Bridging Institutions: Multinational Firms, Argentine Reputations, and the Development of Institutions

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Abstract

In this paper I propose a mechanism for the transmittance of institutions based on multinational firms' reputations. I create a model that links consumers preferences for better firm reputations to firm behavior, and then impose institutions as a constraint on this behavior. It is shown that such institutions constrain firm behavior in all countries in which the firm operates, even when not all of these nations have the same quality of institutions. This effect bridges institutions across nations.

Institutions matter: this intuition has only been supported by the evidence so far gathered. But such a statement is in need of qualification, for the important economic question is no longer *if* institutions matter; it is *how* do institutions matter. This paper proposes one mechanism to answer a related question: how might institutions in developing nations influenced by the presence of multinational firms?

Multinational firms offer a unique perspective towards looking at the study of institutions because they have the potential to act as bridges between economies. This topic is of particular interest to trade economists as the proliferation of such firms, or foreign direct investment (FDI) in general, has multiplied over the last two decades of the twenty-first century (Froot 2003). The shear magnitude of this FDI motivates both important, practical policy questions, and also new avenues of theoretical research in the area of globalization.

The literature pertaining to multinational firms is extensive. What follows is just a brief and general over view of this field. The more recent push into the theory of the multinational firm begins approximately in the early 1980s. Works by John Dunning (1977, 1981) specify conditions under which firms will choose to enter in FDI. Elhanan Helpman (1984), develops a general equilibrium model of international trade with multinational corporations. James R. Markusen (1995, 2002) has developed a host of models dealing with topics ranging from the industrial organization of multinational firms, their origins, and internalization as well as surveying the empirical facts with regards to multinational firm operation. Markusen also notes that multinational firms tend to those which depend more intensely on firm specific characteristics –particularly firm reputation (2002 page 7).

The nature of the multinational firm is not, in general, a homogenous concept. Differences do exist in where, how, and why a firm branches out of its home country to transact business directly in another. In part, this is simply a result of a heterogeneous world, and one aspect where differences in countries are significant is in their institutions –economic or otherwise. Indeed, there has been a general division of the global community of nations into two economic classes: the Northern or developed nations, and the Southern or developing nations. In terms of economic institutions –by which it is

meant social and political structures imposed over economic activity[1] –it is generally accepted that the Northern countries posses institutions superior to those of the Southern countries[2]. The study conducted by Acemuoglu, Johnson, and Robinson (2001), finds evidence that the cumulative impact of institutional quality on national income is significant and positive: that is, the better were the institutions in the past, the higher is the national income of a particular country in the present. It can be inferred from their analysis that by improving institutions in the present, greater economic output should result in the future. The interesting questions that follow are those that look for paths to such institutional development.

Exposing a developing economy to the economy of a developed nation offers one possible path that may affect this; for if there ever was a time when the majority of nations were sufficiently isolated so as to develop and maintain their institutions independently of each other, that era has effectively ended with the integration –on mass –of domestic economies into the international market place. Theories already exist as to how international trade, and the resulting integration of individual nations into an international community, can cause shifts in institutional quality within nations. One example comes from Wayne Sandholtz and William Joettzle (2000) and Wayne Sandholtz and Mark Gray (2003), who show a positive correlation between a country's overall integration into the international community and that country's quality of institutions. They attributes this finding to a general diffusion of institutions, norms, and culture from the developed world and argues that such exposure to more efficient institutions serves to make inefficient institutions more costly to maintain.

Andrei Levchenko (2004) demonstrates a similar result; in a static model, he shows that differences in institutions between trading partners can directly effect the terms of trade between the pair. This result comes about from the comparative advantage that better institutions afford an economy. In fact, poor institutions can result in the loss of overall income when an economy is opened up to trade with nations of better

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[1] For example, how the property rights are defined and enforced, how business is regulated, and to what extent are transactions transparent.

[2] By which it is meant that better institutions are those which produce better economic outcomes (i.e. metrics that indicate higher national income, higher growth rate, and higher general welfare).

institutional quality. He extends this analysis to include a mechanism whereby institutions would be improved over time in order to make an economy more competitive –and so neutralize the disadvantage of lower quality institutions. However, better institutions need not follow from openness in trade in general. Quy-Toan Do and Andrei Levchenko (2006) show that opening up to trade can actually worsen institutions when such trade increases the power of a small elite of exporters in a highly concentrated market. Such a scenario seems to parallel the histories of the so called "banana republics".

The presence of multinational firms, however, provides for different mechanism by which institutional quality can be transmitted, and institutions changed for the better. The key to understanding this lies in the very structure of multinational businesses –that these firms operate in more than one country. So that, when they operate in both a developed and developing nation, it should be expected that those firms which are particularly sensitive to their reputation will be constrained behave in such a manner as to protect their reputation worldwide; thus these firms can be expected to operate under the stricter institutional guidelines generally found in developed countries.

This paper proceeds to model the intuition outlined above. I start with a simple benchmark case of a two firm, two country, one good model as an illustration of why reputation matters. I then construct a model of firm behavior based on problems of agency in order to show when and why firms might act in a way that could tarnish their reputation. Finally, I link firms' sensitivity to reputation across markets with the institutional settings across those same markets in order to show the possible transformational effects this could have on institutions in developing countries.

Reputation

Reputation is arguably an important intangible asset of a business. In a 1992 paper, Richard Hall concludes that a sustainable competitive advantage depends heavily on various kinds of intangible assets, including reputations. Reputation, in the sense that Hall uses, is the composition of both fame and esteem –with the distinction being that

esteem can only be built up in the long term after maintaining a consistently favorable perception in the public's mind. Zyglidopoulos (2001) presents evidence that blemishes to a firm's record can adversely impact future profits. He defines reputation as the set of knowledge held by various stakeholders in a firm and also those affected by its activities. Werner Raub and Jeroen Weesie (1990) approach the question of reputation within the framework of game theory; to them, reputation is a characteristic attributed to an actor by those with whom the actor interacts –for example a firm and its customers. More importantly, they see the empirical basis of reputation as an actor's past observed behavior. Charles Fombrun and Mark Shanley (1990) see reputations arising from a competitive process, whereby firms vie for greater status in the public's view. Among their results is evidence that media coverage –even seemingly positive news –tends to negatively impact firm reputation.

In other literature, firm reputation is positively linked to ends in firm value and profit. Riahi-Belkaoui (2004) finds evidence that the greater degree to which an firm participates in a multinational market setting, the greater proportion of that firm's value is derived from its reputation. Benjamin Klein and Keith Leffer's (1981) theory states that firms can signal higher quality by charging an above market price if and only if they are perceived as having a good reputation. Thus an intangible reputation can result in an increase in tangible profits.

At least two points are clear from the literature cited above. First, reputation is something that the public perceives based on observed attributes. Second, firms have a material incentive to maintain and improve their perceived reputations.

A Model of Firm Reputation

Suppose there are two firms operating in a single market in one country. Each firm is the same except possibly with regards to their reputations. Demand for the services of these firms depends on the price and quality of service, and in equilibrium these two metrics should be the same. But the demand for each firm's service will also be assumed to depend on how consumers perceive that firm's reputation *relative* to the

other[3]. Under the condition that the perceived reputations are the same for both firms, then in equilibrium the firms are identical and so they share the market equally. However, should one firm's reputation be perceived to be superior to the other, then demand for the firm with the inferior reputation will be less than in the previous equilibrium, and in general the profits will be lower for this firm.

Public knowledge of a firm's reputation will be assumed to depend only on publicly available information. For simplicity, the information available to consumers will consist of discrete "events" where a firm is observed to misbehave; such an event can be likened to a scandal involving the firm's management. Since what matters for profits is the relative reputation, perceived reputation for firm i can be modeled as follows:

$$PR_i = \begin{cases} 1 - \dfrac{n_i}{n_1 + n_2} & \text{if } n_1 \text{or } n_2 \neq 0 \\ 1 & \text{if both } n_1 \text{ and } n_2 = 0 \end{cases} \qquad \text{for } i = 1,2$$

Where n_i is a discrete number, greater or equal to zero, which is defined to be the number of observed and unfavorable events for firm i in a single, static time period. The perceived reputation index above has the following properties:

i. $PR_i(n_i + 1, n_j) - PR_i(n_i, n_j) < 0$
ii. $PR_i(n_i, n_j + 1) - PR_i(n_i, n_j) > 0$
For $i, j = 1,2$ and $i \neq j$
iii. $PR_1 = PR_2 \Leftrightarrow n_1 = n_2$

The perceived reputation index decreases for firm i when the number of scandals for firm i increases and it increases when the number of scandals for the other firm, j, increases. Since firms cannot erase scandals from the public's memory in this model, we only need to consider increases in the number of firm specific events.

In a world where both firms have a perfect record, their reputations are measured as 1 on this index, and more importantly, their reputations are indistinguishable to the

[3] This would be particularly relevant to financial services firms, for example.

public. As soon as one firm has at least one unflattering event more than its rival, that firm suffers with a perceived reputation that is lower than its competitor. However it should be noted that as long as the number of scandals for each firm is the same, their relative reputations will remain equivalent in the public's view. It should also be noted that as the world become more corrupt –that is, as the number of scandals for both firms get large –the marginal impact of additional tarnishes to the relative perceived reputation becomes less. This can be seen in figure 1, which plots firm 1's PR holding firm 2's number of scandals fixed for various counts of firm 2's tarnishing events.

A Simple Competition

Barring free entry, the public has a simple choice between two firms for the same product; holding quality and price of each firm fixed, and with the additional assumption that each firm could single handedly clear the market, the two firms face a game similar to a Bertrand pricing situation, with the difference being that the firm's will compete on reputation. Thus, a firm's profit will confirm to the following schedule:

$$\Pi_i(n_1, n_2) = \left\{ \begin{array}{ll} 0 & \text{if } n_i > n_{-i} \\ \Pi^D & \text{if } n_i = n_{-i} \\ \Pi^M & \text{if } n_i < n_{-i} \end{array} \right\} \text{ for } i = 1,2$$

Π^M is the profit of serving the entire market alone, and Π^D is the profit derived from sharing the market with the other firm, and it is reasonable to assume that $0 < \Pi^D < \Pi^M$. Essentially, what this shows is that, under the conditions constructed above, the firm with the best reputation reaps the greatest profit. It is clear that a firm will strive to achieve the best possible reputation relative to its competitor.

That being said, the parameter n_i does not share the same characteristics as would price in a similarly set up game. The number of unfavorable events can only be increased; thus, in an equilibrium where both firm have an equal number of publicly observed events, both firms have a strong incentive to prevent any further scandals in public view. On the other hand, should a firm have one event more than the other, the

best that firm can hope for is that the other firm be implicated in a scandal, putting their reputations on an equal footing once again –but this is not something that the disadvantaged firm can control.

This line of reasoning leads to multiple equilibria. If firms can only control whether or not they behave in the market, then when the reputations are equal, both firms will choose not to engage in a scandal. On the other hand, once a firm has one or more events in the public view than its rival, it will be indifferent from seeing more scandals attributed to its name or not; its rival will care only that it maintains its lead in holding a better reputation.

Since there is no mechanism in this model which allows for reputations to be repaired, once the damage has been done, a firm's reputation depends only on the actions of its rival, in other words, it cannot take action to improve its situation, and only can damage its reputation further. An analysis of the process of reputation improvement is better suited for a dynamic model. For the purposes of the present analysis, it suffices to conclude that firms have a strong incentive to preserve their reputations in the first place. A more general approach to this analysis is pursued next.

The discussion above is presented as a benchmark case, and all variables except for reputation are given exogenously. A more general setting would have the demand for a firm's service –and so the price it is able to charge –vary with its perceived reputation, rather than jumping between extreme points. This follows the intuition that while a firm may be perceive to hold a reputation that is inferior, and thus a product deemed to be of inferior quality, consumers might still be willing to buy from that firm if the price is right.

This thought experiment will proceed on the assumption that consumer preferences between firms 1 and 2 yield the following demand schedule for each of the two firms:

$$D_i(p_i, PR_1, PR_2) = \left\{ \begin{array}{ll} APR_i - \alpha p_i & \text{if } n_1 \neq n_2 \\ \frac{A}{2} - \alpha p_i & \text{if } n_1 = n_2 \end{array} \right\} \text{ for } i = 1,2$$

Demand for firm $i's$ services depends on its relative reputation through the intercept term. Higher relative reputation shifts the demand schedule up and when both firms are on equal footing, their demand is symmetric.

Given the assumption on demand above, each firm then has the objective of maximizing profits given their perceived reputation in the market. The calculation for the first order condition is carried out for firm 1 below:

$$\Pi_1(p_1) = p_1 D_1(p_1, PR_1, PR_2)$$
$$\Pi_1(p_1) = p_1(APR_1 - \alpha p_1)$$
$$= APR_1 p_1 - \alpha p_1^2$$
$$\frac{\partial \Pi_1(p_1)}{\partial p_1} = APR_1 - 2\alpha p_1^* = 0$$
$$\Leftrightarrow p_1^* = \frac{APR_1}{2\alpha}$$
$$p_1^*(n_1, n_2) = \frac{A}{2\alpha}\left(1 - \frac{n_1}{n_1 + n_2}\right)$$

The first order condition for firm 2 is $p_2^* = \frac{APR_2}{2\alpha}$ by symmetry. From this it is apparent that the price that can be charged for a firm's service is proportional to its reputation.

The profit function for each firm depends on its respective reputation in the following way:

$$\Pi_1^*(n_1, n_2) = p_1^*(n_1, n_2)\left[APR_1(n_1, n_2) - \alpha p_1^*(n_1, n_2)\right]$$
$$= \frac{A}{2\alpha}\left(1 - \frac{n_1}{n_1 + n_2}\right)\left[A\left(1 - \frac{n_1}{n_1 + n_2}\right) - \alpha \frac{A}{2\alpha}\left(1 - \frac{n_1}{n_1 + n_2}\right)\right]$$
$$= \frac{A}{2\alpha}\left(1 - \frac{n_1}{n_1 + n_2}\right)\left[\frac{A}{2}\left(1 - \frac{n_1}{n_1 + n_2}\right)\right]$$
$$= \left[\frac{A^2}{4\alpha}\left(1 - \frac{n_1}{n_1 + n_2}\right)^2\right]$$

It can be shown that the profit function for each firm varies with n_1 and n_2 in a similar way as the perceived reputation index discussed previously:

i. $\Pi_i^*(n_i+1, n_j) - \Pi_i^*(n_i, n_j) \leq 0$

ii. $\Pi_i^*(n_i, n_j+1) - \Pi_i^*(n_i, n_j) \geq 0$

For $i, j = 1, 2$ and $i \neq j$

iii. $n_1 = n_2 \Leftrightarrow \Pi_1^*(n_1, n_2) = \Pi_2^*(n_1, n_2)$

The profit for firm i never increases when the number of its scandals increases, and strictly decreases in the case that both firms have at least one observed event. Likewise, when firm i's competitor is found to engage in corrupt acts, the profit for i increases, unless it has a perfect record, in which case it's profit is already at the maximum. The marginal impact of scandals on profits is also decreasing in a competitor's n; this relationship can be viewed in figures 2 and 3.

It can be inferred from these results that an atomistic firm whose only objective is to maximize profit would always prefer to maintain a better reputation than its rival; that is, given a set of initial reputations, no firm has an incentive to engage in further corruption. This matches the literature which predicts that reputation correlates positively with earnings. However, if this were truly the case, then it should be expected that firms always behave in line with public expectations of proper behavior –and this is not the case empirically. When firms are viewed not as atomistic players in a market, but instead are seen as organizations composed of individuals whose payoffs are not necessarily tied to the firm's profit, then an agency problem may arise which can explain why managers might risk reputation in the market.

The Decision of Corruption

To model when a manager of a firm will choose to participate in a corrupt act, it will be necessary to specify the payoff of engaging in such an act as opposed to the payoff of behaving as a genuine fiduciary. This situation can be analyzed as a two period

model. In the first period, the manager must decide to engage in a corrupt act or not, in the second period the consequences of the first period's actions are revealed.

Suppose in the case that follows that a firm 1 is managed by a single manager who is not an owner of the firm. The compensation for the manager in the first period is a fixed salary, F; in the second period the manager receives a certain percentage, θ, of the firms profit. This kind of compensation can be likened to a combination of receiving a performance based rewards with something of a pension in the second period. The total value of compensation in period 1 is $C = F + \beta\theta\Pi_1^2(n_1, n_2)$, where $\beta \in (0,1)$ is the discount factor and $\Pi_1^2(n_1, n_2)$ is the profit of firm 1 in period 2, given n_1 and n_2. The manager also has the option of engaging in a corrupt act in period 1 which yields him an additional sum of T. It is important to note that T is an exogenous parameter –and other than putting restrictions on its value, this paper says nothing about how it is actually determined. Should he decide to extract T in period 1, then in period 2 there is a non-zero probability, q, of public detection that results in a scandal. The manager is assumed to be risk neutral and his objective in period 1 is to maximize his expected and discounted sum of compensation and extraction,

$$C = \begin{cases} F + \beta\theta\Pi_1^2(n_1, n_2) & \text{if no corruption} \\ \text{F+T+}\beta\theta[(1-q)\Pi_1^2(n_1, n_2) + q\Pi_1^2(n_1+1, n_2)] & \text{if corruption} \end{cases}$$

The manager engages in corruption if and only if:

$$F + \beta\theta\Pi_1^2(n_1, n_2) \leq \text{F+T+}\beta\theta[(1-q)\Pi_1^2(n_1, n_2) + q\Pi_1^2(n_1+1, n_2)$$

This implies that $\beta\theta q[\Pi_1^2(n_1, n_2) - \Pi_1^2(n_1+1, n_2)] \leq T$. The manager engages in corruption only if his discounted share of future expected profits is less than the lump sum he can obtain in the first period. It can be shown that this condition depends on n_1 and n_2 as follows,

$$\beta\theta q \frac{A^2}{4\alpha}\left[\frac{n_2^2 + 2n_1n_2^2 + 2n_2^3}{(n_1+n_2)^2(n_1+n_2+1)^2}\right] \leq T \text{ if } n_1, n_2 \neq 0$$

Notice if initially, $n_1, n_2 = 0$, then according to the model, the profit for firm 1 in period 2 if corruption is detected is zero, and so the manager would engage in corruption only if,

$$\beta\theta q[\Pi_1^2(0,0)] \le T \text{ or } q \le \frac{T}{\beta\theta\Pi_1^2(0,0)}$$

To interpret this result, it is reasonable to assume that $T \le \Pi_1^1(n_1,n_2) = \Pi_1^2(n_1,n_2)$, that is, he cannot take more in period 1 than what the firm makes in period 1. This also shows that as the percent, θ, of period 2 profit decreases, the upper bound for q increases and holding all else fixed, eventually exceeds 1 –and so for sufficiently small θ, corruption is certain to take place even if detection is assured. A similar result holds for the parameter β. On the other hand, if T becomes much less than $\beta\theta\Pi_1^2(0,0)$, we see that the manger will only steal if the chances of detection become arbitrarily low.

In the general case, as $n_1 \to \infty$, holding n_2 fixed,

$$\beta\theta q \frac{A^2}{4\alpha}\left[\frac{n_2^2 + 2n_1n_2^2 + 2n_2^3}{(n_1+n_2)^2(n_1+n_2+1)^2}\right] \to 0$$

And so the lower bound for T approaches zero, and there are almost not restrictions on T. This view is consistent with the reputation of the firm approaching zero as a firm continues to accumulate tarnishes to its reputation –holding its rival fixed –and so, as its future profits vanish, so do the incentives to maintain its reputation. In the case where $n_2 \to \infty$,

$$\beta\theta q \frac{A^2}{4\alpha}\left[\frac{n_2^2 + 2n_1n_2^2 + 2n_2^3}{(n_1+n_2)^2(n_1+n_2+1)^2}\right] \to 0$$

The lower bound on T also approaches zero in this case. This can be interpreted as showing that as a firm 1's rival becomes more and more perverted in the public's mind, the cost towards future profits becomes minimal if one more scandal is detected, and a manager will steal for any possible value of T that is positive. That is, in a particularly rotten world, it matters little which firm is reputable more since the marginal damage of a public scandal to a firm's profit is small in both cases.

The analysis above does not rely on any assumptions with regards to the parameters other than the inequality constraints derived above. Nevertheless it would be constructive to consider certain scenarios which link them. In particular, the probability of detection, q, might be related to the size of the rent, T.

Intuitively, it could be expected that the probability of detection in period 2 should increase with the size of the rent. One relationship that models this trait is, $q(T) = 1 - e^{-T}$. Under this assumption, the decision problem for the manager of firm 1 becomes,

$$C = \begin{cases} F + \beta\theta\Pi_1^2(n_1, n_2) & \text{if no corruption} \\ \text{F+T+}\beta\theta[(1-(1-e^{-T}))\Pi_1^2(n_1, n_2) + (1-e^{-T})\Pi_1^2(n_1+1, n_2)] & \text{if corruption} \end{cases}$$

And he engages in corruption if and only if,

$$F + \beta\theta\Pi_1^2(n_1, n_2) \leq \text{F+T+}\beta\theta[(1-(1-e^{-T}))\Pi_1^2(n_1, n_2) + (1-e^{-T})\Pi_1^2(n_1+1, n_2)$$

or

$$\beta\theta(1-e^{-T})[\Pi_1^2(n_1, n_2) - \Pi_1^2(n_1+1, n_2)] \leq T$$

In this example, the lower bound for T increases as T itself increases, which is reasonable since the higher is the value of T, the higher is the risk of the firm being implicated in a scandal. When the initial conditions are such that the world is perfect, then the manager prefers to cheat if $\beta\theta(1-e^{-T})[\Pi_1^2(0,0)] \leq T$, which determines a threshold for θ,

$$\theta \leq \frac{T}{\beta(1-e^{-T})\Pi_1^2(0,0)}$$

This shows that when θ is less than the quantity to the right, the manager will attempt scandalous behavior. But this quantity is very high when T is low; in other words, the promised fraction of future profits must be high in order to avoid small scale or petty crime.

The situation above can also be described graphically. Figures 4 depicts the conditions for cheating given two values of the parameters $\theta\beta\Pi_1^2(0,0)$. It can be seen that the threshold for T increases as $\theta\beta\Pi_1^2(0,0)$ increases. The relationship is based on the following analysis,

$$\begin{aligned}
&\theta\beta(1-e^{-T})\Pi_1^2(0,0) \leq T \\
&\Leftrightarrow \theta\beta\Pi_1^2(0,0) - \theta\beta\Pi_1^2(0,0)e^{-T} \leq T \\
&\Leftrightarrow -\theta\beta\Pi_1^2(0,0)e^{-T} \leq T - \theta\beta\Pi_1^2(0,0) \\
&\Leftrightarrow e^{-T} > 1 - \frac{1}{\theta\beta\Pi_1^2(0,0)}T \\
&\Leftrightarrow e^{-T} - \left(1 - \frac{1}{\theta\beta\Pi_1^2(0,0)}T\right) > 0
\end{aligned}$$

Two qualities are apparent. The first is quite natural; as future profits without any tarnishes to reputation increase, the threshold on T for which the agent is willing to risk reputation increases. The second shows that the same result hold as the percent of future promised profits increases. These qualities show that although in this version of the world agents have incentives not to cheat if their normal compensation is large enough relative to T, there still exist scenarios in which corruption can be expected to take place. At the other extreme, when the world is plagued with rampant corruption, and in particular firm 2 is much more corrupt than firm 1, the situation is the same. This is due to the fact that the impact on future profits is negligible in this case, as shown previously.

Possible Inefficiencies Due to Corruption

Now as it has been determined that in a savage business climate, corruption is a distinct possibility –and that profits are likely to suffer as a result –it is natural to ask whether this has an overall impact on social welfare. To be sure, the consensus does not advocate one answer to this question; theories about corruption have come up with a diverse set of conclusions regarding this question. For example, Nathaniel H. Leff (1964) finds that corruption can actually contribute to a more efficient economy if government regulations are cumbersome to the extreme. However, such literature is generally geared towards mitigating the effects of inefficient government; with regards to private industry –and the general welfare of society, the results can be quite the reverse. In addition, as Rose-Ackerman (1999) argues, government power and private gains often go hand in hand to benefiting a select group at the expense of a greater community. Caution dictates that we be suspicious of corruption in general; and to that end, certain results of the consequences of corporate corruption can be extracted from the framework already presented.

What is clear from the agency model of the previous section is that either way, the ability for managers to extract resources from a corporate entity is costly to the firm: either the firm must pay the manager a percent of profits such that there is no material incentive to cheat them, or the managers will illegitimately extract what they can subject to maximizing their expected returns over two time periods.

One consequence of this situation is that the return to capital will be diminished over time. To see this, assume first that in the period one of a two period horizon, investors naïvely invest a fixed amount, I, in an enterprise. Their return is the profit of the first period minus what they pay to the management, residual profit in the second period, and what is left over of their capital after depreciation. This can be summarized as,

$$R = [\Pi^1 - F] + [(1-\theta)\Pi^2] + (\delta - 1)I$$

Here Π^1 and Π^2 represent profits in period one and two respectively when there is no corruption, and δ is the rate of depreciation across these time periods. This can be contrasted with their expected return, in a world where management engages in corruption. This expected return is unambiguously less than the quantity above,

$$E(R) = E[\Pi^1 - F] + E[(1-\theta)\Pi^2] + E[(\delta - 1)I]$$
$$= [\Pi^1 - F] + (1-\theta)[q\Pi^2_{tar} + (1-q)\Pi^2] + (\delta - 1)I$$

Where Π^2_{tar} is the second period profit when the firm's reputation is tarnished, $\Pi^2_{tar} < \Pi^2$, and $q > 0$.

One can speculate that the situation described above would make investors less willing to invest directly in such an enterprise –all things being equal. Of course, while the decision about the amount of investment initially is better thought of as endogenous to the scenario, it suffices for the purposes of this paper to merely point out that investment is likely to suffer as a consequence of corruption. This consequence will have an ever greater impact on a firm's ability to compete in an international setting.

In terms of other welfare measures, the model indicates that consumers will be worse off in the face of rampant corruption. This result falls out as an after thought, because, by assumption, consumers care about firm reputation. Although consumers will be indifferent between firms when both are seen by consumers to have similarly numerous scandals, they will, nonetheless, be paying for service they perceive to be inferior to what they would perceive that service to be should the firms have no tarnishes to their names. To clarify with an example, suppose the firms represent two banks: the world where these banks operate with integrity should be preferred by consumers to the world where both banks are plagued with public scandals. Each of the two banks receives an equal amount of business in both scenarios, however consumers are better off in one setting than in another.

This result can be further distilled by considering a monopoly setting. If the case is that a certain service is provided by one firm, then it is all the easier for managers to steal and simply pass on the costs to consumers. For a simple illustration suppose that

this time corruption takes a more specific form. It will be assumed that the manager can selectively inflate the marginal cost by using outside suppliers from which he receives a kick back. That is, he can claim that the marginal cost is $c' = c + \mu$, where μ is the markup, from which he will receive a certain percent of the extra revenue that the supplier makes. Since the owner will expect a profit based on the claim of c' and not c, it is clear that the firm will be pricing not where the marginal revenue equals the true marginal cost, but at an inflated price above what the monopoly would have priced in earnest. Consumers pay a higher price for less service than they would otherwise. While the model of this paper only allows the management a lump sum extraction, it should be relatively straight forward extend the results to a case that specifies the mechanism of extraction such as the one directly above.

The Matter of Institutions

Up until this point, there has been no mention of institutions. The previous portion of this paper was aimed at exploring a state of the world with no exogenous constraints on the behavior of firm management –and to that end, it was demonstrated that, even though corruption could produce scandals that could damage firm profits, nevertheless because of problems with agency, corporate corruption could be expected to take place in general. It was also argued that the impact of such behavior should be expected to decrease overall welfare.

Institutions, on the other hand, can be introduced into this setting as constraints on management's ability to profit from illegitimate action. Of the many ways that this can be modeled, two stand out in the area of law and order. One possibility is that policing and punishment are sufficient to deter such white collar crimes as what was considered above. Another related option is that that the institutional structure of corporate governance makes all transactions transparent to all parties involved.[4] Both of these mechanism are now examined. Regarding the decision calculus of the manager outlined

[4] I would refer the reader to the text of the Sarbane-Oxley Act of 2002 as one example of this.

in prior sections, there are two parameters that invite institutional involvement: q, the probability of being detected and T, the material gain of corruptions. The second option will be examined first.

Suppose that the institutional environment of how corporations transact business is such that $q = 1$. Thus a manager who takes from the firm today is certain to be caught and suffer a loss to his future share of tomorrow's profits. This situation is modeled below,

$$C = \begin{cases} F + \beta\theta\Pi_1^2(n_1, n_2) & \text{if no corruption} \\ \text{F+T+}\beta\theta\Pi_1^2(n_1 + 1, n_2) & \text{if corruption} \end{cases}$$

The lower bound on T is, $\beta\theta[\Pi_1^2(n_1, n_2) - \Pi_1^2(n_1 + 1, n_2)] \leq \text{T}$. Compare this to the result in the general case and it is clear that the threshold on T can go no higher. The interpretation is that transparency sheds a light on any corrupt happenings, and so management is constrained to consider a strict trade off between the amount it can extract in the first period relative to the loss of future profit that can be expected from the second. Whether or not such action makes sense depends on whether T is suitably high. All that transparency adds to the picture is that corruption will only higher values of T than in the general model.

A more specific case is when the initial conditions are such that both firms have untarnished records. If that is so, then because the market puts a premium on perfection, the manager will be certain to ruin the business if he acts corruptly. This puts further restrictions on T, as now the second period profits will be zero and so T must be greater than $\beta\theta\Pi_1^2(0,0)$. This can be contrasted with the case in which the competitor is totally corrupt, (i.e. $n_2 \to \infty$). In that case we again observe that the damage to profits of one more scandal is negligible, and so corrupt acts become profitable even for very small amounts. Transparency works only insofar as it increases the amount that a corrupt manager is willing to accept in return for engaging in corruption. If we can specify T exogenously –that is, if not all values of T are feasible for a manager to steal, and in particular, if higher values of T are specified to be more difficult to embezzle, then

transparency does reduce the likelihood of corruption in private enterprise. However, as the model indicates, knowing that one will be caught only forces one to accept the consequences of guilt –and so far those consequences have been market drive.

A more direct approach to incorporating institutions is in establishing punishments as a consequence to being implicated in a scandal. This is the policing option already mentioned. To that end, suppose that if the manager is caught in the second period, he not only must forgo the amount T he took from the firm in the first period, but also must pay a fine, Φ, in addition to this. So that the manager must calculate his excepted payoff from the following,

$$C = \begin{cases} F + \beta\theta\Pi_1^2(n_1, n_2) & \text{if no corruption} \\ \text{F+T+}\beta[(1-q)\theta\Pi_1^2(n_1, n_2) + q\{\theta\Pi_1^2(n_1+1, n_2) - T - \Phi\}] & \text{if corruption} \end{cases}$$

From this, a necessary condition for the manager to want to cheat the firm is,

$$\frac{\beta\theta q[\Pi_1^2(n_1, n_2) - \Pi_1^2(n_1+1, n_2)] + q\beta\Phi}{1-q\beta} \leq T$$

If we impose that $T \leq \Pi_1^1(n_1, n_2) = \Pi_1^2(n_1, n_2)$, then the restrictions on T amount to, $\Phi \leq \theta\Pi_1^2(n_1+1, n_2) - \left(\theta + 1 - 1/q\beta\right)\Pi_1^2(n_1, n_2)$ for corruption to take place, or that $\Phi > \theta\Pi_1^2(n_1+1, n_2) - \left(\theta + 1 - 1/q\beta\right)\Pi_1^2(n_1, n_2)$ is sufficient to deter corruption. When $(n_1, n_2) = (0,0)$, then the lower bound on Φ is positive when $q < \frac{1}{\beta(\theta+1)}$, and so a fine is only necessary if the probability of being caught is sufficiently low. This is because if caught in the second period, one cannot keep the amount taken in the first period. Notice, however, that the minimum fine increases in q, and as q approaches zero, the minimum fine increases without bound. Thus enforcement of a penal fine apparently solves the problem of corporate corruption only to the extend that the probability of catching a criminal is nonzero; and of course, the effectiveness of such a program is greatly

enhanced if coupled with greater transparency which ensures a high probability of detection.

Institutions, as interpreted above, have a very specific meaning. They directly refer to law and law enforcement, but they also indirectly refer to norms and corporate culture, or culture in general. Laws of transparency on the books have little meaning if the culture of the firm actively disregards them; and fines imposed by a judiciary that is not impartial or independent of influence from the parties involved are suspect. While this paper does not address these nuances in any detail, they remain implicit nonetheless.

Bridging Institutions

The stage is now set for the analysis of the development of institutions. The setting builds on the model of reputation competition and institutional constraints developed above. For simplicity, suppose there are just two nations, the North and the South. In the North, we have two firms sharing the same market where consumers care about reputation as described in this paper. One of these firms will be entirely domestic, while the other will be a multinational firm and transact business in both countries. The South will have two firms as well, however one of the firms will be the branch of the multinational. The analysis assumes that the decision to transact business abroad by the multinational firm is given, and also that the behavior of all firms is observed by all consumers regardless to their nationality.

Under autarky, the two firm market in the South can be imagined as behaving in much the same manner as the model of reputations permits. Corruption will be costly to firms, but because of agency issues, the 'state of nature' all but guarantees that corruption will take place. In fact, let us assume that both firms exist in a state of corruption, so that the marginal cost to the firm and management of an additional scandal is small, that is, that initial conditions are that both n_1^S and n_2^S are large. The situation in the North is the opposite. Both of the firms' reputations are intact, in other words, n_1^N and n_2^N are zero; furthermore, institutional constraints prevent management from engaging in corrupt acts, and so n_1^N and n_2^N are fixed at zero.

Let firm 1 of the North be the multinational and suppose that it acquires and ties its name to firm 1 of the South. To consolidate the notation, the multinational will be renamed firm M. The process of the take-over also works as a jubilee of sorts for what was firm 1 in the South, and we will simply assume that its reputation (and especially as far as the North is concerned) is now perfect. The reputation for firm M now depends on n_M^N and n_M^S. n_M^N is held fixed at zero because of the institutions of the North[5] and our assumption about the initial conditions; the South has no such institutions yet, and so n_M^S is a liability for firm M. The cost to firm M of even one scandal being detected across markets is quite high; following the model, firm M would be ruined in the North. The logic of doing business in the South depends on firm M's ability to neutralize this risk. One way or another, firm M must find a way to bridge the institutional divide that exists between the North and the South. This can be accomplished informally and formally.

An informal solution would attempt to tie the management of the foreign branch to the institutions of the North. For example, firm M can employ only managers who are citizens of the North, and so subject to the laws of the North. Should such a strategy be successful, then firm 2 of the South is ruined, since it cannot compete with firm M's unspoiled name. Alternatively, firm M can lobby for formal changes to the institutions of the South. This matter is taken up in detail next.

Before opening up to the multinational, the South had two firms, each conducting business in a corrupt manner. The managers in each firm were the primary beneficiaries of this. They had an interest in maintaining the status quo of no institutional oversight and it is conceivable that they would have lobbied to see that this remained the case.

One way to model this is with the framework of lobbying developed by Grossman and Helpman (2001, Chapter 7). Following their model, there exists one policy maker and one group that lobbies for one policy dimension: institutional quality as embodied in the enforcement of a fine, $\Phi \in \{0, \Phi^*\}$, where Φ^* is an amount sufficient to deter corruption given a nonzero q. Assuming the policy maker cares only about contributions and that she can set the fine to either of these levels, the lobbying group and the policy

[5] We can assume that their exists a nonzero probability of detection.

maker enter into a bargaining game where they attempt to split the rents of corruption. If no agreement is reached, then both the group of managers and the policy maker get nothing (she sets the fine to Φ^* and they do not engage in corruption); otherwise they find an agreeable partition of the spoils. To see why such an arrangement is likely to produce a corrupt environment, consider two variations of the game. If the lobbying group acts first and makes a take it or leave it offer to the policy maker, then for any positive amount they offer, the policy maker will never wish to set the fine to Φ^*. On the other hand, should the policy maker make the first offer, and demand a tribute, then as long as this tribute is not too high[6], the managers will agree to pay it and avoid having a fine in place.

Once the multinational makes a commitment to enter the market in the South, the lobbying game between the old firms and the government is effectively ended. Firm 2, with its tarnished reputation, cannot compete with firm M's perfect record; the ability of its management to pay off the policy maker dries up with the profits and the only possible source of lobbying comes from firm M. Firm M has an interest in seeing that the policy maker implements a fine of Φ^*, since that would formally police the management of its foreign branch. To that end, we can imagine a setting whereby the multinational management in the headquarters offers a contribution to the policy maker in exchange for ensuring a high enough fine. In doing this, firm M actively works to make formal changes in the governance of firms in the South, and so it acts like a bridge for the institutions of the North to cross over to the South.

The analysis of this paper presents a very simplified version of a very complex set of relationships; but in so doing it distills the logic of how a multinational firm which cares about its own argentine reputation can effect the institutions in the countries of its foreign operations. The methodology was limited to static and basic two period time periods in an effort to establish the results in a straight forward manner, however the nature of reputations and the observation that institutions change only gradually over time

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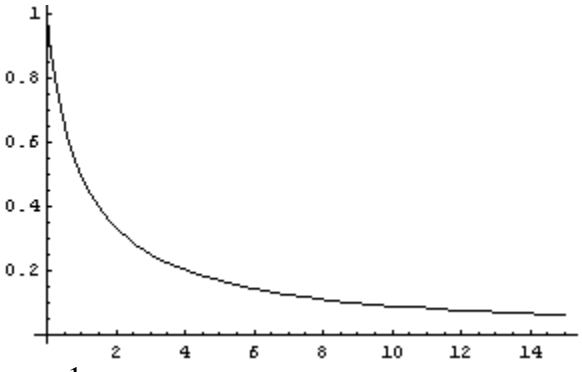
[6] Here, 'too high' refers to the condition that $c < \beta\theta q[\Pi_i^2(n_1, n_2) - \Pi_i^2(n_1 + 1, n_2)] - T$ for the management of each firm i, $i = 1,2$.

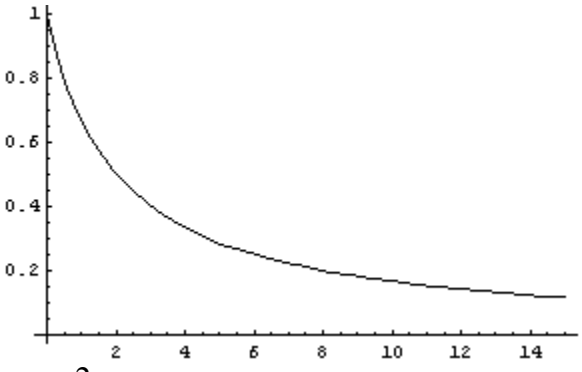
indicates that a dynamic model would be a fruitful endeavor. There is also a host of empirical questions that this paper points to. The advantage of this modeling is that it maps two observed and measurable quantities: public scandals and the institutions of law and law enforcement. The degree to which firms are sensitive to damages to their name is also an empirical matter –and this model ignores the fact that scandals can vary in their impact. Some acts of corruption are perceived to be worse than others and that is something a simple count does not account for.

Finally, for all its simplicity, this exercise of thought has produced some very relevant results to the ongoing debate over globalization. The proliferation of multinational firms across the globe will have repercussions. If, by holding these enterprises to high standards in their home countries, these high standards will diffuse through out their network of operation, then policy makers and business personnel alike have one more avenue to which they can approach the many problems on an increasingly dynamic and integrated global economy.

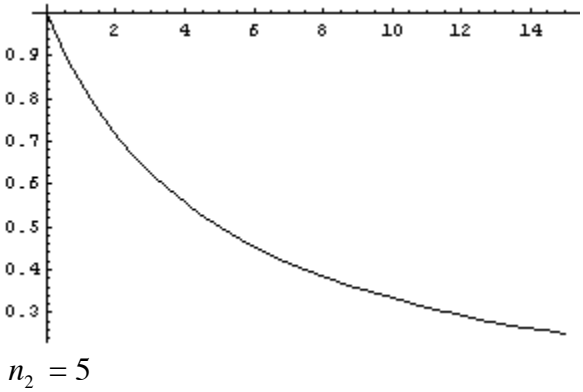
Figure 1 –The PR index for firm 1 varies with n_1 given select values of n_2



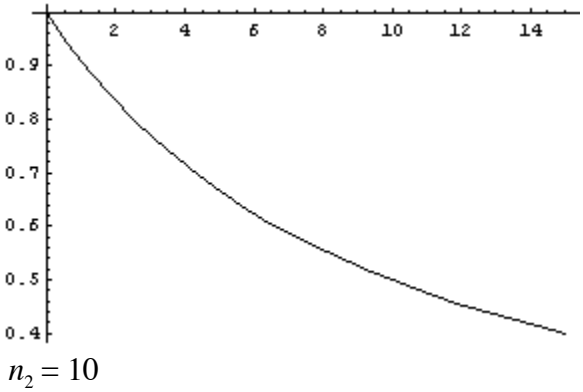
$n_2 = 1$



$n_2 = 2$

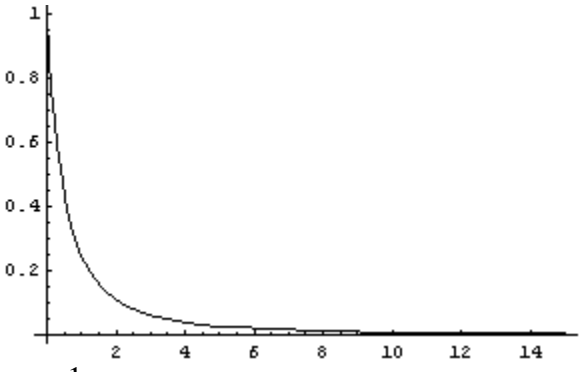


$n_2 = 5$

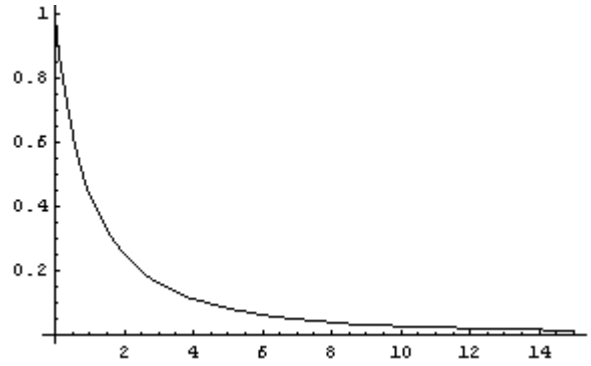


$n_2 = 10$

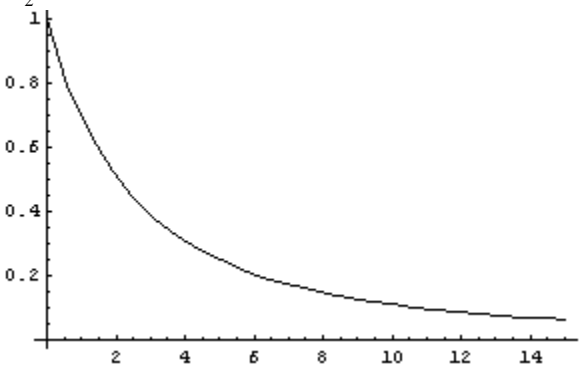
Figure 2 –How profits of firm 1 varies with n_1 given select values of n_2



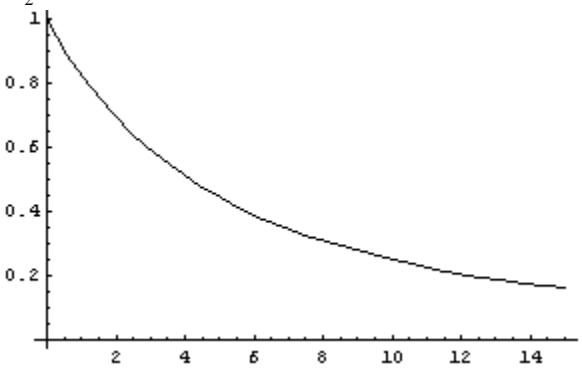
$n_2 = 1$



$n_2 = 2$



$n_2 = 5$



$n_2 = 10$

Figure 3 –A comparison of firm 1's profits where the upper curve represents $n_2 = 50$ and the lower curve represents $n_2 = 10$. The horizontal axis is n_1.

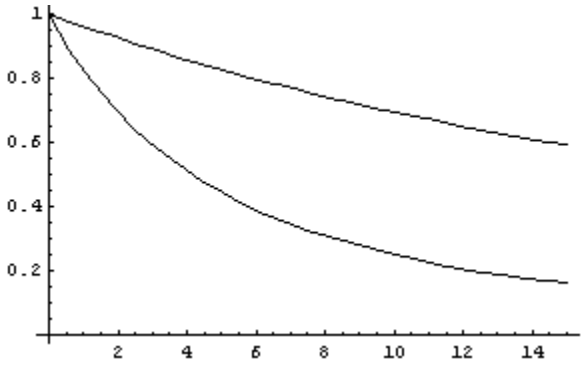
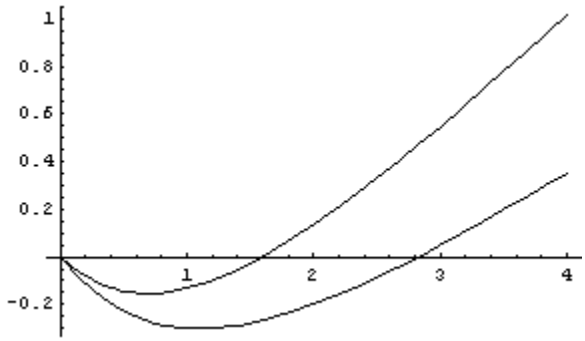


Figure 4 -- $e^{-T} - \left(1 - \frac{1}{\theta\beta\Pi_1^2(0,0)}T\right) = 0$ for $\theta\beta\Pi_1^2(0,0) = 2$ (upper curve) and $\theta\beta\Pi_1^2(0,0) = 3$ (lower curve)



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