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# The Regulation of Entry: A Survey

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*Simplifying entry regulation has been a popular reform since the publication of Djankov and others (2002). The inclusion of business entry indicators in the World Bank's Doing Business project has led to an acceleration in reform: in 2003–08, 193 reforms took place in 116 countries. A large academic literature has followed: 201 academic articles have used the data compiled by Djankov and others (2002) and subsequently by the World Bank. The author identifies three theories as to why some countries impose burdensome entry requirements. He also surveys the literature on the effects of making business entry easier. JEL codes: D24, D92*

In 1983, Hernando de Soto's research team followed all necessary bureaucratic procedures in setting up a one-employee garment factory in the outskirts of Lima. The factory was in a legal position to start operations 289 days and \$1,231 later. The cost amounted to three years of wages—not the kind of money the average Peruvian entrepreneur has at his or her disposal. “When legality is a privilege available only to those with political and economic power, those excluded—the poor—have no alternative but illegality,” writes Mario Vargas Llosa in the Foreword to de Soto's (1989) book.

Djankov and others (2002) further developed this view by recording the number of procedures, time, and cost needed to start a business in 85 countries. The main finding was that heavier regulation of entry is generally associated with greater corruption and a larger unofficial economy. Also, entry is regulated more heavily by less democratic governments, and such regulation does not seem to yield visible social benefits.

These findings have been used to motivate simplification of business start-up. Since the publication of Djankov and others (2002), 116 countries have made 193 reforms.<sup>1</sup> It is not only the World Bank that has been using these data.<sup>2</sup> The Millennium Challenge Corporation, a mechanism devised by the United States to channel aid to developing countries, uses these and similar indicators to identify

the countries that most deserve development aid. The entry regulation indicators created in Djankov and others (2002) are also used in The Heritage Foundation's *Index of Economic Freedom*, the World Economic Forum's *Global Competitiveness Report*, and the Fraser Institute's *Economic Freedom of the World* ranking. These in turn motivate governments to reform.

A large academic literature has sprung up too. As of December 2008, 201 papers published in refereed journals use the Djankov and others (2002) dataset.<sup>3</sup> These papers study the link between entry regulation on the one hand, and entrepreneurship, productivity, and corruption on the other. The evidence points to economically large and statistically significant effects, particularly linked to entry rates and productivity growth. The research on entry regulation and corruption is still nascent.

The paper proceeds as follows. First I survey the theoretical literature on the reasons why politicians and bureaucrats impose high entry barriers to business. I then survey the evidence on the economic and social benefits of such reforms, before I review the business entry reforms in 2003–08.

## Why Is Entry Difficult in Some Countries?

Why do some countries maintain high entry barriers? Pigou's (1938) public interest theory of regulation holds that unregulated markets exhibit frequent failures, ranging from monopoly power to externalities. As applied to the regulation of 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. 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. A recent paper in this vein—that argues for high entry barriers—is Arrunada (2007).

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.

### *The Capture Theory*

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

A variation is Acemoglu (2008), which develops a model of an "oligarchic" society. In this model, political power is in the hands of major producers who erect significant entry barriers against new entrepreneurs. An alternative model of democracy, where political power is more widely diffused, imposes redistributive taxes on producers but tends to avoid entry barriers. Acemoglu interprets the evidence in Djankov and others (2002), which shows that entry regulations is higher in less democratic countries, as supportive of his model. A similar model is developed in Morck and Yeung (2004), where a high level of trust within a small elite, in the context of a low level of trust in society at large, promotes political rent seeking, which exhibits high entry barriers and retards growth.

Another interpretation of the capture model is in Perotti and Volpin (2005). There, incumbent businesses seek a low level of effective investor protection to prevent potential entrants from raising capital. They succeed because they can promise larger contributions to ruling politicians than the entrants, due to the higher rents earned with less competition. Mitton (2008) tests the prediction of this model and finds that, consistent with Perotti and Volpin (2005), concentration of industrial activity is higher in countries with higher entry costs.

Caselli and Gennaioli (2008) offer a solution to the capture model by suggesting a sequence of reforms where financial reform precedes business entry reform. The effects of these two reforms depend on the market where control rights over incumbent firms are traded. In the absence of a market for control, both reforms increase the number and the average quality of firms, and are politically equivalent. When a market for control exists, financial reform induces less entry than deregulation, and endogenously compensates incumbents, thereby encountering less political opposition from them. Using this result, Caselli and Gennaioli show that financial reform may be used in the short run to open the way for future entry deregulation.

### *The Tollbooth Theory*

A second strand of the public choice theory, which Djankov and others (2002) call the tollbooth view, holds that regulation is pursued for the benefit of politicians and bureaucrats. 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.

Guriev (2004) points to another feature of the tollbooth model. He develops a model of the emergence and interaction of red tape and corruption in a principal–bureaucrat–agent hierarchy. The principal is to provide the agent with a unit of a good that involves externalities so that market mechanisms fail to achieve first best. Red tape produces information but is costly to the agent and is administered by a corrupt bureaucrat. First, the bureaucrat may extort bribes from the agent in exchange for reducing the amount of red tape. Second, the bureaucrat may take bribes to conceal the information produced through red tape. Even though the former kind of corruption tends to reduce red tape, the model shows that the equilibrium level of red tape is above the social optimum.

Excessive entry regulation occurs because of the threat of ex post corruption even if there is no corruption in equilibrium. Corruption helps the bureaucrat internalize the costs of rigidities imposed on society. However, Guriev's (2004) model has two other important features. First, the bureaucrat's incentives are set by a rational benevolent principal. Second, and what is more important, the rigidities are endogenized. Indeed, if the official level of red tape is too high, (ex ante) corruption reduces it to a more reasonable level, which in turn depends on the incentives that the principal offers to the bureaucrat. The analysis shows that due to the threat of ex post corruption, the principal cannot provide incentives to bring the equilibrium level of red tape all the way down to the social optimum. Corruption results in excessive red tape.

A model similar to Guriev's is developed in Ahlin and Bose (2007). They argue that the efficiency in giving out business licenses depends on the proportion of honest registry officials. An increase in the number of honest officials has two opposing effects. The positive effect is that there are more officials who act in the public interest: they process applications quickly. But there is an indirect and

negative effect: a greater prevalence of honest officials lowers the willingness to pay of efficient applicants, making the remaining corrupt officials' behavior more inefficient. When the indirect effect dominates, social welfare is locally decreasing in the proportion of honest officials. Thus, replacing some subset of corrupt, bribe-maximizing bureaucrats with perfectly honest ones, or spending more resources on monitoring or on fostering organizational identity, can actually reduce efficiency.

## The Evidence on Reforms

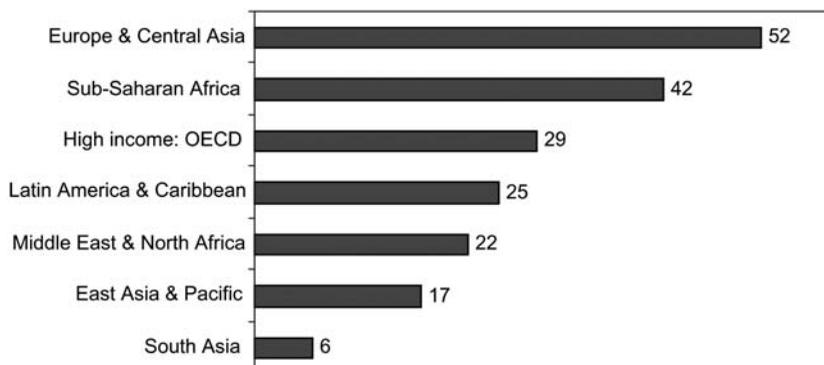
Since 2003, the World Bank's Doing Business report has been documenting the reforms in business entry regulation. To date, the database shows 193 reforms in 116 countries. Most of the reforms have taken place in Eastern Europe, followed by Africa (Figure 1). The country that has reformed the most is Saudi Arabia, followed by Madagascar, Yemen, Macedonia, Georgia and Azerbaijan.

About 60 countries have not reformed any aspect of business entry in the last five years. These are primarily poor African countries (for example, Burundi, Cameroon, Chad, Eritrea, Guinea) and some conflict-affected states (Haiti, Iraq, Sudan). These countries also have higher perceived levels of corruption than reform countries and less democracy, even adjusting for income per capita. Remarkably, every transition economy but Poland; every OECD high-income country but Sweden and the United States; and every Latin American country but Brazil and Venezuela have made entry regulation faster or cheaper or administratively simpler.

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**Figure 1.** Business Entry Reforms, by Region, 2003–08

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Source: World Bank (2008).

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The five most popular types of reforms in 2003–08 are: standardizing incorporation documents, cutting the minimum capital requirement, moving registration out of the courts, making the use of notaries optional, and allowing online registration.

### *Standardizing Incorporation Documents*

In El Salvador 70 percent of new business applications are rejected due to flawed or insufficient paperwork. In Kazakhstan, this figure is 65 percent. By contrast, the rejection rate is only 10 percent in Mauritius.

The difference here is due to the use of standard incorporation documents. With these, entrepreneurs ensure legality without the need of notaries or lawyers. And the workload eases at the registry, preventing errors and speeding up processing. In 2004 the Slovak business register issued such standardized forms on its website. If submitted incorporation documents are found to be incomplete, companies have 15 days to correct the errors and refile their application without paying additional fees. Only about a quarter of applications are returned for correction, and those are approved within two weeks. Previously, rejected applications took up to six months to resolve in a civil court procedure.

In Jamaica one document—the articles of incorporation—is now required to form a company, after a reform in 2005. It now takes 22 fewer days to start a business. After Estonia introduced standard documents in 2006, processing time at the registry fell from 15 days to 1. Another 65 countries have standard forms—including China, Egypt, Malaysia, Oman, South Africa, and now Bulgaria.

### *Cutting the Minimum Capital Requirement*

An effective reform of business entry is to cut the capital requirement. Some countries justify the capital requirement as protecting creditors, as protecting the company against insolvency, and as protecting consumers against bad products. But this makes little sense. Lenders base their decisions on commercial risk, not whether a business meets a government-imposed capital requirement. And in many countries, for example in Bulgaria, minimum capital can be paid with in-kind contributions or withdrawn immediately after registration—hardly of value in insolvency. Recovery rates in bankruptcy are no higher in countries with capital requirements than in those without.

In a number of economies the capital requirement is still a major obstacle to starting a business: Guinea–Bissau, Ethiopia, Niger, Timor Leste, Togo, Oman, the Central African Republic, Djibouti, Mauritania, Eritrea, Guinea, Mali, Chad, Benin, and the United Arab Emirates. In these countries, an entrepreneur needs

to put up at least three times the average annual income to register—and often much more. Aside from Timor Leste, all are in Africa and the Middle East. Until 2007, Yemen came next, requiring 20 times the average annual income. However, in May 2008 the Yemeni government issued a law that reduces the requirement to a nominal value. Jordan did the same.

This is one area of reform where the majority of countries that imposed a significant burden have removed it in the past decade. It is often argued that the inclusion of the Djankov and others (2002) analysis in the World Bank's Doing Business project is the primary reason behind this trend (for example, in Arrunada [2007]).

### *Moving Registration out of the Courts*

Company registration is an administrative process. Moving it out of the courts allows judges to focus on commercial disputes. A recent example is Italy, which until 1998 had the most cumbersome regulation of any European economy, with the process taking four months. Registration was taken out of the courts in 2004, cutting three months off the process. Further reforms in 2005 reduced the time to only 13 days.

Several Latin American countries, including Chile, Honduras, and Nicaragua, have taken registration out of the hands of judges. The benefits are large: entrepreneurs in countries where registration is a judicial process spend 14 more days to start a business (World Bank 2008).

### *Making the Use of Notaries Optional*

Other reformers, including Bosnia and Herzegovina, Hungary, and Romania, eliminated the need for mandatory use of notaries. Romania made optional the use of notaries in business registration. Notaries perform a simple verification service—such as certifying that minimum capital has been deposited (as is now done in the Republic of Congo) or verifying the founder's signatures (as in Hungary)—which could easily be handled by the business registry official already involved in registration.

Where notaries are needed to authorize documents, this is frequently the most expensive part of the business registration. In Mexico, notary costs are \$875, almost 80 percent of the total costs. In Turkey, notarization costs \$780, 84 percent of the registration cost; in Guatemala, \$850, 73 percent; in Slovenia, \$920, 67 percent; and in Angola, \$2,800, 51 percent.

### *Allowing Online Registration*

In Denmark, an entrepreneur can start a business without leaving the house. Using the internet, the entrepreneur can obtain a digital signature, register with the business registry and tax authority, and submit the incorporation documents. All data are automatically validated—no public officials are involved. The entrepreneur receives a business identification number online and the company notice is published on the web.

Since 2003, 17 countries have introduced electronic registration, including Belgium, Ireland, Mauritius and Norway, and, since January 2009, Bulgaria. This has cut the average time to start a business in those countries from 40 days to 14. And with no contact between the entrepreneur and the public official, no bribes can change hands. Online start-up works best in countries with high internet penetration and laws allowing electronic signatures.

As a start, countries can introduce online name search and publication or computerize registration records. Since 2005 Germany, Macedonia, Mozambique, and Serbia have made the company establishment notice electronic, saving up to three months in waiting time. Online name checking is now available in Croatia, Moldova, Nigeria, and Vietnam. Such reforms are cheap. When Guatemala made registry records electronic, it took five months to scan nearly 2 million files, all at a cost of \$100,000. The Serbian government spent \$1.5 million to establish the business registry, hire and train its staff, purchase the necessary software, build the website, and digitize all previous records.

## Survey of Empirical Studies

With so many reforms taking place around the world, it must be that politicians see high pay-offs in making business entry simpler. Indeed, the empirical evidence shows that easier regulation of start-ups increases entrepreneurship, raises productivity, and cuts corruption. In this section I will survey the main results in this new literature.

### *Entrepreneurship*

Entrepreneurship is a critical part of the process of creative destruction, which Joseph Schumpeter argued is so important for the continued dynamism of the modern economy. Yet a number of countries put in place regulations that make it difficult to start a new firm.

Klapper, Laeven, and Rajan (2006) use a large database of European firms to study how business entry regulation drives the creation of new firms: their

sample has about 3.5 million annual observations over the years 1998–99, all from European countries. The annual entry rate varies from a high of 19.2 percent in Lithuania to a low of 3.5 percent in Italy. Overall, the entry rate is an average of about 15.7 percent of firms in Eastern European countries, and 11.9 percent for Western European countries.

The authors hypothesize that industries which naturally have low entry barriers are most affected by regulations on entry. Under the assumption that these barriers are low in the United States (entry costs there being 0.5 percent of per capita GNP compared to an average of 20 percent of per capita GNP in the sample of European countries), Klapper, Laeven, and Rajan take the rate of entry in an industry in the United States to be a proxy for the “natural” propensity for entry in that industry.

They find that entry regulations hamper entrepreneurship, especially in industries that would naturally have high entry. For example, the coefficient estimate suggests that the difference in entry rates between retail and pulp in the Czech Republic (with entry costs equal to 8 percent of per capita GNP) is 0.5 percentage points higher than the difference in entry rates between the same industries in Italy (with entry costs equal to 20 percent of per capita GNP). In other words, moving from Italy to the Czech Republic benefits the high-entry retail sector relatively more. As a comparison, the mean difference in entry rates between the retail and pulp industries across countries is 5 percent. This suggests that the effect of regulatory entry barriers accounts for about 10 percent of the mean difference.

Their findings offer an explanation for the low level of incorporation in countries like Italy. Across all industries, firms start out larger when young in Italy, but grow more slowly so that firms in, say, the United Kingdom are about twice as large by age 10.

Fisman and Sarria-Allende (2004) corroborate these findings using a larger sample of 57 countries. Similar to Klapper, Laeven, and Rajan, they interpret U.S. data as “industry representative” of an optimal economy and use U.S. turnover data as a proxy for natural barriers of entry. The outcome variables are derived from the United Nations’ UNIDO database, which provides industry-level data on production, value-added, number of employees, number of establishments, and total wages bill. The average firm size, defined as the (log of the) ratio of industry value added to industry total number of establishments; and the (log of the) number of establishments in each industry are the main dependent variables.

The three main findings in Fisman and Sarria-Allende (2004) are summarized as follows. First, in industries with low “natural” entry barriers, countries with high entry regulation have few large firms, relative to less regulated economies. Second, operating margins are relatively high in low barrier industries in high entry regulation countries (relative to high “natural” barrier industries).

This suggests less competition in those industries. Third, in countries with high entry regulation, industries respond to growth opportunities through the expansion of existing firms, while in countries with low entry regulation, the response is primarily through the creation of new firms.

Ciccone and Papaioannou (2007) combine the time needed to comply with government entry procedures in 45 countries with the UNIDO industry-level data (also used Fisman and Sarria-Allende [2004]) on employment growth and growth in the number of establishments during the 1980s. Their main finding is that countries where it takes less time to register new businesses see more entry in industries that experienced expansionary global demand and technology shifts.

To check the robustness of this finding, Ciccone and Papaioannou (2007) augment the specification with an interaction between employment growth (also growth in establishments) and an index of the ineffectiveness of property rights, which comes from Djankov and others (2003a). The results show that the time to register new businesses remains a negative and significant determinant of entry, while property rights enforcement does not appear to matter for entry in industries with the potential to expand. Another possibility is that administrative entry delay simply captures the level of economic development. The authors introduce another interaction: with log GDP per capita. The entry-delays variable remains negative and significant in explaining employment and establishment growth, while there is no evidence that more developed countries see faster growth in industries facing expansionary demand and technology shifts.

Dreher and Gassebner (2007), using data for 43 countries in the Global Economic Monitor over the period 2003–05, find that more procedures required to start a business and larger minimum capital requirements are detrimental to entrepreneurship. In contrast, the days and the costs to start a business are not robust determinants of entrepreneurial activity.

The authors focus the analysis on the interaction between entry regulation and corruption. They show that corruption is beneficial in highly regulated economies. At the maximum level of regulation in their sample of countries, corruption significantly increases entrepreneurial activity. In particular, at zero costs of starting a business (as a percentage of GNP per capita), an increase in the index of corruption by one point reduces entrepreneurship by 0.31 percentage points. At the maximum level of 131.3 in the Djankov and others (2002) dataset, a corresponding increase in corruption increases entrepreneurship by 4.2 percentage points.

The results are similar when using the number of days and procedures to start a business. With a minimum of two days required, an increase in corruption by one point reduces entrepreneurship by 0.7 percentage points; at the maximum of 152 days, the increase in entrepreneurship amounts to 3 percentage points. The corresponding increase at the maximum number of procedures (17) is 1.7

percentage points. When regulation is too burdensome, the rational response is to avoid it by paying bribes. Where this is possible, entrepreneurs take advantage of it.

Using the original 85-country dataset, Djankov and others (2008) find that an extra procedure for business entry reduces the entry rate by 0.32 percentage points, so going from barely regulated to most regulated countries would reduce the entry rate by as much as 5 percentage points per year.

The most creative study linking business registration and entry regulation is Becht, Mayer, and Wagner (2008). These authors investigate the incorporation decision of firms in the European Union. In 1999, the European Court of Justice issued a ruling that new companies could register in other European Union jurisdictions without having any business activity there. The ruling was challenged by some governments, most notably Germany and the Netherlands, but was upheld on appeal in 2003. Becht, Mayer, and Wagner document a large increase in UK incorporations by companies from other EU countries, especially after 2003. In the period 2003–06, over 67,000 such incorporations took place, up 500 percent from the previous period.

The analysis also shows that countries with high registration fees and minimum capital requirements, as documented in Djankov and others (2002), experienced significant outflows of company registrations.<sup>4</sup> For example, nearly 17,000 German companies registered in the UK in 2006 alone. This included a hairdresser based in Munich and a restaurant based in Hamburg. In contrast, few French companies registered in the UK, as France quickly revised its laws to reduce the minimum capital requirement to one euro, and cut notary fees.

### *Country Studies on Entrepreneurship*

Other researchers have done country-specific studies that use more detailed data on entry regulations and their effect: for example, Kaplan, Piedra, and Seira (2007) and Bruhn (2008) on Mexico, Monteiro and Assuncao (2006) on Brazil, and Yakovlev and Zhuravskaya (2007) on Russia. These studies uniformly conclude that simplified entry regulations lead to more new firms being established.

Kaplan, Piedra, and Seira (2007) and Bruhn (2008) study the same reform experiment: the creation of SARE in Mexico. SARE is a Federal level program that ensures that micro, small and medium firms, which carry no risk for health and environment, can register and open in two days after filing with the municipality's SARE office. It aims to achieve this objective by consolidating federal, state, and municipal procedures to register and operate a firm in one municipal office, capping the number of mandatory federal procedures at only two. SARE requires municipality governments to issue the operation license in at most two days assuming that industry eligibility and zoning requirements are satisfied.

The program effectively permits operation of the firm while postponing federal inspections and requirements for three months after registering with the Federal Tax Authority.

The Mexican federal government wanted to implement SARE first where it could have the greatest impact. It identified 60 major urban centers based on infrastructure, population, economic activity, and growth potential. These centers encompass 224 municipalities on which the government focused its efforts. But it cannot deny participation to any other municipality, and the mayors of some large cities (for example Mexico City) refused participation. Also, the program could not be implemented simultaneously in all locations because of limited resources. Hence cohorts of implementation took place in 2004, 2005, 2006, and 2007.

Both Kaplan, Piedra, and Seira (2007) and Bruhn (2008) take advantage of this peculiarity in the roll-out of the SARE program to create control groups and study the effect of the reform on job and firm creation. Kaplan, Piedra, and Seira find that new start-ups increased by about 4 percent in eligible industries. The effect on job creation by new registered firms is twice as big: an increase of 8 to 11 percent. This implies that the new firms being registered are larger—suggesting perhaps that these firms may have been operating informally—and that the effect of the new reform was simply to change their incentive to formalize. Bruhn (2008) uses a subsample of SARE districts to show that the reform increased the number of registered businesses by 5 percent in eligible industries, a result comparable to Kaplan, Piedra, and Seira. However, in contrast to Kaplan, Piedra, and Seira, Bruhn argues that the increase in the number of new businesses came primarily from former wage earners opening businesses. Informal (non-registered) business owners were not more likely to register their business after the reform. Bruhn's results also show that employment in eligible industries increased by 2.8 percent after the reform, a smaller effect than documented in Kaplan, Piedra, and Seira.

Bruhn's most interesting finding is on the effect from the new competition: she estimates that the SARE reform decreased the price level in eligible industries by 0.6 percent. The fact that the price decline was concentrated among low-risk industries in the non-tradable goods sector indicates that this was due to competition. Also, the income of incumbent businesses declined by 3.2 percent, again as a result of the increased competition from start-ups.

Yakovlev and Zhuravskaya (2007) investigate a similar reform experience in Russia. Between 2001 and 2004, Russia passed laws that drastically simplified procedures and reduced red tape associated with entry regulation—registration and licensing—and with regulation of existing business, that is, inspections. The laws introduced clear limits to regulatory burden in several specific areas of regulation. For example, the laws established that registering a business requires a trip

to just one government agency (“one-stop shop”) and takes no more than a week; each inspecting agency (for example, fire, sanitary, labor, or certification inspection) comes to inspect a business no more frequently than once in two years; licenses are valid for no less than five years.

The Yakovlev–Zhuravskaya data come from annual surveys of 2,000 firms in 20 regions of Russia on the levels of regulatory burden. Firm-level panel data are collected to measure the dynamics of regulatory burden on existing firms and a repeated cross-section of newly registered firms is collected to measure changes in the regulation of entry.

The results indicate that the enactment of simplified regulation on average lead to a decrease in the level of regulatory start-up burden by 23 percentage points. In turn, this leads to a 9.3 percent higher employment by small businesses and an 8.9 percent increase in the number of small businesses per capita in the respective region. These positive effects are not at the expense of other goods: the analysis shows that regulatory simplification does not have an adverse effect on pollution or morbidity.

Monteiro and Assuncao (2006) is another application of reform analysis to the simplification in entry regulation, this time in Brazil. They document an increase in new businesses of 13 percentage points after the implementation of simplified entry regulation (combining company registry, tax, and social security registry requirements). The effect is more prominent for mid-size firms, consistent with Kaplan, Piedra, and Seira (2007) and the view that the reforms changed the incentives of previously informal businesses to become formal.

### *Productivity*

Several types of studies have linked the cross-country evidence on entry regulations with productivity: some studies run cross-country analyses, as in Barseghyan (2008), Djankov and others (2008), and Alesina and others (2005). Others use within-country analysis, for example Chari (2007) on India. Another set of papers looks at the interaction between entry regulations and trade openness, for example Helpman, Melitz, and Rubinstein (2008) and Freund and Bolaky (2008).

Barseghyan (2008) looks at output per worker in 157 countries and total factor productivity in 97 countries. He finds that an increase in entry costs by 80 percent of income per capita, which is one half of their standard deviation in the sample, decreases total factor productivity and output per worker by 22 and 29 percent, respectively.<sup>5</sup> The magnitudes are large: one reason may be that an increase in entry costs decreases entry pressure, allowing existing firms with lower productivity to survive. This is consistent with Banerjee and Duflo (2005), who show that productivity differences arise because in countries with large

start-up costs the share of relatively unproductive or technologically backward firms is large.

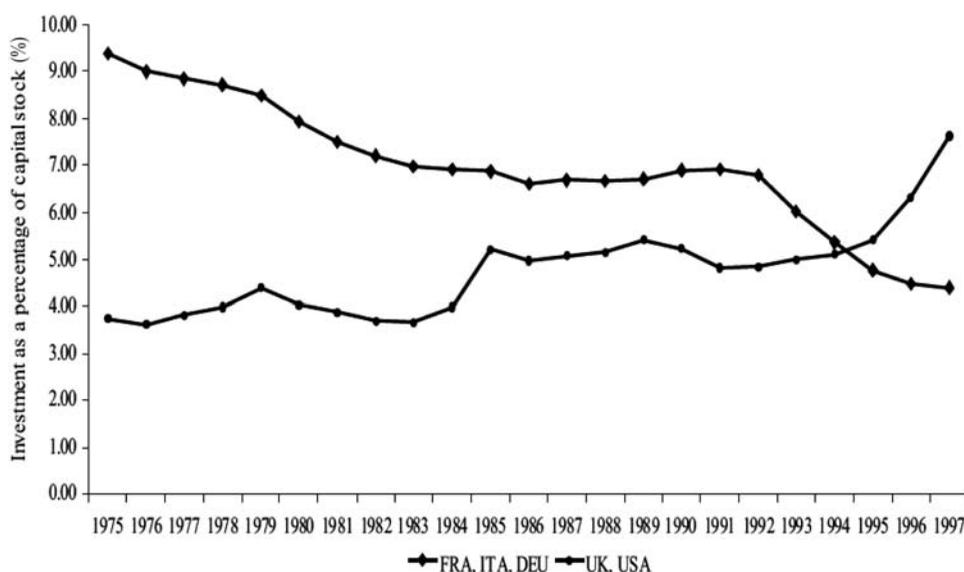
To check for robustness, Barseghyan includes a measure of corruption and separately a measure of business regulation (both taken from the Heritage Foundation's index of economic freedom) as endogenous regressors. The results are qualitatively similar: entry regulation continues to have a significant negative impact on productivity and output, and the size of the coefficient estimates does not change. Also, the two measures turn out to be highly correlated. This could be because corruption within the bureaucracy is one of the variables that the Heritage Foundation takes into account when constructing its measure of business regulation.

Using industry-level data for OECD countries in 1975–98, Alesina and others (2005) find that business start-up reforms have had a significant positive impact on investment in the sectors of transport (airlines, road freight, and railways), communication (telecommunications and postal), and utilities (electricity and gas). In their sample, countries and sectors differ both in terms of the level of regulation and in terms of changes in regulation. No country except the United States has low regulation at the beginning of the sample in the three industries. The United States was the least-regulated economy at the beginning of the sample, was still so in 1998, and implemented strong deregulation policies over the period.

For example, the index measuring the level of regulation in the United States in the transport sector is equal to 4.25 (on a 0 to 10 scale) in 1975 and equal to 0.75 in 1998, a decrease of about 82 percent. Deregulation was particularly strong in the United Kingdom and New Zealand, which were highly regulated at the beginning of the sample but ranked among the most deregulated economies by 1998. For example, regulation decreased by 86 percent from 5.5 to 0.75 in the transport sector in New Zealand and by 78 percent (from 5.63 to 1.25) and 69 percent (from 5.08 to 1.58) in the utilities and communications sectors in the United Kingdom. On the contrary, countries such as Italy, France, and Greece were among the most regulated economies in 1975 and were still so in 1998.

Figure 2 plots the average of investment as a share of the capital stock in the utility, communications, and transport sectors in the United States and the United Kingdom (selected as the early and most decisive deregulators) and in the three largest continental European countries, Italy, France, and Germany (selected as late and timid deregulators). The pattern of the investment rate in one group of countries is the opposite of the other: while in the United States and the United Kingdom investment as a share of the capital stock increased from 3.7 percent in 1975 to 8.15 percent in 1998, in the large continental European countries the investment rate decreased by 5 percentage points from 9.4 to 4.4 percent.

**Figure 2.** Investment in Capital Stock in G7 Countries



Source: Alesina and others (2005).

The investment rate increases by slightly less than one percentage point in the long run (0.863 of 1 percent). Since the investment rate is approximately equal to 6 percent on average, this would imply an increase to almost 7 percent. Note that if regulation decreases from its third-quartile value (5.6) to its first-quartile value (3.2), this change generates an increase in the investment rate of approximately two percentage points, which is quite large. This increase in investment in turn results in higher sectoral productivity.

Klapper, Laeven, and Rajan (2006) find that the average size of entering firms in Europe is significantly higher in high-entry industries in countries with high-entry costs. A one standard-deviation increase in entry costs raises the average size of entrants by 0.78 million euros in an industry that is one standard deviation higher in natural entry rate, a substantial magnitude when compared to the median size of entrants across industries of 0.87 million euros.

The coefficient estimate suggests that the difference in real growth rates of value added per worker between retail and pulp in the Czech Republic (which is at the 25th percentile in terms of entry costs) is 0.7 percentage points higher than the difference in real growth rates between the same industries in Italy (which is at the 75th percentile in terms of entry costs). In other words, moving from Italy to the Czech Republic benefits the growth rate of the high-entry retail sector relatively more. Since the average real growth rate in value added per worker is 1 percent, this is a sizeable magnitude.

Chari (2007) looks at the simplification of entry regulation in India in 1984–90 and finds that when entry costs were cut by approximately 65 percent, the resulting productivity increase was as much as about 28 percent over the six years covered by the data, of which 16 percent was directly contributed by the entry reforms (the remainder is due to reforms in licensing of already-established businesses). Cavalcanti, Magalhaes, and Tavares (2008) find similar results for Brazil: if entry procedures were cut in half and entry delays cut fivefold (to match the ease of entry in Chile), the analysis suggests a long-run income per capita increase of 25 percent.

Helpman and others (2008), Freund and Bolaky (2008), and Chang, Kaltani, and Loayza (forthcoming) study the effect of entry regulation when economies open up their product markets to international competition. Their finding is that with high fixed costs of entry, firms do not move easily toward the industries that most benefit from trade openness. This friction dulls the value of increased openness in terms of raising productivity and growth.

Another line of research investigates the link between entry regulation, higher education, and productivity. For example, Dulleck, Frijters, and Winter-Ebmer (2006) show that reducing the start-up costs for new firms results in higher take-up rates of education. In particular, decreasing the time necessary for a new firm to obtain legal status by one standard deviation would increase tertiary enrolment by 3.6 percentage points. It also gives rise to higher average productivity. This is because new firms (at least those with expansive potential) are often set up by high-skilled workers. Lower start-up costs therefore not only increase production but also lead to a higher proportion of individuals choosing high-skilled education.

Finally, some recent papers show that burdensome entry regulations inhibit innovation and thus reduce future productivity. For example, Aghion and others (2006) introduce entry into a Schumpeterian growth model with multiple sectors which differ by their distance to the technological frontier. They show that technologically advanced entry threat spurs innovation incentives in sectors close to the technological frontier, as successful innovation allows incumbents to prevent entry. In laggard sectors it discourages innovation, as increased entry threat reduces incumbents' expected rents from innovating. These empirical patterns hold using microlevel productivity growth and patent panel data for the United Kingdom. Buettner (2006) uses an endogenous R&D growth model with rising product qualities, and shows how market entry costs affect the incentives to innovate and raise productivity.

Several other papers explore the precise channel linking business entry regulation and growth. Busse and Groizard (2008), for example, study the effect of burdensome entry regulations on foreign direct investment, after showing that such investment shows up as a significant determinant of growth in

cross-country regressions. The study looks at a panel of 84 countries between 2002 and 2006, and finds that in the bottom quartile of countries in terms of ease of entry foreign direct investment loses its effect on growth. Other types of regulation also deter investment—for example labor law rigidities. But burdensome entry regulations have by far the biggest negative effect: equivalent to half a percentage point a year in foregone growth.

### *Corruption*

Svensson (2005) uses cross-country data on the regulation of entry to find a correlation between the number of days to start a business and public perceptions of corruption. Kaufmann, Kraay, and Mastruzzi (2007) corroborate this finding in a larger sample. Treisman (2007) finds that the time necessary to register a business is the most significant in explaining corruption among an array of variables proxying for regulatory burdens.

Pinotti (2008), however, provides evidence from cross-country data suggesting that a large part of the effect of regulation on corruption can be attributed to omitted variation in trust and honesty. Pinotti uses data from the World Values Survey, which contains individual data along several dimensions (economic, social, cultural, and so on) for more than 200,000 people in 83 countries. A widely adopted measure of trust is the answer to the question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” The author codes the answer as a binary variable TRUST equal to 1 if the answer was “most people can be trusted” and 0 otherwise.

According to Pinotti’s estimates, a one standard-deviation increase in the percentage of trustful individuals within the population cuts the red tape by between 30 and 40 percent. However, the result may be due to reverse causality: introducing regulation could affect average honesty by increasing the incentives for predatory practices and corruption, which would in turn impact (negatively) on trust.

This research suggests that the link between regulation and corruption is still unexplored fully and that more rigorous empirical tests are needed to establish causation.

## Conclusions

Business entry reforms have been the prevalent legal and administrative reform around the world in the past decade. This reform enthusiasm was partly triggered by de Soto’s (1989) work, but mostly by the collapse of central planning in Eastern Europe. The publication of Djankov and others (2002) also contributed to

the popularity of business entry reforms. While the evidence so far uniformly shows benefits from simplified entry regulation, the time series is short and it could be that increased entry will also be accompanied by increased failure rates a few years later. These may reduce the social benefits of entry, something that current studies do not fully capture.

In terms of research, the 1990s work on institutions and their importance to growth by Mancur Olson, Douglass North, Robert Hall and Charles Jones led to a cohort of researchers interested in the mechanisms by which specific institutions affect business decisions. The work on legal origin by Andrei Shleifer and co-authors further opened the field of comparative economics by encouraging cross-country comparisons in various areas of law. Djankov and others (2002) follow these contributions.

In turn, the new data collection work in the World Bank's Doing Business project, which follows the methodology of Djankov and others (2002), can lead to a further development: a better understanding of the characteristics of governments who reform. Eifert (2008) is an early contribution in this direction. More will likely follow. These will connect the large empirical literature of the past few years to the original theories of regulation, something that has largely been absent in the current research.

## Notes

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1. World Bank (2008).

2. Djankov and others (2002) resulted in the World Bank's Doing Business project. Published annually, Doing Business tracks regulatory reforms in 181 economies and documents the fastest reformers. Eight other research papers constitute the basis of the Doing Business project: Botero and others (2004), Djankov and others (2003a, 2003b, 2008a, 2008b), Djankov, McLeish, and Ramalho (2006), Djankov, McLiesh, and Shleifer (2007), and Djankov, Freund, and Cong (forthcoming).

3. These numbers are calculated using the Scopus academic citation index (as of December 9, 2008).

4. The explanation is that most registrations take place via agents, and such agents are paid a fee to do the necessary procedures. Hence bureaucratic hassles and delays are incurred by the agent, and the main difference across countries is the size of the minimum capital requirement. As an example of how prevalent agency is, one agent, the Gabem Group, registered nearly 47,000 companies at a single address in West Sussex. Van Stel, Storey, and Thurik (2007) have a similar result using a 39-country sample consisting primarily of European Union economies. In their study, high minimum capital requirements are shown to reduce the business entry rate, while delays, costs, and the number of procedures do not.

5. Djankov, McLiesh, and Ramalho (2006) find a similar magnitude of the effects of reforms on output.

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