)$ as $(1-\alpha)\left[\alpha/\pi^H(f,s)\right]^{\alpha/(1-\alpha)} + g\pi^H(f,s)$ (using (1) and (2)). Entry implies $\phi_0\pi^H(f,s) = \varepsilon'$, so this can further be written as $(1-\alpha)(\alpha\phi_0/\varepsilon')^{\alpha/(1-\alpha)} + g\varepsilon'/\phi_0$, whose local maxima are attained by setting ε' at its maximal and minimal values. The maximum value of ε' consistent with the equilibrium being Entry-No Sales, is reached at the border with the No Entry-No Sales, region, and it is therefore $\phi_0\pi^H(\eta,\lambda)$. This implies that at this local maximum untalented incumbents' payoffs from deregulation are $(1-\alpha)\left[\alpha/\pi^H(\eta,\lambda)\right]^{\alpha/(1-\alpha)} + g\pi^H(\eta,\lambda)$, i.e. the same as in the status quo. The minimal value for ε' is $k = \pi^H(\lambda,1) = \alpha\lambda^{\alpha-1}$, so at this local maximum the payoff of untalented incumbents is $(1-\alpha)\lambda\phi_0^{\alpha/(1-\alpha)} + g\alpha\lambda^{\alpha-1}/\phi_0$. Now recall that in this region we have $\phi_0 \in [k/\pi^H(\eta,\lambda), g]$. Since at $k/\pi^H(\eta,\lambda)$ we are at the border with the No Entry-No Sales, region, the value of the payoff under reform is the same as under no reform. Beyond $k/\pi^H(\eta,\lambda)$ untalented incumbents' payoff

under reform is a continuous function of ϕ which has *at most* one local maximum at g. At g the payoff is $(1-\alpha)\lambda^{\alpha}g^{\alpha/(1-\alpha)} + \alpha/\lambda^{1-\alpha} = (1-\alpha)\left[\alpha g/\pi^H(\lambda,1)\right]^{\alpha/(1-\alpha)} + \pi^H(\lambda,1)$. If we can show that in the status quo the payoff of untalented incumbents always exceeds this quantity we have showed that untalented incumbents are never better off with reform. In the status quo the payoff of untalented incumbents $(1-\alpha)\left[\alpha/\pi^H(\eta,\lambda)\right]^{\alpha/(1-\alpha)} + g\pi^H(\eta,\lambda)$, which, for any choice of the other parameters, has a unique local minimum at $\eta = g/\left[\lambda+(1-\lambda)g\right] \equiv \tilde{\eta}$ (use the formula for π^H). Now recall that, since we are assuming that an Entry-No Sales equilibrium exists, we must have $\pi^H(\lambda,1) \leq g\pi^H(\eta,\lambda)$, or $\eta \leq g^{1/(1-\alpha)}\lambda/\left[\lambda+(1-\lambda)g\right] \equiv \eta^*$. It is immediate that $\tilde{\eta} > \eta^*$, so the minimum value that the payoff of untalented incumbents can take in the status quo is $(1-\alpha)\left[\alpha/\pi^H(\eta^*,\lambda)\right]^{\alpha/(1-\alpha)} + g\pi^H(\eta^*,\lambda)$. Using the definition of η^*, this is the payoff under a reform $\varepsilon' = k$ when $\phi_0 = g$, that we computed above.

We can now turn to the effects of legal reform on the payoff of untalented incumbents. Depending on ε_0, legal reform may lead to No Entry-All Sell, Entry-All Sell, or Entry-No Sales. The results above on deregulation imply that nowhere in the Entry, No Sales region can the payoff of untalented incumbents be larger than in the No Entry-No Sales, region, so untalented incumbents always (weakly) lose from legal reforms that keep the equilibrium of the No Sales variety. We now show that, conditional on the enactment of a legal reform that ushers in an All Sell equilibrium, the one that generates the highest payoff for untalented incumbents is the one which sets $\phi' = 1$. To see this, begin by recalling that in All Sell equilibria we always have $s = 1$. Hence, untalented incumbents' payoff is $w(f,1) + p$, and since all the bargaining power resides with the sellers, we have $p = \phi\pi^H(f,1)$. In No Entry-All Sell equilibria we have $f = \eta$, so the untalented incumbents' payoff is $w(\eta,1) + \phi\pi^H(\eta,1)$, which is clearly increasing in ϕ. When (and if) ϕ reaches the border with the Entry-All Sell region,which is defined by $\phi\pi^H(\eta,1) = \varepsilon$, the payoff under No Entry reaches $w(\eta,1) + \varepsilon$. In Entry-All Sell equilibria we have $\phi\pi^H(f,1) = \varepsilon$, and f is increasing in ϕ. Hence, the untalented incumbents' payoff $w(f,1) + \varepsilon$ is increasing in ϕ. At the point of leaving the border with the No Entry-All Sell region, we have $f = \eta$, so – as just South of the border – the payoff is $w(\eta,1) + \varepsilon$. Hence, throughout the All Sell regions the payoff of untalented incumbents is continuously increasing in ϕ, and is therefore maximized at $\phi = 1$ (for any value of ε_0). As a result, a legal reform which makes untalented incumbents better off exists if and only if their payoff under $\phi' = 1$ exceeds their payoff in the status quo. Now as a function of ε_0 the untalented incumbents'

payoff at $\phi = 1$ is as follows

$$\begin{array}{rll} \alpha^{\frac{\alpha}{1-\alpha}}(1-\alpha)\left[1/\varepsilon_0\right]^{\frac{\alpha}{1-\alpha}} + \varepsilon_0 & \text{for} & k = \pi^H(\lambda,1) \leq \varepsilon_0 < \pi^H(\eta,1) \\ \alpha^{\frac{\alpha}{1-\alpha}}(1-\alpha)/\left[\pi^H(\eta,1)\right]^{\frac{\alpha}{1-\alpha}} + \pi^H(\eta,1) & \text{for} & \pi^H(\eta,1) \leq \varepsilon_0, \end{array}$$

where the first bit corresponds to values of ε_0 such that the equilibrium under $\phi' = 1$ is of the Entry type, and the second bit corresponds to No Entry equilibria. Note that the payoff function under reform is continuous. Also note that its first portion has a unique local minimum at $\varepsilon_0 = \alpha$. Since $\alpha < \alpha\lambda^{\alpha-1} = \pi^H(\lambda,1)$, the payoff function under reform is increasing in ε_0. Now the payoff function under reform is to be compared to the payoff in the status quo, which is $\alpha^{\frac{\alpha}{1-\alpha}}(1-\alpha)/\left[\pi^H(\eta,\lambda)\right]^{\frac{\alpha}{1-\alpha}} + g\pi^H(\eta,\lambda)$. Using the formulas for π^H, and with a few lines of algebra, one sees that this is always less than the maximum attained by the payoff under legal reform (i.e. at $\varepsilon_0 = \pi^H(\eta,1)$), so for sure there exists an $\widetilde{\varepsilon}_1 < \pi^H(\eta,1)$ such that untalented incumbents benefit from a legal reform setting $\phi' = 1$ whenever $\varepsilon_0 \geq \widetilde{\varepsilon}_1$. Always using the formulas for π^H one can also verify that the relative magnitude of the payoff from reform at its minimum (i.e. at $\varepsilon_0 = \pi^H(\lambda,1)$) can be either higher or lower than at the status quo. hence it is either the case that untalented incumbents gain from legal reform, or that the gain for ε_0 sufficiently high.

Proof of Proposition 4. The fact that $\lambda = 1/2$ insures that the configuration of the equilibrium is the same as in Figure 1, with the horizontal border being $g/2$ instead of g. For parts (i)-(ii) the proof is the same as the proof of Proposition 3, except for minimal amendments. For parts (iii) and (iv), we begin by discussing price determination when the market for control operates. Given our assumption that sellers take the rents subject to buyers' incentive-compatibility and participation constraints, we have $p = \min[\pi^H(o,1), 2\phi\pi^H(o,1)]$. Hence, $p = \pi^H(o,1)$ if $\phi > 1/2$, and $p = 2\phi\pi^H(o,1)$ if $\phi < 1/2$ (note that since the market for control operates we have $\phi > g/2$, but $g/2 < 1/2$). Now for part (iii) we simply note that the function describing the payoff of untalented incumbents under a reform $\phi' = 1$ is the same as in the case without mergers, so the same result holds. in particular, the threshold $\tilde{\varepsilon}_1$ is the same). [Small digression: one difference from Proposition 3 is that $\phi' = 1$ is no longer the preferred legal reform for untalented incumbents. Instead, for every ε_0, the payoff of untalented incumbents under $\phi' > g/2$ is maximized at $\phi' = 1/2$. In particular this is strictly greater than the payoff at $\phi' = 1$ within Entry-No Sales equilibria.] Turning now to part (iv), we first notice that if $p = \pi^H(o,1)$ the payoff of talented incumbents under reform is $w(o,1) + \pi^H(o,1)$, which is less than the payoff under the status quo for the same argument we used in the proof of part (ii) of Proposition 3. Hence, if there is a legal reform ϕ' that improves

the situation of talented incumbent, it must be that $g/2 \leq \phi' < 1/2$. Let's begin with legal reforms that usher in a No Entry-All Sell equilibrium. In these equilibria the payoff of talented incumbents is $w(\eta,1) + 2\pi^H(\eta,1) - 2\phi\pi^H(\eta,1)$, which exceeds their payoff under the status quo if $\phi' \leq \overline{\phi} \equiv \left[w(\eta,1) - w(\eta,\lambda) + 2\pi^H(\eta,1) - \pi^H(\eta,\lambda)\right]/2\pi^H(\eta,1)$. Now if $\lambda = 1/2$ $\overline{\phi}$ exceeds $g/2$: using the formulas for π^H we have that $\overline{\phi} = \left\{2 - [2/(1+g)]^{1-\alpha} + [(1-\alpha)/\alpha]\,\eta\,\{[1-(1+g)/2]^{\alpha}\}\right\}/2$. Since the last term in the numerator is always positive a sufficient condition for $\overline{\phi} \geq g/2$ is $2 - [2/(1+g)]^{1-\alpha} \geq g$ (for $g \leq 1$), which can readily be verified. This establishes that, whenever a legal reform ϕ' exists that establishes a No Entry-All Sell equilibrium, it is possible to choose ϕ' so that talented incumbents are made better off. We now need to check if such a reform would also make the untalented better off. Untalented incumbents's payoff under a No Entry-All Sell equilibrium, with $\phi < 1/2$, is $w(\eta,1) + 2\phi\pi^H(\eta,1)$, which exceeds their payoff under the status quo if $\phi' \geq \underline{\phi} \equiv \left[w(\eta,\lambda) - w(\eta,1) + g\pi^H(\eta,\lambda)\right]/2\pi^H(\eta,1)$. It is immediate that $\underline{\phi} < 1/2$. Furthermore, using $\lambda = 1/2$ it is immediate that $\overline{\phi} > \underline{\phi}$ (it is sufficient to show that $2\pi^H(\eta,1) > (1+g)\pi^H(\eta,\lambda)$), so conditional on reform leading to No Entry-All Sell, there is a "corridor" $[\max(g/2,\underline{\phi}), \min(1/2,\overline{\phi})]$ such that ϕ's in this corridor make all untalented better off. What is left to show is that there are ε_0s such that this corridor belongs to the No Entry-All Sell region. But this is clearly the case by inspection of Figure 1. In particular, it is surely the case that for $\varepsilon_0 \geq (1/2)\pi^H(\eta,1)$ the corridor falls in the No Entry-All Sell region, though of course this may continue to be true for ε_0s as low as $(g/2)\pi^H(\eta,1)$. Notice that we have said nothing about the possibility of finding a legal reform that is attractive to both talented and untalented incumbents in the Entry-All Sell region, which is why this part of the proposition is stated in "if," but not "only if" terms.

Proof of Corollary 3. Follows directly from Propositions 3 and 4.

Proof of Corollary 4. Most of the proof is identical for the cases with and without mergers (as long as the case with merger has $\lambda = 1/2$). It is obvious that outsiders support both reforms and that the talented oppose both reforms. Let's look at untalented outsiders. Under a big-bang reform, the economy immediately settles on the first best, where $f = \lambda$ and $s = 1$, so that profits are $\pi^H(\lambda,1)$. Firms change hands once and for all at the beginning of the first period, and untalented incumbents are able to sell their licenses for the entire present value of the profit stream. I.e. we have $p = (1+\beta)\pi^H(\lambda,1)$. Hence, untalented incumbents' payoff under big-bang reform is $(1+\beta)\left[w(\lambda,1) + \pi^H(\lambda,1)\right]$. Under gradual reform the present value of profits is $\pi^H(f,1) + \beta\pi^H(\lambda,1)$, where f is given by $\pi^H(f,1) = \varepsilon_0$ for $\varepsilon_0 \leq \pi^H(\eta,1)$, and by η otherwise. The payoff of untalented incumbents is therefore $\left[w(f,1) + \pi^H(f,1)\right] + \beta\left[w(\lambda,1) + \pi^H(\lambda,1)\right]$. Hence,

untalented incumbents (weakly) prefer gradual to big-bang reform for every ε_0 if, for every ε_0,

$$w(f,1)+\pi^H(f,1)\geq w(\lambda,1)+\pi^H(\lambda,1),$$

which we have shown to be true in part (ii) of Proposition 3. Hence, whenever untalented incumbents support big-bang reform they also support gradual reform. Let us now compare gradual reform with the status quo. Under gradual reform the present value of untalented insiders' payoffs is

$$\begin{array}{cc} \alpha^{\frac{\alpha}{1-\alpha}}(1-\alpha)\left[1/\varepsilon_0\right]^{\frac{\alpha}{1-\alpha}}+\varepsilon_0+\beta\left[w(\lambda,1)+\pi^H(\lambda,1)\right] & \text{for} \quad k=\pi^H(\lambda,1)\leq\varepsilon_0<\pi^H(\eta,1) \\ w(\eta,1)+\pi^H(\eta,1)+\beta\left[w(\lambda,1)+\pi^H(\lambda,1)\right] & \text{for} \quad \pi^H(\eta,1)\leq\varepsilon_0, \end{array}$$

which is increasing in ε_0 by the same argument we used in Proposition 3. The status quo provides utility $(1+\beta)\left[w(\eta,\lambda)+\pi^L(\eta,\lambda)\right]$, so untalented incumbents prefer a gradual reform path towards the first best over the status quo if

$$\beta\left[w(\eta,\lambda)+\pi^L(\eta,\lambda)-w(\lambda,1)-\pi^H(\lambda,1)\right]\leq\left[w(\eta,1)+\pi^H(\eta,1)-w(\eta,\lambda)-\pi^L(\eta,\lambda)\right]$$

We have proved in Proposition 3 that the right hand side of the above expression is positive, as it represents the first period gain of untalented incumbents under a one shot legal reform (when ε_0 is large enough). Now whether the left-hand-side is positive or negative, there always exists a $\widetilde{\beta}$ such that, for $\beta\leq\widetilde{\beta}$, the condition is satisfied. Furthermore, the left-hand side happens to represent untalented incumbents' loss, relative to the status quo, from a big bang reform. Hence, when the left-hand side is negative (and $\varepsilon_0\geq\pi^H(\eta,1)$) untalented incumbents support both big-bang and gradual reforms, when the left-hand side is positive and $\beta>\widetilde{\beta}$ untalented incumbents oppose both reforms, and when, and when the left-hand side is positive and $\beta\leq\widetilde{\beta}$ untalented incumbents oppose big-bang reform but support gradual reform. For $\varepsilon_0<\pi^H(\eta,1)$ untalented incumbents may also support gradual and big-bang reform, or gradual reform only, but we have established above that they never support big-bang reform only.

Proof of Proposition 5. Since incumbents are opposed to all deregulation, and there are η incumbents, the number of votes they need to buy to block deregulation is $1/2-\eta$. Consider a deregulation $\varepsilon'<\varepsilon$ moving the economy from (η,λ) to (f,s) where $f>\eta, s>\lambda$. This reform is

blocked if:

$$(1/2-\eta)\left[w(f,s)-w(\eta,\lambda)\right] \leq (1/2)\eta\left[\pi^H(\eta,\lambda)+w(\eta,\lambda)-\pi^H(f,s)-w(f,s)\right]. \qquad (9)$$

The right hand side of (9) represents the aggregate loss of talented incumbents under deregulation, while the left hand side represents the gain of un untalented outsider from deregulation, times the number of additional votes needed to block reform. If (9) holds, talented insiders can "afford" to block deregulation. Now if $\alpha = 1/2$, then $w(f,s)-w(\eta,\lambda) = \left[\pi^H(\eta,\lambda)-\pi^H(f,s)\right] / \left[4\pi^H(\eta,\lambda)\pi^H(f,s)\right]$. Using this, and the fact that in a Entry-No Sales equilibrium $\pi^H(f,s) = \varepsilon/\phi$, condition (9) simplifies into condition $\varepsilon'/\phi_0 \geq (1-\eta) / \left[4\eta\pi^H(\eta,1/2)\right]$. Notice that for some parameter values (e.g. η very small) this condition is met for any possible ε', which implies that there are parameter values under which any deregulation can be blocked, even though incumbents are in a minority.

Now consider a reform $\phi' = 1$ which is supported by untalented incumbents, and opposed by talented incumbents (we know that there always exist values of ε_0 such that this is true). In order to block this reform talented incumbents need to buy $1/2 - 1/2\eta = 1/2(1-\eta)$ votes. If o is the number of plants following the reform, the lobby is successful at blocking the reform if

$$(1/2)(1-\eta)\left[w(o,1)-w(\eta,\lambda)\right] \leq (1/2)\eta\left[\pi^H(\eta,\lambda)+w(\eta,\lambda)-2\pi^H(o,1)-p-w(o,1)\right],$$

which has the same interpretation as (9). Consider first cases in which the post-reform equilibrium is associated with an Entry-All Sell equilibrium. Profits under this reform are $\pi^H(o,1) = \varepsilon_0$. Furthermore, we have $p = \pi^H(o,1)$. Hence, this legal reform can be blocked if $\varepsilon_0 \geq 1/\left[4\eta\pi^H(\eta,1/2)\right] \equiv \widehat{\varepsilon}$, and passed otherwise. The rest of the proof first establishes that at $\varepsilon_0 = \widehat{\varepsilon}$ there exists a legal reform that talented and untalented incumbents can support, and then that if incumbents support a legal reform at $\widehat{\varepsilon}$, then they support a legal reform at any $\varepsilon_0 > \widehat{\varepsilon}$. This shows that incumbents are able to block a reform $\phi' = 1$ only when there exists some reform $\phi' > g/2$ that they would not want to block. To see that there is a reform supported by incumbents at $\widehat{\varepsilon}$, begin by recalling from Proposition 4 that there exists a "corridor" $\phi' \in [\underline{\phi}, \overline{\phi}]$ such that if (ε_0, ϕ') belongs to the intersection of this corridor and the No Entry-All Sell region all the incumbents support a reform (ε_0, ϕ'), and the same is true for all $\varepsilon_0' > \varepsilon_0$. Hence, if $(\hat{\varepsilon}, \max(\underline{\phi}, g/2))$ belongs to the No Entry-All Sell region, we are done. Consider then cases where $(\hat{\varepsilon}, \max(\underline{\phi}, g/2))$ belongs to the Entry-All Sell region. For every $\hat{\varepsilon}$ satisfying this property there exists a legal reform $\phi' \in (g/2, 1/2)$ such that the new equilibrium is of the Entry-All Sell type. Consider the top of

this interval, i.e. consider a proposed reform $\phi' = 1/2$. Under such a reform the price of licenses is $p = \pi^H(o,1) = 2\widehat{\varepsilon}$. It is immediate to see that $p(\widehat{\varepsilon}) > g\pi^H(\eta,\lambda)$, which implies that untalented incumbents gain from this reform at $\widehat{\varepsilon}$. Talented incumbents surely benefit from legal reform as long as $2(1-\phi')\pi^H(o,1) = 2\widehat{\varepsilon}(1-\phi')/\phi' = 2\hat{\varepsilon} \geq \pi^H(\eta,1/2)$, which is also true. As a result, the reform $(\hat{\varepsilon},1/2)$ is feasible. Lastly, we need to show that if the reform ϕ' is acceptable to both talented and untalented incumbents for $\varepsilon_0 = \widehat{\varepsilon}$, it continues to be so for all $\varepsilon > \widehat{\varepsilon}$. As long as the equilibrium remains of the Entry type, the payoff of both talented and untalented incumbents at $\phi' = 1/2$ is $w(o,1) + \pi^H(o,1)$. We know that this function is decreasing in the wage, and that the wage is decreasing in ε_0, so if the reform was feasible at $\hat{\varepsilon}$ then it continues to be feasible at all $\varepsilon_0 > \hat{\varepsilon}$ that are still associated with Entry. Eventually we reach the point where it is possible to choose a reform that is acceptable to all incumbents and is associated with No Entry, so a reform acceptable to incumbents can be found for all $\varepsilon_0 \geq \hat{\varepsilon}$.

9 Appendix 2: Market for Managers

We consider the family of contracts in which talented agents are hired as managers, receive a compensation t from owners, and promise to return to the owner the entire profit stream of the firm (net of his salary t). The managerial contract must provide the manager with the incentive to transfer profits to the owner instead of diverting them to himself. Again if the manager defaults on his obligations the courts will seize a fraction ϕ of what he diverted. Then, the incentive compatibility constraint is:

$$t \geq (1-\phi)\pi^H.$$

The left hand side represents what the manager obtains if he does not steal. The right hand side represents what he obtains if he defaults on creditors and shareholders.

The manager participation constraints are

$$t \geq \pi^H - p$$

and

$$t \geq \pi^H - \varepsilon.$$

The owner participation constraints are

$$\pi^H - t \geq \pi^L$$

and

$$\pi^H - t \geq p.$$

Notice that combining the first manager participation constraint and the second owner participation constraint we get $t = \pi^H - p$. Using this, the IC constraint is $\phi\pi^H \leq p$. The second manager PC becomes $p \leq \varepsilon$, and the first owner PC becomes $p \geq \pi^L$. Hence, contracts on the market for managers are completely isomorphic to contracts on the market for control: they can be written exactly under the same set of conditions.

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