THE REGULATION OF ENTRY*

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We present new data on the regulation of entry of start-up firms in 85 countries. The data cover the number of procedures, official time, and official cost that a start-up must bear before it can operate legally. The official costs of entry are extremely high in most countries. Countries with heavier regulation of entry have higher corruption and larger unofficial economies, but not better quality of public or private goods. Countries with more democratic and limited governments have lighter regulation of entry. The evidence is inconsistent with public interest theories of regulation, but supports the public choice view that entry regulation benefits politicians and bureaucrats.

I. Introduction

Countries differ significantly in the way in which they regulate the entry of new businesses. To meet government requirements for starting to operate a business in Mozambique, an entrepreneur must complete 19 procedures taking at least 149 business days and pay US$256 in fees. To do the same, an entrepreneur in Italy needs to follow 16 different procedures, pay US$3946 in fees, and wait at least 62 business days to acquire the

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necessary permits. In contrast, an entrepreneur in Canada can finish the process in two days by paying US$280 in fees and completing only two procedures.

In this paper we describe the required procedures governing entry regulation, as well as the time and the cost of following these procedures, in 85 countries. We focus on legal requirements that need to be met before a business can officially open its doors, the official cost of meeting these requirements, and the minimum time it takes to meet them if the government does not delay the process. We then use these data to evaluate economic theories of regulation. Our work owes a great deal to De Soto's [1990] path-breaking study of entry regulation in Peru. Unlike De Soto, we look at the official requirements, official cost, and official time—and do not measure corruption and bureaucratic delays that further raise the cost of entry.

Pigou's [1938] public interest theory of regulation holds that unregulated markets exhibit frequent failures, ranging from monopoly power to externalities. A government that pursues social efficiency counters these failures and protects the public through regulation. As applied to entry, this view holds that the government screens new entrants to make sure that consumers buy high quality products from "desirable" sellers. Such regulation reduces market failures such as low quality products from fly-by-night operators and externalities such as pollution. It is "done to ensure that new companies meet minimum standards to provide a good or service. By being registered, new companies acquire a type of official approval, which makes them reputable enough to engage in transactions with the general public and other businesses" [SRI 1999, p. 14]. The public interest theory predicts that stricter regulation of entry, as measured by a higher number of procedures in particular, should be associated with socially superior outcomes.

The public choice theory [Tullock 1967; Stigler 1971; Peltzman 1976] sees the government as less benign and regulation as socially inefficient. It comes in two flavors. In Stigler's [1971] theory of regulatory capture, "regulation is acquired by the industry and is designed and operated primarily for its benefit." Industry incumbents are able to acquire regulations that create rents for themselves, since they typically face lower information and organization costs than do the dispersed consumers. In this theory the regulation of entry keeps out the competitors and raises incumbents' profits. Because stricter regulation raises bar-

riers to entry, it should lead to greater market power and profits rather than benefits to consumers.

A second strand of the public choice theory, which we call the *tollbooth* view, holds that regulation is pursued for the benefit of politicians and bureaucrats [McChesney 1987; De Soto 1990; Shleifer and Vishny 1998]. Politicians use regulation both to create rents and to extract them through campaign contributions, votes, and bribes. "An important reason why many of these permits and regulations exist is probably to give officials the power to deny them and to collect bribes in return for providing the permits" [Shleifer and Vishny 1993, p. 601]. The capture and tollbooth theories are closely related, in that they both address rent creation and extraction through the political process. The capture theory emphasizes the benefits to the industry, while the tollbooth theory stresses those to the politicians even when the industry is left worse off by regulation.

In principle, the collection of bribes in exchange for release from regulation can be efficient. In effect, the government can become an equity holder in a regulated firm. In practice, however, the creation of rents for the bureaucrats and politicians through regulation is often inefficient, in part because the regulators are disorganized, and in part because the policies they pursue to increase the rents from corruption are distortionary. The analogy to tollbooths on a highway is useful. Efficient regulation may call for one toll for the use of a road, or even no tolls if the operation of the road is most efficiently financed through general tax revenues. In a political equilibrium, however, each town through which the road passes might be able to erect its own tollbooth. Toll collectors may also block alternative routes so as to force the traffic onto the toll road. For both of these reasons, political toll collection is inefficient.

In the tollbooth theory the regulation of entry enables the regulators to collect bribes from the potential entrants and serves no social purpose. "When someone has finally made the decision to invest, he then is subjected to some of the worst treatment imaginable. . . In a few cases this treatment consists of outright extortion: presenting the investor with insurmountable delays or repeated obstacles unless he makes a large payoff . . ." [World Bank 1999, p. 10]. More extensive regulation should be associated with socially inferior outcomes, particularly corruption.

We assess the regulation of entry around the world from the perspective of these theories by addressing two broad sets of

questions. First, what are the consequences of the regulation of entry, and in particular, who gets the rents? If the regulation of entry serves the public interest, it should be associated with higher quality of goods, fewer damaging externalities, and greater competition. Public choice theory, in contrast, predicts that stricter regulation is most clearly associated with less competition and higher corruption.

A second question we examine to distinguish the alternative theories of regulation is which governments regulate entry? The public interest model predicts that governments whose interests are more closely aligned with those of the consumers, which we think of as the more representative and more limited governments, should ceteris paribus regulate entry more strictly. In contrast, the public choice model predicts that the governments least subject to popular oversight should pursue the strictest regulations, to benefit themselves and possibly the incumbent firms. Knowing who regulates thus helps to discriminate among the theories.

Our analysis of exhaustive data on entry regulation in 85 countries leads to the following conclusions. The number of procedures required to start up a firm varies from the low of 2 in Canada to the high of 21 in the Dominican Republic, with the world average of around 10. The minimum official time for such a start-up varies from the low of 2 business days in Australia and Canada to the high of 152 in Madagascar, assuming that there are no delays by either the applicant or the regulators, with the world average of 47 business days. The official cost of following these procedures for a simple firm ranges from under 0.5 percent of per capita GDP in the United States to over 4.6 times per capita GDP in the Dominican Republic, with the worldwide average of 47 percent of annual per capita income. For an entrepreneur, legal entry is extremely cumbersome, time-consuming, and expensive in most countries in the world.

In a cross section of countries, we do not find that stricter regulation of entry is associated with higher quality products, better pollution records or health outcomes, or keener competition. But stricter regulation of entry *is* associated with sharply higher levels of corruption, and a greater relative size of the unofficial economy. This evidence favors public choice over the public interest theories of regulation.

In response, a public interest theorist could perhaps argue that heavy regulation in some countries is a reflection of both

significant market failures and the unavailability of alternative mechanisms of addressing them, such as good courts or free press. In addition, corruption and a large unofficial economy may be inadvertent consequences of benevolent regulation, and hence cannot be used as evidence against the public interest view. Such inadvertent consequences might obtain as a side effect of screening out bad entrants [Banerjee 1997; Acemoglu and Verdier 2000], or simply as a result of a well-intended but misguided transplant of rich-country regulations into poor countries. Because of this logic, the question of which countries regulate entry more heavily may be better suited conceptually to distinguish the alternative theories.

We find that the countries with more open access to political power, greater constraints on the executive, and greater political rights have less burdensome regulation of entry—even controlling for per capita income—than do the countries with less representative, less limited, and less free governments. The per capita income control is crucial for this analysis because it could be argued that richer countries have both better governments and a lower need for the regulation of entry, perhaps because they have fewer market failures or better alternative ways of dealing with them. The fact that better governments regulate entry less, along with the straightforward interpretation of the evidence on corruption and the unofficial economy, point to the tollbooth theory: entry is regulated because doing so benefits the regulators.

The next section describes the sample. Section III presents our basic results on the extent of entry regulation around the world. Section IV asks who gets the rents from regulation. Section V presents the main results on which governments regulate. Section VI concludes.

II. Data

A. *Construction of the Database*

This paper is based on a new data set, which describes the regulation of entry by start-up companies in 85 countries in 1999. We are interested in all the procedures that an entrepreneur needs to carry out to begin legally operating a firm involved in industrial or commercial activity. Specifically, we record all procedures that are officially required of an entrepreneur in order to

obtain all necessary permits and to notify and file with all requisite authorities. We also calculate the official costs and time necessary for the completion of each procedure under normal circumstances. The study assumes that the information is readily available and that all governmental bodies function efficiently and without corruption.

We collect data on entry regulation using all available written information on start-up procedures from government publications, reports of development agencies such as the World Bank and USAID, and government web pages on the Internet. We then contact the relevant government agencies to check the accuracy of the data. Finally, for each country we commission at least one independent report on entry regulation from a local law firm, and work with that firm and government officials to eliminate disagreements among them.

We use official sources for the number of procedures, time, and cost. If official sources are conflicting or the laws are ambiguous, we follow the most authoritative source. In the absence of express legal definitions, we take the government official's report as the source. If several official sources have different estimates of time and cost, we take the median. Absent official estimates of time and cost, we take the estimates of local incorporation lawyers. If several unofficial (e.g., a private lawyer) sources have different estimates, we again take the median.

Our countries span a wide range of income levels and political systems. The sample includes fourteen African countries, nine East Asian countries including China and Vietnam, three South Asian countries (India, Pakistan, and Sri Lanka), all Central and Eastern European countries except for Albania and some of the former Yugoslav republics, eight former Soviet Union republics and Mongolia, ten Latin American countries, two Caribbean countries (Dominican Republic and Jamaica), six Middle Eastern countries (Egypt, Israel, Jordan, Lebanon, Morocco, and Tunisia), and all major developed countries.

We record the procedures related to obtaining all the necessary permits and licenses, and completing all the required inscriptions, verifications, and notifications for the company to be legally in operation. When there are multiple ways to begin operating legally, we choose the fastest in terms of time. In some countries, entrepreneurs may not bother to follow official procedures or bypass them by paying bribes or hiring the services of "facilitators." An entrepreneur in Georgia can start up a company

after going through 13 procedures in 69 business days and paying $375 in fees. Alternatively, he may hire a legal advisory firm that completes the start-up process for $610 in three business days. In the analysis, we use the first set of numbers. We do so because we are primarily interested in understanding the structure of official regulation.

Regulations of start-up companies vary across regions within a country, across industries, and across firm sizes. For concreteness, we focus on a "standardized" firm, which has the following characteristics: it performs general industrial or commercial activities, it operates in the largest city[1] (by population), it is exempt from industry-specific requirements (including environmental ones), it does not participate in foreign trade and does not trade in goods that are subject to excise taxes (e.g., liquor, tobacco, gas), it is a domestically owned limited liability company,[2] its capital is subscribed in cash (not in-kind contributions) and is the higher of (i) 10 times GDP per capita in 1999 or (ii) the minimum capital requirement for the particular type of business entity, it rents (i.e., does not own) land and business premises, it has between 5 and 50 employees one month after the commencement of operations all of whom are nationals, it has turnover of up to 10 times its start-up capital, and it does not qualify for investment incentives. Although different legal forms are used in different countries to set up the simplest firm, to make comparisons we need to look at the same form.

Our data almost surely underestimate the cost and complexity of entry.[3] Start-up procedures in the provinces are often slower than in the capital. Industry-specific requirements add procedures. Foreign ownership frequently involves additional verifications and procedures. Contributions in kind often require assessment of value, a complex procedure that depends on the quality of property registries. Finally, purchasing land can be quite difficult and even impossible in some of the countries of the sample (for example, in the Kyrgyz Republic).

1. In practice, the largest city coincides with the capital city except in Australia (Melbourne), Brazil (Sao Paulo), Canada (Toronto), Germany (Frankfurt), Kazakhstan (Almaty), the Netherlands (Amsterdam), South Africa (Johannesburg), Turkey (Istanbul), and the United States (New York).

2. If the Company Law allows for more than one privately owned business form with limited liability, we choose the more popular business form among small companies in the country.

3. The World Economic Forum [2001] surveys business people on how important administrative regulations are as an obstacle to new business. Our three measures are strongly positively correlated with these subjective assessments.

B. Definitions of Variables

We use three measures of entry regulation: the number of procedures that firms must go through, the official time required to complete the process, and its official cost. In the public interest theory, a more thorough screening process requires more procedures and demands more time. In the public choice theory, more procedures and longer delays facilitate bribe extraction (tollbooth view) or make entry less attractive to potential competitors (capture view).

Theoretical predictions regarding our measure of cost are ambiguous. A benevolent social planner who wants to spend significant resources on screening new entrants may choose to finance such activity with broad taxes rather than with the direct fees that we measure, leading to low costs as we measure them. A corrupt regulator may also want to set fees low in order to raise his own bribe income if, for example, fees are verifiable and cannot be expropriated by the regulator.[4] In contrast, higher fees are unambiguously desirable as a tool to deter entry under the *capture theory*. Because of these ambiguities, we present statistics on cost mainly to describe an important attribute of regulation and not to discriminate among theories.

We keep track of all the procedures required by law to start a business. A separate activity in the start-up process is a "procedure" only if it requires the entrepreneur to interact with outside entities: state and local government offices, lawyers, auditors, company seal manufacturers, notaries, etc. For example, all limited liability companies need to hold an inaugural meeting of shareholders to formally adopt the Company Articles and Bylaws. Since this activity involves only the entrepreneurs, we do not count it as a procedure. Similarly, most companies hire a lawyer to draft their Articles of Association. However, we do not count that as a procedure unless the law requires that a lawyer be involved. In the same vein, we ignore procedures that the entrepreneur can avoid altogether (e.g., reserving exclusive rights over a proposed company name until registration is completed) or that can be performed after business commences.[5] Finally, when ob-

4. Shleifer and Vishny [1993] distinguish corruption with theft from corruption without theft. In the latter case, the regulator must remit the official fee to the Treasury, and therefore has no interest in that fee being high.

5. In several countries, our consultants advised us that certain procedures, while not required, are highly recommended, because failure to follow them may result in significant delays and additional costs. We collected data on these

taining a document requires several separate procedures involving different officials, we count each as a procedure. For example, a Bulgarian entrepreneur receives her registration certificate from the Company Registry in Sofia, and then has to pay the associated fee at an officially designated bank. Even though both activities are related to "obtaining the registration certificate," they count as two separate procedures in the data.

To measure time, we collect information on the sequence in which procedures are to be completed and rely on official figures as to how many business days it takes to complete each procedure. We ignore the time spent to gather information, and assume that all procedures are known from the very beginning. We also assume that procedures are taken simultaneously whenever possible, for maximum efficiency. Since entrepreneurs may have trouble visiting several different institutions within the same day (especially if they come from out-of-town), we set the minimum time required to visit an institution to be one day.[6] Another justification for this approach is that the relevant offices sometimes open for business only briefly: both the Ministry of Economy and the Ministry of Justice in Cairo open for business only between 11 a.m. and 2 p.m.

We estimate the cost of entry regulation based on all identifiable official expenses: fees, costs of procedures and forms, photocopies, fiscal stamps, legal and notary charges, etc. All cost figures are official and do not include bribes, which De Soto [1990] has shown to be significant for registration. Setup fees often vary with the level of start-up capital. As indicated, we report the costs associated with starting to operate legally a firm with capital equivalent to the larger of (i) ten times per capita GDP in 1999 or (ii) the minimum capital requirement stipulated in the law. We have experimented with other capital levels and found our results to be robust.

Theoretical predictions for the cost of entry regulation are ambiguous. As an alternative measure, we consider only the

procedures, but did not include them in the variables presented here because we wanted to stick to the mandatory criterion. We have rerun the regressions discussed below including these highly recommended procedures. The inclusion does not have a material impact on the results.

6. In the calculation of time, when two procedures can be completed on the same day in the same building, we count that as one day rather than two (following the urgings of officials in several countries, where several offices are located in the same building). Our results are not affected by this particular way of computing time.

component of the cost that goes to the government, which in the sample averages about half the total cost. The results for this cost variable are generally weaker than for the total out-of-pocket cost, but go in the same direction. Our basic cost estimates also ignore the opportunity cost of the entrepreneur's time and the forgone profits associated with bureaucratic delay. To address this concern, we calculate a "full cost" measure, which adds up the official expenses and an estimate of the value of the entrepreneur's time, valuing his time at the country's per capita income per working day. We report this number below, and have replicated the analysis using it as a measure of cost. The results obtained using this cost measure are very similar to those using the raw data on time and cost, and hence are not presented.

Table I lists typical procedures associated with setting up a firm in our sample. The procedures are further divided by their function: screening (a residual category, which generally aims to keep out "unattractive" projects or entrepreneurs), health and safety, labor, taxes, and environment. The basic procedure in starting up a business, present everywhere, is registering with the Companies' Registry. This can take more than one procedure; sometimes there is a "preliminary license" and a "final" license. Combined with that procedure, or as a separate procedure, is the check for uniqueness of the proposed company name. Add-on procedures comprise the requirements to notarize the Company Deeds, to open a bank account and deposit of start-up capital, and to publish a notification of the company's establishment in an official or business paper. Additional screening procedures that include obtaining different certificates and filing with agencies other than the Registry may add up to 97 days in delays, as is the case in Madagascar. Another set of basic screening procedures, present in almost every country in the data set, covers certain mandatory municipal procedures, registrations with statistical offices and with Chambers of Commerce and Industry (or respective Ministries). In the Dominican Republic these procedures take seven procedures and fourteen days. There is large cross-country variation in terms of the number, time, and cost of screening procedures as the Company Registry performs many of these tasks automatically in the most efficient countries but the entrepreneur does much of the legwork in the less efficient ones.

Additional procedures appear in four areas. The first covers tax-related procedures, which require seven procedures and twenty days in Madagascar. The second is labor regulations,

TABLE I

List of Procedures for Starting up a Company

This table provides a list of common procedures required to start up a company in the 85 countries of the sample.

1. Screening procedures
- Certify business competence
- Certify a clean criminal record
- Certify marital status
- Check the name for uniqueness
- Notarize company deeds
- Notarize registration certificate
- File with the Statistical Bureau
- File with the Ministry of Industry and Trade, Ministry of the Economy, or the respective ministries by line of business
- Notify municipality of start-up date
- Obtain certificate of compliance with the company law
- Obtain business license (operations permit)
- Obtain permit to play music to the public (irrespective of line of business)
- Open a bank account and deposit start-up capital
- Perform an official audit at start-up
- Publish notice of company foundation
- Register at the Companies Registry
- Sign up for membership in the Chamber of Commerce or Industry or the Regional Trade Association

2. Tax-related requirements
- Arrange automatic withdrawal of the employees' income tax from the company payroll funds
- Designate a bondsman for tax purposes
- File with the Ministry of Finance
- Issue notice of start of activity to the Tax Authorities
- Register for corporate income tax
- Register for VAT
- Register for state taxes
- Register the company bylaws with the Tax Authorities
- Seal, validate, rubricate accounting books

3. Labor/social security-related requirements
- File with the Ministry of Labor
- Issue employment declarations for all employees
- Notarize the labor contract
- Pass inspections by social security officials
- Register for accident and labor risk insurance
- Register for health and medical insurance
- Register with pension funds
- Register for Social Security
- Register for unemployment insurance
- Register with the housing fund

4. Safety and health requirements
- Notify the health and safety authorities and obtain authorization to operate from the Health Ministry
- Pass inspections and obtain certificates related to work safety, building, fire, sanitation, and hygiene

5. Environment-related requirements
- Issue environmental declaration
- Obtain environment certificate
- Obtain sewer approval
- Obtain zoning approval
- Pass inspections from environmental officials
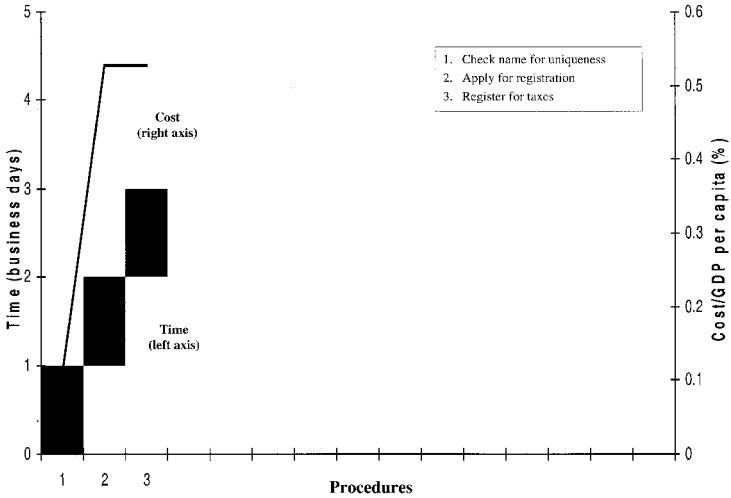- Register with the water management and water discharge authorities

FIGURE I

Start-up Procedures in New Zealand

Procedures are lined up sequentially on the horizontal axis and described in the text box. The time required to complete each procedure is described by the height of the bar and measured against the left scale. Cumulative costs (as a percentage of per capita (GDP) are plotted using a line and measured against the right scale.

which require seven procedures and 21 days in Bolivia. The third area is health and safety regulations, which demand five procedures and 21 business days in Malawi. The final area covers compliance with environmental regulations, which take two procedures and ten days in Malawi if all goes well.

Figures I and II describe the number, time, and cost of the procedures needed to begin operating legally in New Zealand and France, respectively. New Zealand's streamlined start-up process takes only three procedures and three days. The entrepreneur must first obtain approval for the company name from the website of the Registrar of Companies, and then apply online for registration with both the Registrar of Companies and the tax authorities.

In contrast, the process in France takes 15 procedures and 53 days. To begin, the founder needs to check the chosen company name for uniqueness at the Institut National de la Propriété Industrielle (INPI). He then needs the mayor's permit to use his home as an office. (If the office is to be rented, the founder must secure a notarized lease agreement.) The following documents must then be obtained, each from a different authority: proof of a
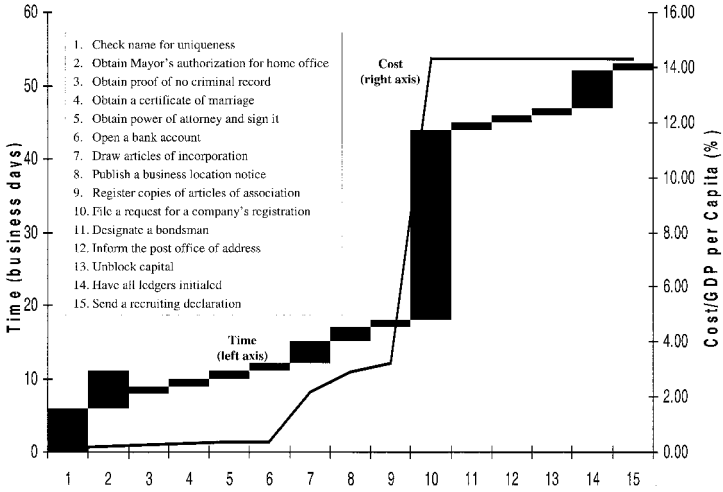
FIGURE II
Start-up Procedures in France

Procedures are lined up sequentially on the horizontal axis and described in the text box. The time required to complete each procedure is described by the height of the bar and measured against the left scale. Cumulative costs (as a percentage of per capita GDP) are plotted using a line and measured against the right scale.

clean criminal record, an original extract of the entrepreneur's certificate of marital status from the City Hall, and a power of attorney. The start-up capital is then deposited with a notary bank or Caisse des Dépôts, and is blocked there until proof of registration is provided. Notarization of the Articles of Association follows. A notice stating the location of the headquarters office is published in a journal approved for legal announcements, and evidence of the publication is obtained. Next, the founder registers four copies of the articles of association at the local tax collection office. He then files a request for registration with the Centre de Formalités des Entreprises (CFE) which handles declarations of existence and other registration-related formalities. The CFE must process the documents or return them in case the request is incomplete. The CFE automatically enters the company information in the Registre Nationale des Entreprises (RNE) and obtains from the RNE identification numbers: numero SIRENE (Système Informatique pour le Répertoire des Entreprises), numero SIRET (Système Informatique pour le Répertoire des Etablissements), and numero NAF (Nomenclature des Activitées Francaises). The SIRET is used by, among others, the tax

authorities. The RNE also publishes a notice of the company formation in the official bulletin of civil and commercial announcements. The firm then obtains a proof of registration form "K-bis," which is effectively its identity card. To start legal operations, the entrepreneur completes five additional procedures: inform the post office of the new enterprise, designate a bondsman or guarantee payment of taxes with a cash deposit, unblock the company's capital by filing with the bank a proof of registration (K-bis), have the firm's ledgers and registers initialed, and file for social security. The magazine L'Entreprise comments: "To be sure that the file for the Company Registry is complete, many promoters check it with a counselor's service, which costs FF200 in Paris (about US$30). But there's always something missing, and most entrepreneurs end up using a lawyer to complete the procedure."

III. BASIC RESULTS

Table II describes all the variables used in this study. Table III presents the basic information from our sample. Countries are ranked in ascending order first by the total number of entry procedures, then by the time it takes to complete them, and finally by the cost of entry. We classify each procedure as one of five types: safety and health, environmental, tax, labor, and a residual category which we label "screening," whose purpose under the public interest theory is to weed out the undesirable entrepreneurs. We then compute and report the total number of procedures and their breakdown into our five categories for each country. We also report the minimum number of business days that are officially required to comply with entry regulations, the costs arising from the official fees, and the total costs which impute the entrepreneur's time (as a fraction of GDP per capita). Finally, we take averages by income level and report t-tests comparing the regulation of entry across income groups.

The data show enormous variation in entry regulation across countries. The total number of procedures ranges from 2 in Canada to 21 in the Dominican Republic and averages 10.48 for the whole sample. Very few entry regulations cover tax and labor issues. The worldwide average number of labor and tax procedures are 1.94 and 2.02, respectively. Procedures involving environmental issues and safety and health matters are even rarer (0.14 and 0.34 procedures on average, respectively). Instead, much of what governments do to regulate entry falls into the

category of screening procedures. The worldwide average number of such procedures facing a new entrant is 6.04.

The number of procedures is highly correlated with both the time and cost variables (see Table VI). The correlation of the (log) number of procedures with (log) time is 0.83 and with (log) cost is 0.64. Translated into economic terms, this means that entrepreneurs pay a steep price in terms of fees and delays in countries that make intense use of ex ante screening. For example, completing 19 procedures demands 149 business days and 111.5 percent of GDP per capita in Mozambique. In Italy the completion of 16 procedures takes up 62 business days and 20 percent of GDP per capita. The Dominican Republic is in a class of its own: completing its 21 procedures requires 80 business days and fees of at least 4.63 times per capita GDP. These figures are admittedly extreme within the sample, yet meeting the official entry requirements in the average sample country requires roughly 47 days and fees of 47 percent of GDP per capita.

When we aggregate time and out-of-pocket costs into an aggregate cost measure, the results for some countries become even more extreme. The world average full cost measure rises to 66 percent of per capita GDP, but varies from 1.7 percent of per capita GDP for New Zealand to 4.95 times per capita GDP in the Dominican Republic.

Panel B of Table III reports averages of the total number of procedures and its components, time and cost by quartiles of per capita GDP in 1999. Two patterns emerge. First, the cost-to-per-capita-GDP ratio decreases uniformly with GDP per capita. The average cost-to-per-capita-GDP ratio for countries in the top quartile of per capita GDP ("rich countries") is 10 percent and rises to 108 percent in countries in the bottom quartile of per capita GDP. This pattern merely reflects the fact that the income elasticity of fees (in log levels) is about 0.2. Second, countries in the top quartile of per capita GDP require fewer procedures and their entrepreneurs face shorter delays in starting a legal business than those in the remaining countries.[7] The total number of procedures in an average rich country is 6.8 which is significantly lower than the rest-of-sample average of 11.8 (*t*-statistics are

7. One objection to this finding is that entrepreneurs in rich countries might face more postentry regulations than they do in poor countries. We have data on one aspect of postentry regulation, namely the regulation of labor markets (see Djankov et al. [2001a]). The numbers of entry and of labor market regulations are positively correlated across countries, contrary to this objection.

TABLE II
THE VARIABLES

This table describes the variables collected for the 85 countries included in our study. The first column gives the name of the variable. The second column describes the variable and provides the sources from which it was collected.

Variable	Description
Number of procedures	The number of different procedures that a start-up has to comply with in order to obtain a legal status, i.e., to start operating as a legal entity. Source: *Authors' own calculations.*
Safety & Health	The number of different safety and health procedures that a start-up has to comply with to start operating as a legal entity. Source: *Authors' own calculations.*
Environment	The number of different environmental procedures that a start-up has to comply with to start operating as a legal entity. Source: *Authors' own calculations.*
Taxes	The number of different tax procedures that a start-up has to comply with to start operating as a legal entity. Source: *Authors' own calculations.*
Labor	The number of different labor procedures that a start-up has to comply with to start operating as a legal entity. Source: *Authors' own calculations.*
Screening	The number of different steps that a start-up has to comply with in order to obtain a registration certificate that are not associated with safety and health issues, the environment, taxes, or labor. Source: *Authors' own calculations.*
Time	The time it takes to obtain legal status to operate a firm, in business days. A week has five business days and a month has twenty-two. Source: *Authors' own calculations.*
Cost	The cost of obtaining legal status to operate a firm as a share of per capita GDP in 1999. It includes all identifiable official expenses (fees, costs of procedures and forms, photocopies, fiscal stamps, legal and notary charges, etc.). The company is assumed to have a start-up capital of ten times per capita GDP in 1999. Source: *Authors' own calculations.*
Cost + time	The cost of obtaining legal status to operate a firm as a share of per capita GDP in 1999. It includes all identifiable official expenses (fees, costs of procedures and forms, photocopies, fiscal stamps, legal and notary charges, etc.) as well as the monetized value of the entrepreneur's time. The time of the entrepreneur is valued as the product of time and per capita GDP in 1999 expressed in per business day terms. The company is assumed to have a start-up capital of ten times the GDP per capita level in 1999. Source: *Authors' own calculations.*
GDP/POP_{1999}	Gross domestic product per capita in current U. S. dollars in 1999. Source: *World Bank [2001].*
Quality standards	Number of ISO 9000 certifications per thousand inhabitants issued by the International Organization for Standardization as of 1999 to each country in the sample. "ISO standards represent an international consensus on the state of the art in the technology concerned. . . . ISO 9000 is primarily concerned with quality management. . . . ISO develops voluntary technical standards that contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. . . . ISO standards also serve to safeguard consumers. . . . When an organization has a management system certified to an ISO 9000. . . , this means that the process influencing quality (ISO 9000). . . conforms to the relevant standard's requirements." Source: *International Organization for Standardization (www.iso.ch).*
Water pollution	Emissions of organic water pollutants (kilograms per day per worker) for 1998. Measured in terms of biochemical oxygen demand, which refers to the amount of oxygen that bacteria in water will consume in breaking down waste. Emissions per worker are total emissions divided by the number of industrial workers. Source: *World Bank [2001].*

Deaths from accidental poisoning	Log of the number of deaths caused by accidental poisonings (including by drugs, medications, bio-products, solid and liquid substances, gases and vapors) per million inhabitants. Average of the years 1981 through 1994 (the most recent available figure). Source: The number of accidental deaths from poisoning is taken from *World Health Organization [1998]*. Population figures are taken from *World Bank [2001]*.
Deaths from intestinal infections	Log of the number of deaths caused by intestinal infections (including digestive disorders) per million inhabitants. Average of the years 1981 through 1994 (the most recent available figure). Source: The number of deaths from intestinal infections is taken from *World Health Organization [1998]*. Population figures are taken from *World Bank [2001]*.
Size of the unofficial economy	Size of the shadow economy as a percentage of GDP (varying time periods). Source: *Authors' own computations based on averaging over all estimates reported in Schneider and Enste [2000] for any given country as well as Sananikone [1996] for Burkina Faso, Chidzero [1996] for Senegal, Turnham and Schwartz [1990] for Indonesia and Pakistan, and Kasnakoglu and Yayla [2000] for Turkey*.
Employment in the unofficial economy	Share of the labor force employed in the unofficial economy in the capital city of each country as a percent of the official labor. Figures are based on surveys and, for some countries, on econometric estimates. Source: *Schneider [2000] and the Global Urban Indicators Database [2000]* (www.urbanobservatory.org/indicators/database).
Product market competition	Survey measure of the extent to which respondents agree with the following statement: "Competition in the local market is intense and market shares fluctuate constantly." Scale from 1 (strongly disagree) through 7 (strongly agree). Source: *IMD [2001]*.
Corruption	Corruption perception index for 1999. Corruption is defined broadly as "the misuse of public power for private benefits, e.g., bribing of public officials, kickbacks in public procurement, or embezzlement of public funds." The index averages the corruption scores given by the following sources: (1) Freedom House Nations in Transit (FH); (2) Gallup International (GI); (3) the Economist Intelligence Unit (EIU); (4) the Institute for Management Development, Lausanne (IMD); (5) the International Crime Victim Survey (ICVS); (6) the Political and Economic Risk Consultancy, Hong Kong (PERC); (7) The Wall Street Journal, Central European Economic Review (CEER); (8) the World Bank and University of Basel (WB/UB), (9) the World Economic Forum (WEF). Descending score from 1 (most corrupt) to 10 (least corrupt). Source: *Transparency International (www.transparency.de/)*.
Executive de facto independence	Index of "operation (de facto) independence of chief executive." Descending scale from 1 to 7 (1 = pure individual; 2 = intermediate category; 3 = slight to moderate limitations; 4 = intermediate category; 5 = substantial limitations; 6 = intermediate category; 7 = executive parity or subordination). Average of the years 1945 through 1998. Source: *Jaggers and Marshall [2000]*.
Constraints on executive power	Index of constraints on the executive power based on the number of effective veto points in a country. Veto points include (1) an effective legislature (represents two veto points in the case of bicameral systems); (2) an independent judiciary; and (3) a strong federal system. Average of the years 1945 through 1998. Source: *Henisz [2001]*.
Effectiveness of legislature	Index of the effectiveness of the legislature. Ascending scale from 1 to 4 (1 = no legislature; 2 = largely ineffective; 3 = partly effective; 4 = effective). Average of the years 1945 through 1998. Source: *The Cross-National Time-Series Data Archive (www.databanks.sitehosting.net/www/main.htm)*.
Competition in the legislature's nominating process	Index of the competitiveness of the nominating process for seats in the legislature. Ascending scale from 1 to 4 (1 = no legislature; 2 = noncompetitive; 3 = partly competitive; 4 = competitive). Average of the years 1945 through 1998. Source: *The Cross-National Time-Series Data Archive (www.databanks.sitehosting.net/www/main.htm)*.
Autocracy	Indicates the "general closedness of political institutions." Scale from 0 to 10 with 0 being low in autocracy and 10 being high in autocracy. Average of the years 1945 through 1998. Source: *Jaggers and Marshall [2000]*.
Political rights	Index of political rights. Higher ratings indicate countries that come closer to the ideals suggested by the checklist questions of (1) free and fair elections; (2) those elected rule; (3) there are competitive parties or other competitive political groupings; (4) the opposition has an important role and power; and (5) the entities have self-determination or an extremely high degree of autonomy. Average of the years 1972 through 1998. Source: *Freedom House [2001]*.
Legal origin	Identifies the legal origin of each Company Law or Commercial Code of each country. There are five possible origins: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; and (5) Socialist/Communist laws. Source: *La Porta et al. [1998]; Reynolds and Flores [1989]; CIA World Factbook [2001]*.

TABLE III
THE DATA

Panel A reports the total number of procedures and their breakup in the following five categories: (1) safety and health; (2) environment; (3) taxes; (4) labor; and (5) screening. The table also reports the time, direct cost (as a fraction of GDP per capita in 1999) associated with meeting government requirements, and direct cost plus the monetized value of the entrepreneur's time (as a fraction of GDP per capita in 1999) as well as the level of GDP per capita in dollars in 1999. Countries are sorted in ascending order on the basis of (1) the total number of procedures; (2) time; and (3) cost. Panel B presents means of the variables by quartiles of GDP per capita in 1999. Panel C presents *t*-statistics for differences in means across quartiles of per capita GDP in 1999. Table II describes the variables in detail.

	Number of procedures	Safety & Health	Environment	Taxes	Labor	Screening	Time	Cost	Cost + time	GDP/ POP$_{1999}$
				Panel A: Data						
Canada	2	0	0	1	0	1	2	0.0145	0.0225	19,320
Australia	2	0	0	1	0	1	2	0.0225	0.0305	20,050
New Zealand	3	0	0	1	0	2	3	0.0053	0.0173	13,780
Denmark	3	0	0	1	0	2	3	0.1000	0.1120	32,030
Ireland	3	0	0	1	0	2	16	0.1157	0.1797	19,160
United States	4	0	0	1	1	2	4	0.0049	0.0169	30,600
Norway	4	0	0	1	1	2	18	0.0472	0.1192	32,880
United Kingdom	5	0	0	1	1	3	4	0.0143	0.0303	22,640
Hong Kong	5	0	0	0	1	4	15	0.0333	0.0933	23,520
Mongolia	5	0	0	1	0	4	22	0.0331	0.1211	350
Finland	5	0	0	1	3	1	24	0.0116	0.1076	23,780
Israel	5	0	0	2	1	2	32	0.2132	0.3412	15,860
Zimbabwe	5	0	0	2	1	2	47	0.1289	0.3169	520
Sweden	6	0	0	1	1	4	13	0.0256	0.0776	25,040
Jamaica	6	0	0	2	1	3	24	0.1879	0.2839	2,330
Zambia	6	0	0	2	1	3	29	0.6049	0.7209	320
Panama	7	0	0	1	1	5	15	0.3074	0.3674	3,070
Switzerland	7	0	0	2	1	4	16	0.1724	0.2364	38,350
Singapore	7	0	0	1	2	4	22	0.1191	0.2071	29,610
Latvia	7	0	0	2	1	4	23	0.4234	0.5154	2,470
Malaysia	7	0	0	1	1	5	42	0.2645	0.4325	3,400

Country									
Sri Lanka	8	0	1	1	6	23	0.1972	0.2892	820
Netherlands	8	1	2	0	5	31	0.1841	0.3081	24,320
Belgium	8	0	1	2	5	33	0.0998	0.2318	24,510
Taiwan, China	8	0	1	2	5	37	0.0660	0.2140	13,248
Hungary	8	0	1	1	6	39	0.8587	1.0147	4,650
Pakistan	8	0	2	1	5	50	0.3496	0.5496	470
Peru	8	0	2	2	4	83	0.1986	0.5306	2,390
South Africa	9	0	2	2	5	26	0.0844	0.1884	3,160
Kyrgyz Republic	9	0	1	1	7	32	0.2532	0.3812	300
Thailand	9	0	3	2	4	35	0.0639	0.2039	1,960
Nigeria	9	1	2	1	5	36	2.5700	2.7140	310
Austria	9	0	2	1	6	37	0.2728	0.4208	25,970
Tunisia	9	0	0	2	7	41	0.1722	0.3362	2,100
Slovenia	9	0	0	1	8	47	0.2103	0.3983	9,890
Lebanon	9	0	1	1	7	63	1.5672	1.8192	3,700
Uruguay	10	0	1	4	5	23	0.4949	0.5869	5,900
Bulgaria	10	0	2	0	8	27	0.1441	0.2521	1,380
Chile	10	0	3	2	5	28	0.1308	0.2428	4,740
Germany	10	0	1	2	7	42	0.1569	0.3249	25,350
Ghana	10	1	1	4	4	45	0.2175	0.3975	390
Lithuania	10	2	2	1	5	46	0.0546	0.2386	2,620
Czech Republic	10	0	1	2	7	65	0.0822	0.3422	5,060
India	10	0	3	3	4	77	0.5776	0.8856	450
Japan	11	0	2	2	7	26	0.1161	0.2201	32,230
Uganda	11	2	2	1	6	29	0.3040	0.4200	320
Egypt, Arab Rep.	11	0	2	1	8	51	0.9659	1.1699	1,400
Kenya	11	0	2	3	6	54	0.5070	0.7230	360
Armenia	11	0	1	1	9	55	0.1267	0.3467	490
Poland	11	2	3	1	5	58	0.2546	0.4866	3,960
Spain	11	0	4	2	5	82	0.1730	0.5010	14,000
Indonesia	11	0	2	1	8	128	0.5379	1.0499	580
Croatia	12	1	2	3	6	38	0.4503	0.6023	4,580
Kazakhstan	12	0	1	3	8	42	0.4747	0.6427	1,230
Portugal	12	0	2	2	8	76	0.1844	0.4884	10,600
Slovak Republic	12	0	2	3	7	89	0.1452	0.5012	3,590
China	12	0	5	2	5	92	0.1417	0.5097	780

TABLE III
(CONTINUED)

	Number of procedures	Safety & Health	Environment	Taxes	Labor	Screening	Time	Cost	Cost + time	GDP/ POP$_{1999}$
Korea, Rep.	13	0	0	2	4	7	27	0.1627	0.2707	8,490
Tanzania	13	1	0	5	2	5	29	3.3520	3.4680	240
Ukraine	13	0	0	2	3	8	30	0.2569	0.3769	750
Turkey	13	0	0	2	2	9	44	0.1932	0.3692	2,900
Malawi	13	5	2	1	1	4	52	0.1886	0.3966	190
Morocco	13	1	0	3	3	6	57	0.2126	0.4406	1,200
Georgia	13	2	0	1	1	9	69	0.6048	0.8808	620
Burkina Faso	14	0	0	3	2	9	33	3.1883	3.3203	240
Philippines	14	0	0	5	1	8	46	0.1897	0.3737	1,020
Argentina	14	0	0	4	5	5	48	0.1019	0.2939	7,600
Jordan	14	1	0	2	1	10	64	0.5369	0.7929	1,500
Venezuela	14	1	1	3	3	6	104	0.1060	0.5220	3,670
Greece	15	0	0	4	2	9	36	0.5860	0.7300	11,770
France	15	0	0	3	1	11	53	0.1430	0.3550	23,480
Brazil	15	0	0	7	5	3	63	0.2014	0.4534	4,420
Mexico	15	1	2	2	3	7	67	0.5664	0.8344	4,400
Mali	16	1	0	3	2	10	59			240
Italy	16	0	0	5	3	8	62	0.2002	0.4482	19,710
Senegal	16	0	0	3	2	11	69	1.2331	1.5091	510
Ecuador	16	2	0	2	4	8	72	0.6223	0.9103	1,310
Romania	16	1	2	1	3	9	97	0.1531	0.5411	1,520
Vietnam	16	0	1	1	5	9	112	1.3377	1.7857	370
Madagascar	17	0	0	7	3	7	152	0.4263	1.0343	250
Colombia	18	2	0	4	5	7	48	0.1480	0.3400	2,250
Mozambique	19	4	0	1	3	11	149	1.1146	1.7106	230
Russian Federation	20	0	0	2	5	13	57	0.1979	0.4259	2,270
Bolivia	20	0	1	2	7	10	88	2.6558	3.0078	1,010
Dominican Republic	21	0	0	2	3	16	80	4.6309	4.9509	191
Sample average	**10.48**	**0.34**	**0.14**	**2.04**	**1.94**	**6.04**	**47.40**	**0.4708**	**0.6598**	**8,226**

Panel B: Means by Quartiles of GDP per capita in 1999

1st Quartile	6.77	0.00	0.05	1.59	1.14	4.00	24.50	0.10	0.20	24,372
2nd Quartile	11.10	0.24	0.14	2.14	2.38	6.19	49.29	0.33	0.53	5,847
3rd Quartile	12.33	0.52	0.14	2.19	2.33	7.14	53.10	0.41	0.62	1,568
4th Quartile	11.90	0.62	0.24	2.24	1.95	6.90	63.76	1.08	1.34	349

Panel C: Test of means (t-statistics)

1st vs. 2nd Quartile	−4.20[a]	−2.07[b]	−0.87	−1.35	−3.64[a]	−3.34[a]	−3.71[a]	−3.03[a]	−3.97[a]	12.03[a]
1st vs. 3rd Quartile	−4.58[a]	−3.02[a]	−0.87	−1.64[b]	−2.82[a]	−4.07[a]	−4.21[a]	−2.54[b]	−3.19[a]	16.35[a]
1st vs. 4th Quartile	−4.04[a]	−2.08[a]	−1.55	−1.61	−2.43[b]	−3.18[a]	−4.09[a]	−3.53[a]	−4.06[a]	17.31[a]
2nd vs. 3rd Quartile	−1.17	−1.34	0.00	−0.11	0.10	−1.51	−0.54	−0.52	−0.59	6.14[a]
2nd vs. 4th Quartile	−0.72	−1.17	−0.61	−0.21	1.10	−0.89	−1.46	−2.54[b]	−2.73[a]	8.05[a]
3rd vs. 4th Quartile	0.33	−0.27	−0.61	−0.11	0.82	0.26	−1.06	−2.17[b]	−2.27[b]	8.53[a]

a. Significant at 1 percent; b. significant at 5 percent; c. significant at 10 percent.

reported in Panel C). Rich countries also have fewer safety and health, tax, and labor start-up procedures than the rest of the sample. Similarly, meeting government requirements takes approximately 24.5 business days in rich countries, statistically significantly lower than the rest-of-sample mean of 55.4 days. In contrast, countries in the other three quartiles of per capita income are not statistically different from each other in the number of procedures and the time it takes to complete them.

To summarize, the regulation of entry varies enormously across countries. It often takes the form of screening procedures. Rich countries (i.e., those in the top quartile of per capita GDP) regulate entry relatively less than do all the other countries. In principle, these findings are consistent with both the public choice and public interest theories. Market failures might be more pervasive in countries with incomes just below the first quartile of GDP per capita, generating a greater demand for benign regulation in these countries. Alternatively, income levels may proxy for characteristics of political systems that allow politicians or incumbent firms to capture the regulatory process for their own benefit. In the next two sections we relate these patterns in the data to the theories of regulation.

IV. WHO GETS THE RENTS FROM REGULATION?

Theories of regulation differ in their predictions as to who gets its benefits. The public interest theory predicts that stricter entry regulation is associated with higher measured consumer welfare. In contrast, the public choice theory sees regulation as a tool to create rents for bureaucrats or incumbent firms. Stricter regulation should then be associated with higher corruption and less competition.

Measuring rents is inherently extremely difficult, especially across countries. In this section, we present some measures that we have been able to find that bear—albeit quite imperfectly—on the relevant theories. To begin, consider some variables bearing on the public interest theory. These variables reflect the activities of all firms in the country, and not just the entrants. The first is a measure of a country's compliance with international quality standards. It is a natural variable to focus on if the goal of regulation is to screen out entrants who might sell output of inferior quality. Second, we consider the level of water pollution, which should fall if entry regulation aims to control externalities

and does so successfully.[8] Third, we consider two measures of health outcomes that publicly interested entry regulation would guard against: the number of deaths from accidental poisoning and from intestinal infections.[9] In addition, we include two measures of the size of the unofficial economy based on estimates of unofficial output and employment, respectively. Since firms operating unofficially avoid nearly all regulations, a large size of the unofficial economy in countries with more regulations undermines the prediction of the public interest theory that regulation effectively protects consumers.[10] Finally, we use a survey measure of "product market competition." Stiffer entry regulation should be associated with greater competition in the public interest theory, and lacking competition in the public choice theory, especially in its regulatory capture version.

Table IV presents the results on these seven measures of consequences of regulation using the number of procedures as dependent variables. For two reasons, we run each regression with and without the log of per capita GDP. First, the number of procedures is correlated with income per capita, and we want to make sure that we are not picking up the general effects of good governance associated with higher income. Second, we use GDP per capita as a rough proxy of the prevalence of market failures in a country. Including per capita income as a control is a crude way to keep the need for socially desirable regulation constant, which allows us to focus on the consequences (and later causes) of regulation separately from the need.

The results in Table IV show that compliance with international quality standards declines as the number of procedures rises. Pollution levels do not fall with regulation levels. The two measures of accidental poisoning are not lower in countries with more regulations (if anything, the opposite seems to be true even controlling for per capita income). More regulation is associated with a larger unofficial economy, and statistically significantly so if we use the unofficial employment variable. Competition in countries with more regulation is perceived to be less intense,

8. We have tried measures of air pollution and obtained similar results.
9. Due to reporting practices in poor countries, the second variable might better capture deaths from accidental poisoning in the poor countries, according to the World Health Organization [1998].
10. There is a large literature detailing how regulation can drive firms into the unofficial economy, where they can avoid some or all of these regulations. See, for example, Johnson, Kaufmann, and Shleifer [1997] and Friedman, Johnson, Kaufmann, and Zoido-Lobaton [2000].

TABLE IV

EVIDENCE ON REGULATION AND SOCIAL OUTCOMES

The table presents the results of OLS regressions using the following seven dependent variables: (1) Quality standards as proxied by the number of ISO 9000 certifications; (2) Water pollution; (3) Deaths from accidental poisoning; (4) Deaths from intestinal infection; (5) Size of the unofficial economy as a fraction of GDP; (6) Employment in the unofficial economy; and (7) Product market competition. The independent variables are the log of the number of procedures and the log of per capita GDP in dollars in 1999. Table II describes all variables in detail. Robust standard errors are shown below the coefficients.

Dependent variable	Number of procedures	Ln GDP/POP$_{1999}$	Constant	R^2 N
Quality standards (ISO Certifications)	-0.2781^a		0.7649^a	0.3311
	(0.0496)		(0.1268)	85
	-0.1595^a	0.0771^a	-0.1140	0.5384
	(0.0443)	(0.0131)	(0.1484)	85
Water pollution	0.0127^b		0.1557^a	0.0247
	(0.0084)		(0.0174)	76
	-0.0037	-0.0131^a	0.2984^a	0.2310
	(0.0076)	(0.0027)	(0.0314)	76
Deaths from accidental poisoning	0.6588^a		1.6357^a	0.1179
	(0.2057)		(0.4381)	57
	0.0637	-0.4525^a	6.8347^a	0.4109
	(0.1958)	(0.0933)	(1.0929)	57
Deaths from intestinal infection	2.3049^a		-2.2697^a	0.3451
	(0.3081)		(0.6778)	61
	1.0501^a	-0.8717^a	7.8494^a	0.6259
	(0.2971)	(0.1012)	(1.3048)	61
Size of the unofficial economy^d	14.7553^a		-3.7982	0.2482
	(2.5698)		(5.2139)	73
	6.4849^b	-6.1908^a	67.1030^a	0.5187
	(2.5385)	(1.0834)	(13.7059)	73
Employment in the unofficial economy	19.4438^a		-4.1103	0.3132
	(2.5756)		(5.9160)	46
	13.8512^a	-4.4585^a	41.5133^b	0.4477
	(3.6056)	(1.3918)	(17.6836)	46
Product market competition	-0.4012^a		5.7571^a	0.1405
	(0.1213)		(0.2511)	54
	-0.1418	0.2108^a	3.3579^a	0.3087
	(0.1202)	(0.0680)	(0.7749)	54

a. Significant at 1 percent; b. significant at 5 percent; c. significant at 10 percent.

d. The regression on the size of the unofficial economy controls for the log of GDP per capita plus unofficial economy income (i.e., GDP per capita* (1 + unofficial economy)) and not just by GDP per capita as all other regressions on the table do.

although this result is only statistically significant without the income control. We have also run all regressions using cost and time as independent variables, and obtained qualitatively similar results. While the data are noisy, none of the results support the predictions of the public interest theory.[11]

The negative results in Table IV should be interpreted with caution. First, some of our measures of public goods, such as deaths from accidental poisoning, are probably more relevant for poor countries, and in particular are unlikely to be influenced by entry regulation for rich countries. Accordingly, it might be more appropriate to perform the analysis separately for countries at different income levels. To this end, we divide the sample at the median per capita income and rerun the regressions in Table IV for each subsample. The data do not support the proposition that, in the subsample of poorer countries, heavier regulation of entry is associated with better social outcomes or more competition.

Second, an even deeper concern with the results in Table IV is that, despite our control for per capita income, there is important unobserved heterogeneity among countries correlated with regulation, which accounts for the results. For example, suppose that some countries have particularly egregious market failures, but also especially poor alternative mechanisms for dealing with them, such as the press and the courts. Regulation, for example, might be less infected by corruption than either the press or the judiciary. A publicly interested regulator in such countries would choose to use more regulatory procedures because the alternative methods of dealing with market failure are even worse, but still end up with inferior outcomes.

We cannot dismiss this concern with the results of Table IV, although our later findings cast doubt on its validity. We run the regressions in Table IV using information on the freedom of the press from Djankov, McLiesh, Nenova, and Shleifer [2001], and find that, holding constant various measures of freedom of the press and per capita income, the number of procedures is still not associated with superior social outcomes. We also run the regressions in Table IV using a number of measures of citizen access to

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11. Using data for publicly traded firms, we have found no evidence that countries with heavier entry regulation have more profitable firms, as measured by the return on assets. These profitability numbers, however, are very crude. We also measured profitability using the return on World-Bank-financed projects from the World Bank Operations Evaluation Department. These data also yield no evidence that more regulations are associated with greater returns.
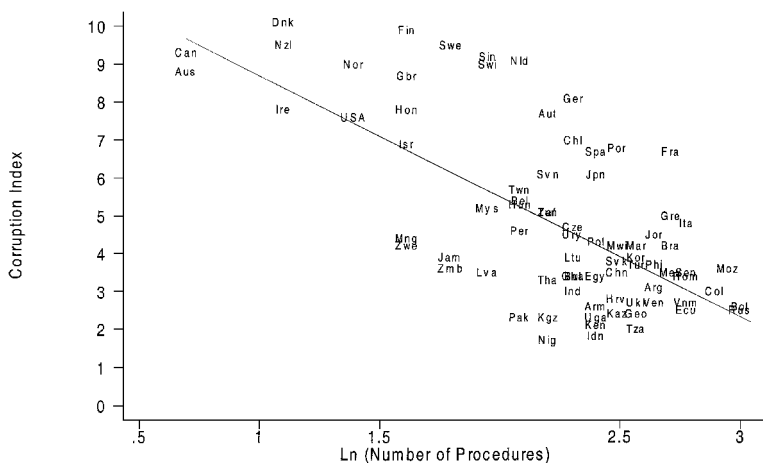
FIGURE III

Corruption and Number of Procedures

The scatter plot shows the values of the corruption index against the (log) number of procedures for the 78 countries in our sample with nonmissing data on corruption.

justice and of efficiency of the judiciary from Djankov et al. [2001b]. Again, we find that, holding constant these measures and per capita income, the number of procedures is associated, if anything, with inferior social outcomes.

A direct implication of the *tollbooth* hypothesis is that corruption levels and the intensity of entry regulation are positively correlated. In fact, since in many countries in our sample politicians run businesses, the regulation of entry produces the double benefit of corruption revenues and reduced competition for the incumbent businesses already affiliated with the politicians. Figure III presents the relationship between corruption and the number of procedures without controlling for per capita GDP.[12] Panel A of Table V shows statistically that, consistent with the *tollbooth* theory, more regulation is associated with worse corruption scores. The coefficients are statistically significant (with and without controlling for income) and large in economic terms. The estimated coefficients imply that, controlling for per capita GDP, reducing the number of procedures by ten is associated with a

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12. We have tried a number of measures of corruption, all yielding similar results. We have made sure that our results do not depend on "red tape" being part of the measure of corruption.

TABLE V

EVIDENCE ON THE TOLLBOOTH THEORY

The table presents the results of OLS regressions using corruption as the dependent variable. The independent variables are (1) the log of the number of procedures; (2) the log of time; (3) the log of cost; and the log of per capita GDP in dollars in 1999. Panel A presents results for the 78 observations with available corruption data. Panel B reports results separately for the subsample of countries with GDP per capita in 1999 above and below the sample median. Table II describes all variables in detail. Robust standard errors are shown in parentheses below the coefficients.

Panel A: Results for the whole sample						
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Number of procedures	−3.1811[a] (0.2986)	−1.8654[a] (0.2131)				
Time			−1.7566[a] (0.1488)	−0.8854[a] (0.1377)		
Cost					−1.2129[a] (0.1206)	−0.4978[a] (0.1285)
Ln GDP/POP$_{1999}$		0.9966[a] (0.0864)		0.9765[a] (0.1014)		0.9960[a] (0.1118)
Constant	11.8741[a] (0.7380)	1.1345 (0.9299)	11.0694[a] (0.5932)	0.0677 (1.1176)	2.7520[a] (0.2414)	−4.0893[a] (0.7867)
R^2	0.4656	0.8125	0.4387	0.7662	0.4256	0.7306
N	78	78	78	78	78	78

Panel B: Results for countries above and below the world median GDP per capita						
	Countries above median GDP/POP$_{1999}$			Countries below median GDP/POP$_{1999}$		
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Number of procedures	−1.8729[a] (0.2971)			−0.7841[b] (0.3304)		
Time		−0.8135[a] (0.1762)			−0.0923 (0.2850)	
Cost			−0.5327[a] (0.1894)			−0.3408[a] (0.1021)
Ln GDP/POP$_{1999}$	1.4811[a] (0.2265)	1.5871[a] (0.2789)	1.7621[a] (0.2913)	0.3993[b] (0.1735)	0.3680[c] (0.1802)	0.2117 (0.1718)
Constant	−3.6970 (2.4628)	−5.9027[c] (2.9942)	−11.3736[a] (2.5773)	2.3246[c] (1.2849)	1.0098 (1.8813)	1.3125 (1.1136)
R^2	0.7820	0.7155	0.6728	0.2362	0.1324	0.2830
N	40	40	40	38	38	38

a. Significant at 1 percent; b. significant at 5 percent; c. significant at 10 percent.

reduction in corruption of .8 of a standard deviation, roughly the difference between France and Italy. The results using the cost and the time of meeting the entry regulations as independent

variables are also statistically significant, pointing further to the
robustness of this evidence in favor of the tollbooth theory.

One way to reconcile the findings in Table V with the public
interest theory is to argue that regulation has unintended conse-
quences. Thus, benign politicians in emerging markets imitate
the regulations of rich countries with best intentions in mind, but
are stymied by corruption and other enforcement failures. This
theory is not entirely consistent with our earlier finding that
poorer countries in fact have more entry regulations than rich
countries do. A further implication of this theory is that regula-
tions should have a bigger impact on corruption in poorer coun-
tries. Panel B of Table V addresses this hypothesis by examining
separately the relationship between entry regulations and cor-
ruption in countries with above and below world median income.
The results show that regulations actually have a stronger effect
on corruption in the subsample of richer countries.

On the second version of the unintended consequences argu-
ment, it may be impossible for a benevolent government to screen
bad entrants without facilitating corruption [Banerjee 1997; Ace-
moglu and Verdier 2000]. In countries whose markets are fraught
with failures, it might be better to have corrupt regulators than
none at all. Corruption may be the price to pay for addressing
market failures. We turn next to the evidence regarding the
political attributes of countries that regulate entry to disentangle
the competing theories of regulation.

V. WHO REGULATES ENTRY?

In this section we focus on the political attributes of countries
that regulate entry. These attributes are intimately related to the
competing hypotheses about regulation. In the public interest
theory, regulation remedies market failures. The implication is
that countries whose political systems are characterized by
higher congruence between policy outcomes and social prefer-
ences should regulate entry more strictly. In the empirical analy-
sis that follows, we identify such countries with more representa-
tive and limited governments.

In the public choice theory, despotic regimes are more likely
to be captured by incumbents and to have regulatory systems
aimed at maximizing the bribes and profits of a few cronies rather
than address market failures [Olson 1991; De Long and Shleifer
1993]. Such dictators need the political support of various inter-

est groups, and use distortionary policies to favor their friends and to abuse their opponents. The dictator's choice of distortionary policies is not mitigated by public pressure, since he faces no elections. When the public is less able to assert its preferences, then, we expect more distortionary policy choices. Specifically, we expect more representative and limited government to be associated with lighter regulation of entry.

One might argue, in contrast, that dictators should pursue efficient economic policies, including light regulation of entry, if they are politically secure and can "tax" the fruits of entry and growth. One response, discussed by Olson [1991] and De Long and Shleifer [1993], is that while a few dictators are politically secure and pursue enlightened policies, most are not. Insecure dictators extract what they can from the economy as fast as they can both to prolong their tenure, and to enrich themselves and their supporters while still in power. Democracy might not lengthen the horizons of politicians, but it does limit their opportunities.

We collect data on a variety of characteristics of political systems, partly because we want to be flexible regarding the meaning of "good government." Where possible, we use variables from different sources to check the robustness of our results. Our political variables fall into four broad groups. The first includes the de facto independence of the executive and an index of constraints on the executive. The second group includes an index of the effectiveness of the legislature and a measure of competition in the legislature's nominating process. The third group includes a measure of autocracy and one of political rights.

An additional variable that we focus on, used in the earlier work by La Porta et al. [1998, 1999] is legal origin. We classify countries based on the origin of their commercial laws into five broad groups: English, French, German, Scandinavian, and Socialist. Legal origin has been viewed as a proxy for the government's proclivity to intervene in the economy and the stance of the law toward the security of property rights in a country [La Porta et al. 1999].

Correlations among the political variables are presented in Table VI. Political variables tend to be strongly correlated within blocks. For example, the measure of constraints on the executive power is highly correlated with de facto independence of the executive (0.9761) and with the effectiveness of the legislature (0.9078). Yet, we report results on all three variables as each

TABLE VI
CORRELATION TABLE FOR POLITICAL ATTRIBUTES

The table reports correlations among measures of regulation and the variables used in Table VII. All variables are defined in Table II. Significance levels are Bonferroni-adjusted.

	Exec de facto independence	Constraints on executive power	Effectiveness legislature	Competition nominating	Autocracy	Political rights	French LO
Exec de facto independence	1.0000						
Constraints on exec. power	0.9761[a]	1.0000					
Effectiveness legislature	0.9210[a]	0.9078[a]	1.0000				
Competition nominating	0.8243[a]	0.8069[a]	0.8484[a]	1.0000			
Autocracy	−0.9085[a]	−0.8844[a]	−0.8514[a]	−0.7819[a]	1.0000		
Political rights	0.8440[a]	0.8448[a]	0.8485[a]	0.7191[a]	−0.8564[a]	1.0000	
French legal origin	−0.1814	−0.1814	−0.1901	−0.1985	−0.0258	0.0565	1.0000
Socialist legal origin	−0.3321	−0.2927	−0.3236	−0.3240	0.5475[a]	−0.4572[a]	−0.4169[a]
German legal origin	0.2101	0.2008	0.2023	0.1281	−0.1920	0.2444	−0.2141
Scandinavian legal origin	0.3391	0.3274	0.3378	0.2522	−0.2978	0.3109	−0.1727
English legal origin	0.2259	0.1998	0.1462	0.2412	−0.2324	0.0778	−0.4874[a]
Ln GDP/POP$_{1999}$	0.6900[a]	0.6703[a]	0.7483[a]	0.6123[a]	−0.6389[a]	0.7519[a]	−0.0767[b]
Ln(Number of procedures)	−0.5518[a]	−0.5234[a]	−0.5848[a]	−0.4435[b]	0.4662[a]	−0.4412[a]	0.4863[a]
Ln(Time)	−0.5420[a]	−0.5204[a]	−0.5635[a]	−0.4360[b]	0.4770[a]	−0.4921[a]	0.3976[b]
Ln(Cost)	−0.5070[a]	−0.4937[a]	−0.5656[a]	−0.4177[b]	0.4075[b]	−0.4588[a]	0.3472
Ln(Cost + time)	−0.5700[a]	−0.5478[a]	−0.6267[a]	−0.4745[a]	0.4713[a]	−0.5085[a]	0.3870[b]

a. Significant at 1 percent; b. significant at 5 percent; c. significant at 10 percent.

comes from a different source. Similarly, blocks of variables tend to be correlated with each other. In particular, democracy tends to be positively associated with competitive and limited executive and legislative branches. Legal origin, in contrast, is insignificantly correlated with other political variables (the exception is Socialist legal origin which has obvious correlations with democracy and limited government).[13] Income levels are positively as-

13. Consistent with this finding, La Porta et al. [2001] find that common law legal origin is associated with English constitutional guarantees of freedom, such

TABLE VI
(CONTINUED)

Socialist LO	German LO	Scandinavian LO	English LO	Ln GDP/POP[1999]	Ln (Number of procedures)	Ln (Time)	Ln (Cost)	Ln (Cost + time)
1.0000								
−0.1479	1.0000							
−0.1192	−0.0612	1.0000						
−0.3365	−0.1729	−0.0139	1.0000					
−0.1995	0.3409	0.3133	−0.0742	1.0000				
0.1538[b]	0.0030[b]	−0.3413[b]	−0.5069[a]	−0.4745[a]	1.0000			
0.1869	−0.0640	−0.2914	−0.4291[b]	−0.5014[a]	0.8263[a]	1.0000		
0.0319	−0.0727	−0.3007	−0.2172	−0.5953[a]	0.6354[a]	0.6147[a]	1.0000	
0.0851	−0.0933	−0.2786	−0.3094	−0.6244[a]	0.7434[a]	0.7793[a]	0.9605	1.0000

sociated with democracy as well as with competitive and limited executive and legislative branches, but not with the legal origin. The fact that countries with severe market failures have more abusive governments by itself limits the normative usefulness of the Pigouvian model.

In Table VII we present the results of regressing the number

as the independence of the judiciary and the accountability of the government to the law. These constitutional guarantees of freedom are strongly associated with economic freedoms, but less so with political freedoms.

TABLE VII
EVIDENCE ON REGULATION AND POLITICAL ATTRIBUTES

The table presents the results of running regressions for the log of the number of procedures as the dependent variable. We run seven regressions using various political indicators described in Table II and (log) GDP per capita. Robust standard errors are shown in parentheses below the coefficients.

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Executive de facto independence	−0.1249ᵃ (0.0322)						
Constraints on executive power		−0.1048ᵃ (0.0352)					
Effectiveness of legislature			−0.3301ᵃ (0.0778)				
Competition nominating				−0.2763ᵇ (0.0999)			
Autocracy					0.0545ᵇ (0.0178)		
Political rights						−0.3470 (0.2185)	
French legal origin							0.7245ᵃ (0.0916)
Socialist legal origin							0.4904ᵃ (0.1071)
German legal origin							0.7276ᵃ (0.1363)
Scandinavian legal origin							−0.0085 (0.1733)
Ln GDP/POP$_{1999}$	−0.0491 (0.0331)	−0.0634ᶜ (0.0352)	−0.0087 (0.0401)	−0.0902ᵇ (0.0358)	−0.0867ᵃ (0.0321)	−0.0939ᵇ (0.0386)	−0.1434ᵃ (0.0270)
Constant	3.1782ᵃ (0.2334)	3.2040ᵃ (0.2408)	2.8709ᵃ (0.2586)	3.3540ᵃ (0.2641)	2.7457ᵃ (0.2888)	3.1850ᵃ (0.2599)	2.9492ᵃ (0.1955)
R^2	0.3178	0.2872	0.3424	0.2475	0.2640	0.2350	0.6256
N	84	84	73	73	84	84	85

a. Significant at 1 percent; b. significant at 5 percent; c. significant at 10 percent.

of procedures on a constant and each of the political variables taken one at a time and the log of per capita income. In interpreting these regressions, we take the broad political measures of limited and representative government as being exogenous to entry regulation. It is possible, of course, that both the political and the regulatory variables are simultaneously determined by some deeper historical factors. Even so, it is interesting to know what the correlation is. Does the history that produces good government also produce many or few regulations of entry? The control for the level of development is crucial (and in fact our results without this control are significantly stronger). Market failures are likely to be both more pervasive and severe in poor countries than in rich ones. Moreover, our measures of good government are uniformly higher in richer countries. Without income controls, our political variables may just proxy for income levels. Imagine, for example, that the consumers in poor countries are exposed to a larger risk from bad firms entering their markets and selling goods of inferior quality. The Pigouvian planner would then need more tools to screen entrants in the poorer countries.

Holding per capita income constant, countries with more limited and representative governments have statistically significantly fewer procedures for entry regulation using five out of six measures of better government.[14] These results show that countries with more limited governments, governments more open to competition, and greater political rights have lighter regulation of entry even holding per capita income constant. Figure IV plots the number of procedures against the autocracy score and shows that regulation is increasing in autocracy. Regulation is heavy in autocratic countries such as Vietnam and Mozambique and light in democratic countries such as Australia, Canada, New Zealand, and the United States.

The log of per capita GDP tends to enter these regressions significantly. The interpretation of this result is clouded both because there are problems of multicollinearity with the political variables and because the direction of causation is unclear. In the public choice theory, burdensome regulation reflects transfers

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14. Results are significant in all six regressions when we use time rather than number of procedures as the dependent variable. In contrast, results are insignificant in three regressions (competition in the legislature's nominating process, autocracy, and political rights) when using cost as the dependent variable.
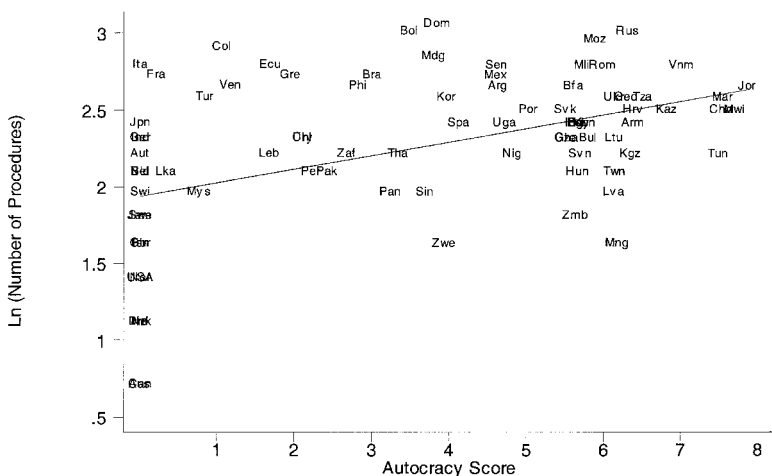
FIGURE IV

Autocracy and Number of Procedures

The scatter plot shows the values of the (log) number of procedures against the autocracy score (higher values for more autocratic systems) for the 84 countries in our sample with nonmissing data for the autocracy score.

from entrepreneurs or consumers, which are likely to be distortionary and, hence, associated with lower levels of income. Countries may be poor because regulation is hostile to new business formation.

Holding per capita income constant, countries of French, German, and Socialist legal origin have more regulations than English legal origin countries, while countries of Scandinavian legal origin have about the same. The result that civil law countries (with the exception of those in Scandinavia) regulate entry more heavily supports the view that the legal origin proxies for the state's proclivity to intervene in economic life [La Porta et al. 1999]. However, note that in itself this evidence does not discriminate among the alternative theories in the same way as the evidence on democracy does: French origin countries might merely be more prepared to deal with market failures than common law countries.

These results are broadly consistent with the public choice theory that sees regulation as a mechanism to create rents for politicians and the firms they support. The public choice theory predicts that such rent extraction should be moderated by better government to the extent that outcomes in such regimes come

closer to representing the preferences of the public. In contrast, these results are more difficult to reconcile with public interest unless one identifies it with political systems of countries such as Bolivia, Mozambique, or Vietnam, where corruption is widespread, governments are unlimited, and property rights insecure. Of course, it is possible that autocratic countries would perform even worse in the absence of heavy regulation because market failures are larger and alternative mechanisms of social control are inferior. Such a possibility strikes us as remote, especially since we hold the level of development constant.

VI. CONCLUSION

An analysis of the regulation of entry in 85 countries shows that, even aside from the costs associated with corruption and bureaucratic delay, business entry is extremely expensive, especially in the countries outside the top quartile of the income distribution. We find that heavier regulation of entry is generally associated with greater corruption and a larger unofficial economy, but not with better quality of private or public goods. We also find that the countries with less limited, less democratic, and more interventionist governments regulate entry more heavily, even controlling for the level of economic development.

This evidence is difficult to reconcile with public interest theories of regulation but supports the public choice approach, especially the tollbooth theory that emphasizes rent extraction by politicians [McChesney 1987; Shleifer and Vishny 1993]. Entry is regulated more heavily by less democratic governments, and such regulation does not yield visible social benefits. The principal beneficiaries appear to be the politicians and bureaucrats themselves.

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REFERENCES

Acemoglu, Daron, and Thierry Verdier, "The Choice between Market Failures and Corruption," *American Economic Review,* XC (2000), 194–211.
Banerjee, Abhijit, "A Theory of Misgovernance," *Quarterly Journal of Economics,* CXII (1997), 1289–1332.

Central Intelligence Agency, *CIA World Factbook* (2001), published online. http://www.cia.gov/cia/publications/factbook/

Chidzero, Anne-Marie, "Senegal," in *The Informal Sector and Microfinance Institutions in West Africa,* Leila Webster and Peter Fidler, eds. (Washington, DC: The World Bank, 1996).

De Long J. Bradford, and Andrei Shleifer, "Princes and Merchants: European City Growth before the Industrial Revolution," *Journal of Law and Economics,* XXXVI (1993), 671–702.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, "The Regulation of Labor," Harvard University manuscript in preparation, 2001a.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, "Courts: The Lex Mundi Project," Harvard University, 2001b.

Djankov, Simeon, Caralee McLiesh, Tatiana Nenova, and Andrei Shleifer, "Who Owns the Media?" NBER Working Paper No. 8288, 2001.

De Soto, Hernando, *The Other Path* (New York, NY: Harper and Row, 1990).

Freedom House, *Freedom of the World* (New York, NY: Freedom House, 2001).

Friedman, Eric, Simon Johnson, Daniel Kaufmann, and Pablo Zoido-Lobaton, "Dodging the Grabbing Hand: The Determinants of Unofficial Activity in 69 Countries," *Journal of Public Economics,* LXXVI (2000), 459–494.

Henisz, Witold Jerzy, "The Institutional Environment for Economic Growth," *Economics and Politics,* XII (2000), 1–31.

Institute for International Management Development, *World Competitiveness Report* (Lausanne, Switzerland: IMD, 2001).

Jaggers, Keith, and Monty G. Marshall, "Polity IV Project," Center for International Development and Conflict Management, University of Maryland, 2000.

Johnson, Simon, Daniel Kaufmann, and Andrei Shleifer, "The Unofficial Economy in Transition," *Brookings Papers on Economic Activity,* 2 (1997), 159–239.

Kasnakoglu, Zehra, and Münür Yayla, "Unrecorded Economy in Turkey: A Monetary Approach" (1999), in *Informal Sector in Turkey, Volume I,* Tuncer Bulutay, ed. (Ankara, Turkey: SIS, forthcoming).

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "Law and Finance," *Journal of Political Economy,* CVI (1998), 1113–1155.

La Porta Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "The Quality of Government," *Journal of Law, Economics, and Organization,* XV (1999), 222–279.

La Porta, Rafael, Florencio Lopez-de-Silanes, Cristian Pop-Eleches, and Andrei Shleifer, "Guarantees of Freedom," manuscript, Harvard University, 2001.

McChesney, Fred S., "Rent Extraction and Rent Creation in the Economic Theory of Regulation," *Journal of Legal Studies,* XVI (1987), 101–118.

Olson, Mancur, "Autocracy, Democracy, and Prosperity," in Richard Zeckhauser, ed., *Strategy of Choice* (Cambridge, MA: MIT Press, 1991).

Peltzman, Sam, "Toward a More General Theory of Regulation," *Journal of Law and Economics,* XIX (1976), 211–240.

Pigou, Arthur C., *The Economics of Welfare,* 4th ed. (London: Macmillan and Co., 1938).

Reynolds, Thomas H., and Arturo A. Flores, *Foreign Law: Current Sources of Codes and Basic Legislation in Jurisdictions of the World* (Littleton, CO: F. B. Rothman, 1989).

Sananikone, Ousa, "Burkina Faso," in *The Informal Sector and Microfinance Institutions in West Africa,* Leila Webster and Peter Fidler, eds. (Washington, DC: The World Bank, 1996.)

Schneider, Friedrich, "The Value Added of Underground Activities: Size and Measurement of Shadow Economies and Shadow Economy Labor Force All over the World," mimeo, 2000.

Schneider, Friedrich, and Dominik H. Enste, "Shadow Economies: Size, Causes, and Consequences," *Journal of Economic Literature,* XXXVIII (2000), 77–114.

Shleifer, Andrei, and Robert W. Vishny, "Corruption," *Quarterly Journal of Economics,* CVIII (1993), 599–617.

Shleifer, Andrei, and Robert W. Vishny, *The Grabbing Hand: Government Pathologies and their Cures* (Cambridge, MA: Harvard University Press, 1998).

SRI International, *International Practices and Experiences in Business Startup Procedures* (Arlington, VA: SRI, 1999).

Stigler, George J., "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science,* II (1971), 3–21.

Tullock, Gordon, "The Welfare Cost of Tariffs, Monopoly, and Theft," *Western Economic Journal,* V (1967), 224–232.

Turnham, David, Bernard Salome, and Antoine Schwartz, *The Informal Sector Revisited* (Paris, OECD, 1990).

World Bank, "Administrative Barriers to Investment in Africa: The Red Tape Analysis," FIAS, Washington, DC, 1999.

——, *World Development Indicators* (Washington, DC: The World Bank, 2001).

World Economic Forum, *The Global Competitiveness Report 2001,* Klaus Schwab et al., eds. (New York, NY: Oxford University Press, 2001).

World Health Organization, *Causes of Death and Life, Birth Statistics* (Geneva, Switzerland: World Health Organization, 1998).