The Effect of Ease of Doing Business on Firm Creation

Tristan Canare[*]

This paper looked at the effect of ease of doing business on firm creation. Using a nine-year panel data of about 120 countries from the World Bank's Ease of Doing Business Reports, results suggest that overall ease of doing business has a positive effect on business creation. This relationship is most strongly driven by the Starting a Business component, but Paying Taxes is also important. In addition, the effect of the Starting a Business component is driven by the financial cost rather than the time and administrative cost. Finally, results change when the analysis is applied to non-high-income countries only.

1. BACKGROUND AND OBJECTIVES

The importance of the private sector and of a good business environment on economic growth and development has been well-studied in the literature (e.g. Djankov, McLiesh, and Ramalho 2006; Djankov et al 2002; Barseghyan 2008). A good business environment enables private businesses to prosper more and contribute better to the economy. The more successful the private sector is and the more businesses are created, the more opportunities there are for employment. To promote private sector growth, many countries conducted reforms targeted at streamlining and lowering the cost of doing and starting a business (Klapper and Love 2010). Indeed, there is a rich body of literature providing evidence that barriers to firm entry are associated with weaker economic growth (Crafts 2006; Herrendorf and Teixeira 2011) or drivers of economic growth such as factor productivity (Moscoso Boedo and Mukoyama 2012; Poschke 2010), technological growth

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[*]Department of Economics, Ateneo de Manila University. The author thanks Philip Arnold Tua?o for comments on an earlier version of the paper. All remaining errors are the author's sole responsibility. Email: tristan.canare@gmail.com.

(Prantl 2012), entrepreneurship (Dreher and Gassebner 2013), and foreign direct investments (Jayasuriya 2011; Corcoran and Gillanders 2015).

Entry barriers — such as lengthy firm start-up procedures and high cost of doing business — can also affect economic growth by hindering the creation of new businesses (Fonseca, Lopez-Garcia, and Pissarides 2001; Klapper and Love 2010; Van Stel, Storey, and Thurik 2007). The creation of new businesses is especially important as some papers argue that new rather than older firms are the stronger source of growth and employment (Lingelbach, de la Viña, and Asel 2005; Haltiwanger, Jarmin, and Miranda 2010). This puts under greater spotlight the aforementioned reforms in improving the ease and lowering the cost of doing business and how they influence the creation of new businesses.

For more than a decade now, the Ease of Doing Business (EODB) Report, published annually by the World Bank, has been ranking the business environment of almost 200 countries worldwide. It uses ten criteria in evaluating the business environment in each of these countries: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. Although it has been studied in the theoretical and empirical literature how these criteria — individually or in groups — contribute to business growth or economic development (e.g. Fonseca, Lopez-Garcia, and Pissarides 2001; Levine 2005; Rodrik, Subramanian, and Trebbi 2004), it is less clear which of these criteria actually promote the creation of new businesses.

The objective of this paper is to look at the effect of EODB on business creation as measured by new business density — defined as the number of new businesses per 1,000 people aged 15 to 64. Perhaps more importantly, it also attempted to determine which among the doing business areas have the strongest relationship with business creation. The results of this study could help policy-makers in designing the appropriate policies that will promote business creation and entrepreneurship. This is especially useful when resources are limited such that reforms can be implemented only in some EODB areas. In addition, this paper analyzed the data not only for all countries, but also for the subset of non-high-income economies to see if there are any differences on how ease of doing business affects business creation in developed and developing countries.

Another reason why it is valuable to look at developing and least developed economies in isolation is that in these countries, there could be differences in policies versus what actually occurs on the ground (Jayasuriya 2011). For instance, Hallward-Driemeier, Khun-Jush, and Pritchett (2010), using data from African countries, found evidence that there is some divergence between the Doing Business indicators and actual experience of firms.

2. LITERATURE REVIEW AND FRAMEWORK

2.1. Ease of Doing Business, Growth, and Business Creation

Most of the literature about the EODB areas center on their effects on development, growth, or elements of development and growth. A few of them looked at their effects on entrepreneurship and starting a business. One of the earliest conceptual works on the subject was by North and Thomas (1973), who argued that barriers to entry faced by businesses hinder development because they give market power to the existing firms. Later empirical woks by Fonseca, Lopez-Garcia, and Pissarides (2001), Klapper, Laeven, and Rajan (2006), and Dreher and Gassebner (2013) found evidence that institutional entry barriers do limit entrepreneurship, and by extension, firm creation.

Another EODB criterion, access to credit, also receive much attention in the literature. Recent reviews of empirical and theoretical literature by Levine (2005) and Beck and Demirguc-Kunt (2008) concluded that financial development promotes growth. A well-developed financial system and access to finance also promote several important variables such as innovation (Meierrieks 2014), foreign direct investments (Kinda 2000; Deichmann et al 2003), lower optimal tax rate (Gupta 2005), comparative advantage in trade (Beck 2002), and reduction of income inequality (Bittencourt 2010).

Contract enforcement and quality of institutions is another EODB criterion that is richly studied in the literature in terms of its effects on growth and development. The theoretical work by Aghion (2004) explains how the institutional environment is an important driver of entrepreneurship, which is an essential element of business creation, which in turn positively affects growth. Dixit (2009) identified the three essential elements of institutional quality crucial to an efficient market — security of property rights, contract enforcement, and collective action. The effect of institutions on growth is also supported by empirical literature. One of the most-cited works on this topic, Acemoglu, Johnson, and Robinson (2001) found evidence that quality of institutions is positively associated to per capita income using data from former European colonies. A similar cross-country study by Barro (2003) concluded that economic growth is influenced positively rule of law. Related empirical analyses by Rodrik, Subramanian, and Trebbi (2004) and Hall and Jones (1999) also concluded that quality of institutions affect income and productivity, respectively.

Trading is one of the building blocks of growth of most of the East Asian miracles. And as such, there is much literature that studied how relaxing barriers can improve trade (Hoekman and Nicita 2011; Portugal-Perez and Wilson 2012; Moise and Sorescu 2013). In terms of paying taxes, most of the literature is on the effect of tax rate, rather than tax administration, on certain indicators. The World Bank Enterprise Survey shows that tax

administration is one of the top 11 constraints faced by businesses and tax rate is in the top five (World Bank 2013). In addition, empirical analysis by Djankov et al (2010) found evidence that high tax rate is correlated with lower investment, less entrepreneurship, and lower foreign direct investment (FDI); while Lee and Gordon (2005) and Fisman and Svensson (2007) concluded that tax rate is negatively related to growth. Another EODB area, investor protection, is concluded to have a positive effect on growth in some studies (Castro, Clementi, and MacDonald 2004; Haidar 2009).

There are also papers that studied ease of doing business in general — rather than the indicators individually — and its effect on certain variables crucial for development. Bayraktar (2013) and Jayasuriya (2011) found a positive relationship between performance in the EODB report and FDI. In addition, Djankov, McLiesh, and Ramalho (2006) concluded that business-friendly regulations is associated with greater economic growth.

The literature also offers studies similar to this one on how the business environment affects firm creation. Fonseca, Lopez-Garcia, and Pissarides 2001 showed and empirically verified how higher start-up costs leads to fewer entrepreneurs and thus fewer new firms. Using data from 39 countries, Van Stel, Storey, and Thurik (2007) concluded that the requirement to put up a minimum capital and labor regulations reduce the creation of new businesses; however, administrative costs such as time and procedures have no effect on it. In contrast, using the same Ease of Doing Business Report database as this paper, Klapper and Love (2010) concluded that time and procedures are indeed associated with lower firm creation. Moreover, Klapper and Love also found evidence that business registration reforms could induce more firm creation but only if the reforms are substantial.

2.2. Theoretical Literature and Framework

The model by Fonseca, Lopez-Garcia, and Pissarides (2001) explained how higher cost of starting a business discourages potential entrepreneurs from establishing firms and instead opting to become employees; thus, limiting job creation and increasing the number of individuals that compete for a job. In the model, the economy consists of individuals who are either entrepreneurs or workers. These individuals are heterogenous in terms of entrepreneurial capability. An agent will choose to be an entrepreneur if the returns to being an entrepreneur less start-up costs exceed the returns to being employed. The authors' model showed how an increase in start-up cost increases the required entrepreneurial capability that will make the agent choose to establish a business rather than become an employee.

The Fonseca et al model begins with an entrepreneurship decision equation. Let α be an indicator of entrepreneurial ability and also of the number of jobs that the agent can create if he/she does decide to become an entrepreneur; and V is the return to entrepreneurship for every employee

hired. The variable α is implicitly assumed to be exogenous. If the agent decides to be an entrepreneur, he/she would incur a cost K, which is the costs — financial and otherwise — of starting a business. Let U be the return to employment (i.e. salary and other benefits that the agent will earn if he/she chooses to be an employee). An agent will choose to be an entrepreneur if given his/her α,

$$\alpha V - K > U \tag{1}$$

Re-arranging, the agent will choose to be an entrepreneur if

$$\alpha > \frac{U + K}{V} \tag{2}$$

If K increases (start-up costs in starting a business rises), the required α to be an entrepreneur increases, and thus the number of entrepreneurs decreases and the number of those who prefer to be employees rises. In this model, K need not be solely start-up cost. It can essentially be any cost attached to doing business. Once the business has been established, as long as Equation (2) holds, the entrepreneur will stay with his/her business.

Pissarides (2003) extended the model by including a period of unemployment while the business is starting, costs incurred during the start-up process, and even operating costs. The latter was included because knowledge of operating costs can potentially discourage entrepreneurs from establishing a business. Pissarides defined the Net Present Value (NPV) of the business at the start, here denoted as Q, as:

$$Q = \frac{a}{r + a} S(\alpha, \gamma) - \frac{c + as}{r + a} \tag{3}$$

In Equation (3), c is costs incurred during the unemployment phase while the business permit is being processed, s is the cost of the business permit, a is the speed of permit processing, S is the expected present value of the stream of profits, r is the discount rate, and γ is the operating costs such as wages and rent. Canare, Francisco, and Morales (2017) applied Equation (3) on Equation (2) to come up with more explanatory variables that explain the decision to start a business or remain as an employee. The starting a business condition becomes:

$$\frac{c + as}{r + a} \leq \frac{a}{r + a} S(\alpha, \gamma) - U \tag{4}$$

When an employee decides to start a business, he/she gains the value $\frac{a}{r+a} S(\alpha, \gamma)$ and incurs the cost $\frac{c+as}{r+a}$. Thus, an employee will start a business if the cost is less than or equal to the difference between the value of the business and the value of being employed, U.

This framework shows that aside from start-up costs, operating costs (both financial and otherwise) also can affect business creation. Indeed, if a potential entrepreneur knows that the cost of running a business is extremely high, it can be a deterrent to start a firm.

3. METHODOLOGY AND DATA

3.1. Measuring the Ease of Doing Business and Business Creation

The World Bank has been publishing the annual Ease of Doing Business (EODB) Report since the 2004 edition. The Report ranks almost 200 countries in terms of how easy it is to do business in several criteria. These criteria have changed slightly through the years; but the last few years consists of ten EODB areas: Starting a Business, Dealing with Construction Permits, Getting Electricity, Registering Property, Getting Credit, Protecting Minority Investors, Paying Taxes, Trading Across Borders, Enforcing Contracts, and Resolving Insolvency.

Starting a Business consists of indicators of how easy, how fast, and how costly it is to establish a business. This includes number of steps and number of days it takes to register a business, cost of starting a business expressed as percent of income per capita, and required minimum paid-in capital. Dealing with construction permits includes indicators on the time, number of procedures, and cost of obtaining a building construction permit, as well as several indices that measure quality control after construction, certifications needed, and insurance and liabilities. Getting Electricity includes indicators of not only the cost, time, and procedures of getting electricity but also of the reliability of electrical service and the cost of electricity. Registering Property includes measures of time, cost, and number procedures to register a property, and also indexes on quality of land administration, reliability of infrastructure, transparency of information, equal access to property rights, and quality of land dispute resolution. The Getting Credit area includes indexes on quality and scope of credit information and registry, and strength of legal rights.

Protecting Minority Investors is composed of indexes of extent of disclosure, extent of director liability, ease of shareholder suit, extent of shareholder rights, extent of ownership and control, and extent of corporate transparency (World Bank 2017). Paying Taxes includes indicators of how easy and costly it is to pay taxes, including number of payments per year, time spent paying taxes, tax rate, and ease of the tax appeal process. Trading Across Borders includes indicators of time and cost of exporting and importing such as number of documents and number of days to export, number of documents and number of days to import, and dollar cost of exporting and importing per container. Enforcing Contracts contains indi-

cators of quality of judicial process, cost of litigation expressed as percent of claim, and duration of contract enforcement. Finally, Resolving Insolvency includes indicators of time and cost of insolvency proceedings, an index on strength of insolvency framework, and quality of time and cost of debt recovery for a creditor (World Bank 2017). Prior to the 2012 edition, the EODB ranks countries based on a simple averaging methodology, wherein for each country, it averages the rankings of each EODB area (World Bank 2010).

Starting with the 2012 edition, the EODB implemented an important innovation in reporting the ease of doing business of countries by including the Distance-to-Frontier (DTF) score. The DTF is an index that measures how far the economy is to the "frontier", or the best performance ever posted (since 2005) by a country for a particular indicator. To compute for the DTF, the values of each indicator, y, under each EODB area are standardized according to the formula $(y - \min)/(\max - \min)$ where the minimum value is the frontier. This standardized score is then reversed (subtracted from 100) so that a higher score means better ease of doing business. The ranking for each EODB area is then determined by ranking the average standardized scores of each indicator under that area. The overall EODB ranking is the rank of the average DTF score of each EODB area (World Bank 2011).

Whereas the EODB rank measures the relative EODB performance of countries, the DTF is more of an absolute measure. Moreover, whereas changes in EODB ranks measure the relative change in EODB performance, changes in DTF can also be used as a measure of absolute improvement of a country across the years. A country that increased its DTF score from last year to this year improved its ease of doing business. However, a country can post minimal improvement in DTF score but a large change increase in rank if those ranked near it did not improve at all. Moreover, an increase in DTF score can even lead to a decrease in ranking if countries immediately below improved faster[1]. This paper used the DTF as measure of ease of doing business. The overall DTF was used as measure of overall ease of doing business, while the DTF of each EODB area was used as measure of components of ease of doing business.

Although the DTF started only in the 2012 edition of the Doing Business report, DTF scores are reported down to earlier years. However, because of changes in EODB areas, Doing Business only reports an overall DTF starting 2010. In particular, because the Getting Electricity component started only in 2010, overall DTFs would not be comparable before and after 2010. To increase the number of observations with overall DTF data

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[1]The Doing Business Report revises the DTF scores each year to account for new "frontiers" to make the data comparable across years. The data used in this paper was the one released with the 2017 Doing Business Report (released in 2016).

by including years before 2010, a new overall DTF score was manually computed such that it does not include the Getting Electricity area; i.e. the overall DTF score was re-calculated that includes only the nine other areas.

For business creation, the indicator used was the new businesses density data from the World Development Indicators (WDI). This data is the number of new limited liability corporations registered in the country for a given year per 1,000 people aged 15-64.

3.2. Estimation Procedure

The general econometric equation estimated was

$$\text{busstart}_{it} = \alpha + \beta * \text{eodb}_{it} + \gamma * X_{it} + \mu_{it} \tag{5}$$

where busstart is an indicator of business creation (new business density) for country i at time t, eodb is an indicator of ease of doing business for country i at time t, and X_{it} is a vector of control variables for country i at time t. The variables β and η are coefficients of eodb and X, respectively, α is a constant, and μ is the error term. The parameter of interest is β, which is the response of business creation to ease of doing business.

The composition of the control vector X is important because it controls for other factors that influence business creation, allowing to better isolate the effect of ease of doing business on the number of new businesses. Variables included in X were selected so as to control for as much other factors as possible while guarding against too much multicollinearity among the regressors. The control variables included were per capita real GDP, real per capita GDP growth rate, gross capital formation (investments) as share of GDP, per capita net FDI inflow, inflation rate, real interest rate, taxes as share of revenue, percent change of exchange rate from the previous year, a governance index from the World Bank's Worldwide Governance Indicator (WGI), and the infrastructure index score from the World Economic Forum's (WEF) Global Competitiveness Report.

The first four variables are macroeconomic conditions that can increase demand and thus induce firm creation. Inflation rate can either discourage entrepreneurs from starting a business because of higher increase in costs or it could be a signal of increasing demand and thus encourage firm creation. Real interest rate can slow down firm creation because it affects the cost of borrowing and investing, while higher taxes reduces real income and thus discourages the creation of firms. Exchange rate appreciation and depreciation can affect firm creation especially in industries that require imported inputs; while good governance and high quality of institutions can affect firm creation because they affect the environment in which the firm operates.

TABLE 1.

Variable description and summary statistics

Variable	Variable Description	Obsns	Mean	SD	Min	Max
newbus_den	Number of new limited liability corporations registered in the country for the year, per 1,000 population aged 15 to 64.	1044	24.20	273.20	0.00	4,388.97
eodb_overall	Overall EODB DTF	1610	57.14	13.54	10.17	90.38
eodb_startbus	Starting a business DTF	1610	70.29	19.32	2.21	99.96
eodb_cost	Cost of starting a business as percent of income per capita	1610	57.49	118.38	0.00	1,491.60
eodb_days	Number of days to start a business	1610	39.91	58.48	0.50	697.50
eodb_procedures	Number of procedures to start a business	1610	8.84	3.38	1.00	21.50
eodb_construct	Dealing with construction permits DTF	1444	62.97	16.96	4.00	94.46
eodb_tax	Paying Taxes DTF	1450	64.05	19.73	3.31	100
eodb_property	Registering property DTF	1576	62.45	17.34	14.11	99.86
eodb_credit	Getting credit DTF	1606	48.12	23.86	6.25	100.00
eodb_trading	Trading across borders DTF	1446	62.91	22.08	0.45	96.84
eodb_contract	Enforcing contracts DTF	1610	56.21	14.61	2.08	93.36
gdppercap	GDP per capita in 2010 USD (in thousands)	1786	13.66	19.43	0.21	144.25
gdpcapgrwth	Real per capita GDP growth rate	1780	2.70	5.23	−62.23	50.12
invest_gdp	Gross capital formation (investments) as share of GDP	1607	24.33	8.77	0.00	77.00

TABLE 1—*Continued*

Variable	Variable Description	Obsns	Mean	SD	Min	Max
fdi	Net FDI inflow per capita (in thousands USD)	1800	10.24	121.02	−308.28	2,613.27
inflation	Inflation rate	1584	22.64	613.90	−35.84	24,411.03
interest	Real interest rate	1428	6.27	23.31	−42.31	572.94
tax	Taxes on income, profits and capital gains as percent of revenue	1180	23.41	13.06	0.43	75.24
exchrate	Percentage change in foreign exchange rate from the previous year	1505	46,129.18	1,789,033.00	−31.89	69,400,000.00
governance	Average index score of the six indicators in the WGI (for each indicator, range is −2.5 to 2.5	1902	0.01	0.92	−2.45	1.96
infra	Infrastructure index score in the WEF's Global Competitiveness Report (range: 1 to 7)	965	4.16	1.25	1.56	6.77

This governance variable was constructed by getting the average index score of the six indicators of WGI — voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. The WGI is an aggregation of 31 different perceptions-based data sources. The scores are standardized from −2.5 (worst) to 2.5 (best) (Kaufmann, Kraay, and Mastruzzi 2010). Infrastructure was included because it is essential in business creation as it connects the firm to markets and suppliers and affects time and efficiency of service delivery. Here, it is proxied by the Infrastructure index score of the WEF Global Competitiveness Report.

The list of all variables used in this paper, including their description and summary statistics, are listed in Table 1.

This paper used panel data from more than 120 countries for the years 2004 to 2012. Because the data structure consists of many cross sections and few time periods, the System Generalized Method of Moments (GMM) technique (Blundell and Bond 1998; Arellano and Bover 1995; Holtz-Eakin,

Newey, and Rosen 1988; Arellano and Bond 1991) was used to estimate Equation (5). This estimation method is appropriate for dynamic panels with a large number of cross-sections and few time periods. It also allows for endogeneity of some independent variables and the existence of fixed effects, heteroskedasticity and autocorrelation (Roodman 2009). Equation (5) can be modified to make it a dynamic panel by adding a lagged dependent variable among the regressors, i.e.

$$\text{busstart}_{it} = \alpha + \theta * \text{busstart}_{i,t-1} + \beta * \text{eodb}_{it} + \eta * X_{it} + \mu_{it}; \quad (6)$$
$$\text{where} \quad \mu_{it} = \varepsilon_i + v_{it}$$

where ε_i is the unobserved fixed effect. The primary problem with Equation (6) when there are few time periods is that the lagged dependent variable is correlated with the fixed effects, thus making it correlated with the error term (Roodman 2009), creating the dynamic panel bias described by Nickel (1981). One solution to this is by transforming the variables through first differencing to eliminate the fixed effects. Equation (6) then becomes:

$$\text{busstart}_{it} - \text{busstart}_{i,t-1} = \alpha + \theta * (\text{busstart}_{i,t-1} - \text{busstart}_{i,t-2}) \quad (7)$$
$$+ \quad \beta * (\text{eodb}_{it} - \text{eodb}_{i,t-1}) + \eta * (X_{it} - X_{i,t-1}) + (\varepsilon_i - \varepsilon_{i-1}) + (v_{it} - v_{i,t-1})$$

Although the fixed effects has been removed, the differenced lagged dependent variable could still be endogenous (and thus with biased coefficient) because $\text{busstart}_{i,t-1}$ is correlated with $v_{i,t-1}$ (Roodman 2009). The variable v is the idiosyncratic component of the error term, i.e. it is composed of time-varying unobserved heterogeneity, or time-varying factors that affect business creation that are not part of the control variables. The control variables included in this study were discussed earlier; and possible omitted variables that may affect business creation are presence of and quality of implementation of policies that promote private sector growth, political stability, and presence of, number, and severity of natural calamities.

The same problem exists if there are endogenous variables in the vector of controls, X. This problem can be solved by instrumenting the differenced endogenous regressors with their lagged levels. This is the difference GMM methodology (Arellano and Bond 1991; Holtz-Eakin, Newey, and Rosen 1988). Arellano and Bover (1995) and Blundell and Bond (1998) showed that including the original level variables into the equation and instrumenting them with their lagged first differences would increase efficiency. This is the System GMM methodology.

Using the System GMM entails identifying the endogenous regressors. In this paper, the regressors considered to be endogenous aside from the lagged dependent variable are per capita GDP, real per capita GDP growth rate, and investment as share of GDP because these three variables are likely to have bi-directional effect with business creation. That is, these regressors

potentially affect business creation and business creation simultaneously affects them. Another important step in doing the System GMM is selecting the instruments. By default, all available lags are used as instruments. However, including too many lags can cause the number of instruments to increase too much; and too many instruments bias the estimates (Roodman 2009). The Hansen J test (Hansen 1982) serves as guide in choosing the lags to be used as instruments. Specifically, Roodman (2009) suggests that a Hansen test p-value of greater than 0.25 is a sign that too many instruments were used, which biases the coefficients. On the other hand, a significant p-value (less than 0.1) indicates that some of the instruments are not exogenous. Thus, a Hansen test p-value of 0.1 to 0.25 is the rule of thumb in selecting the correct instruments. One option to reduce the number of instruments is to reduce the number of lags used as instruments.

The autocorrelation test is also important because serial correlation in the idiosyncratic errors (v_{it} in Equation 6) would render some lags invalid as instrument. In particular, if levels of the residuals has first order serial correlation (AR(1)), instruments should start at lag 2. If AR(2) is present, even later lags should be used. Time dummies were also included in the regressions because it increases the likelihood of meeting the System GMM assumption that the idiosyncratic errors are uncorrelated across countries (Roodman 2009). The runs also used the two-step, rather than the one-step, estimation because it is more efficient for System GMM. The caveat of using the two-step estimation is that the standard errors are downward biased. However, Windmeijer (2005) developed a way to correct for this bias in the standard errors.

3.3. Data Sources

As discussed earlier, the EODB Distance to Frontier (DTF) scores were taken from the annual Doing Business Reports. As the DTF could change each year due to the emergence of new "frontiers", the statistics used in this study were those as of the release of the 2017 edition (released in 2016). The new business density and most control variables were gathered from the World Development Indicators (WDI). The governance index was calculated from the World Governance Indicators, and the infrastructure quality index was from the World Economic Forum's Global Competitiveness Ranking.

4. RESULTS AND DISCUSSIONS

4.1. Econometric Results

As discussed earlier, the econometric model was estimated using all countries in the sample and using only non-high-income economies. In addition, the DTF score of individual EODB areas were separately tested for their

TABLE 2.

Regression Results with Overall EODB as the Variable of Interest; All Observations

Dependent Variable: New Business Density	(1)	(2)	(3)	(4)
L.newbus_den	0.859***	0.873***	0.852***	0.825***
	(0.0319)	(0.0302)	(0.0350)	(0.0433)
eodb_overall	0.0236***	0.0278***	0.0267***	0.0193**
	(0.00782)	(0.00671)	(0.00862)	(0.00922)
gdppercap	0.00373	−0.00304	−0.00155	−0.0119
	(0.00447)	(0.00333)	(0.00418)	(0.0100)
gdpcapgrwth	0.111***	0.0908***	0.0498**	0.0633**
	(0.0368)	(0.0318)	(0.0225)	(0.0265)
invest_gdp	−0.0197	−0.0109	−0.0202	−0.0286
	(0.0130)	(0.00815)	(0.0128)	(0.0192)
fdi	0.0121	0.0385*	0.0741	0.101
	(0.0112)	(0.0217)	(0.0779)	(0.0848)
Inflation		0.00150	0.00785	0.0195
		(0.00719)	(0.00903)	(0.0151)
interest		−0.00192	−0.00247	−0.00481
		(0.00432)	(0.00376)	(0.00316)
tax			−0.00227	−0.00158
			(0.00420)	(0.00444)
exchrate			−0.00337	−0.00311
			(0.00602)	(0.00807)
governance				0.735**
				(0.314)
infra				−0.218*
				(0.119)

effect on new business density. The specific EODB areas that were tested were Starting a Business, Getting a Construction Permit, Registering Property, Getting Credit, Trading Across Borders, Paying Taxes, and Enforcing Contracts. The other EODB areas that are unlikely to have an effect on business creation such as Resolving Insolvency and Protecting Minority Investors were no longer included. Moreover, the Starting a Business area was further disaggregated into financial and administrative or time cost. The financial cost of starting a business was measured by the cost of starting a business expressed as percent of income per capita, while administrative or time cost of starting a business was measured by the number of days and number of procedures to register a new business.

As a robustness check, several combinations of control variables were tested, adding them on a staggered basis. At first, only the macroeconomic

TABLE 2—*Continued*

Dependent Variable: New Business Density	(1)	(2)	(3)	(4)
Year 2005 dummy	−0.113	0.0452	0.245	0
	(0.211)	(0.239)	(0.182)	(0)
Year 2006 dummy	−0.161	0.0379	0.289	0.375
	(0.230)	(0.256)	(0.185)	(0.251)
Year 2007 dummy	−0.0610	0.0670	0.201	0.298
	(0.217)	(0.242)	(0.151)	(0.186)
Year 2008 dummy	−0.237	−0.238	−0.0835	0
	(0.158)	(0.187)	(0.176)	(0)
Year 2009 dummy				0.329
				(0.228)
Year 2010 dummy	−0.222	−0.0683	−0.0282	0.241*
	(0.225)	(0.276)	(0.166)	(0.145)
Year 2011 dummy	−0.125	0.0197	0.181	0.434**
	(0.190)	(0.222)	(0.172)	(0.195)
Year 2012 dummy	−0.0889	0.0376	0.219	0.553**
	(0.136)	(0.180)	(0.143)	(0.235)
Constant	−0.808	−1.200***	−0.926*	0.451
	(0.534)	(0.460)	(0.515)	(0.712)
Observations	830	719	489	383
Number of Countries	123	109	81	73
Number of instruments	62	86	66	65
Hansen J Test p-value	0.139	0.248	0.194	0.159

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

variables GDP per capita, real per capita GDP growth rate, investments as share of GDP, and per capita net FDI inflow were controlled for. Next, inflation and real interest rate were added, followed by taxes as share of revenue and by the percent change in exchange rate. Finally, the governance and infrastructure indexes were added. As discussed in the Methodology section, the appropriate lags to be used as instruments were determined using the results of the Hansen J test and the auto-correlation test.

The econometric results are reported from Table 2 to Table 7. Table 2 shows the results with the overall ease of doing business as the variable of interest. Table 3 reports the results wherein the EODB scores are disaggregated into its components, while Table 4 shows the results when Starting a Business is separated into financial and administrative or time cost. Tables 5 to 7 are the counterparts of Tables 2 to 4 when only non-high-income countries were used in the regressions. Note that in Tables 2, 3, 5, and 7,

only the regression that includes all controls were reported due to space
constraints.

TABLE 3.

Regression Results with Disaggregated EODB as the Variables of Interest;
All Observations

Dependent Variable: New Business Density							
L.newbus_den	0.856***	0.799***	0.832***	0.850***	0.797***	0.7716***	0.817***
	(0.0433)	(0.0554)	(0.0461)	(0.0429)	(0.0510)	(0.0617)	(0.0474)
eodb_construct	0.00549						
	(0.00429)						
eodb_credit		0.00628					
		(0.00421)					
eodb_contract			0.00773				
			(0.00708)				
eodb_tax				0.00864*			
				(0.00457)			
eodb_property					0.00726		
					(0.00570)		
eodb_startbus						0.0197**	
						(0.00840)	
eodb_trading							−0.00187
							(0.00595)
gdppercap	−0.0119	−0.0209*	−0.0121	−0.0129	−0.0268**	−0.0272**	−0.0229**
	(0.00976)	(0.0118)	(0.00959)	(0.00946)	(0.0126)	(0.0122)	(0.0114)
gdpcapgrwth	0.0586**	0.0552	0.0604**	0.0681***	0.0541	0.0535	0.0580
	(0.0258)	(0.0436)	(0.0264)	(0.0264)	(0.0430)	(0.0467)	(0.0383)
invest_gdp	−0.0311*	−0.00137	−0.0313*	−0.0361**	−0.00552	−0.00292	−0.00566
	(0.0182)	(0.0120)	(0.0183)	(0.0179)	(0.0172)	(0.0191)	(0.0135)
fdi	0.100	0.101	0.100	0.105	0.117*	0.102	0.119
	(0.0656)	(0.0969)	(0.0787)	(0.0907)	(0.0696)	(0.0733)	(0.0889)
Inflation	0.0110	0.0184	0.0180	0.0188	0.0172	0.0179	0.0148
	(0.0254)	(0.0224)	(0.0173)	(0.0207)	(0.0209)	(0.0201)	(0.0286)
interest	−0.00765*	−0.00419	−0.00562	−0.00555	−0.00733	−0.00397	−0.00487
	(0.00396)	(0.00454)	(0.00359)	(0.00388)	(0.00514)	(0.00427)	(0.00452)
tax	−0.00188	0.00149	0.00287	0.00134	0.00381	0.00337	0.00244
	(0.00610)	(0.00776)	(0.00495)	(0.00482)	(0.00630)	(0.00691)	(0.00708)
exchrate	−0.00395	−0.00256	−0.00556	−0.00517	−0.00189	−0.00109	−0.00263
	(0.0100)	(0.0104)	(0.00708)	(0.00788)	(0.0109)	(0.0110)	(0.0110)
governance	0.700*	1.072***	0.808**	0.734**	1.203***	1.252***	1.114***
	(0.392)	(0.383)	(0.346)	(0.348)	(0.408)	(0.396)	(0.376)

TABLE 3—*Continued*

Dependent Variable: New Business Density							
infra	−0.141	−0.191	−0.194	−0.191	−0.202	−0.244**	−0.159
	(0.116)	(0.144)	(0.137)	(0.121)	(0.132)	(0.121)	(0.111)
Year 2005 dummy	0	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Year 2006 dummy	0.313	0.929	1.367**	1.360**	0.371	0.0385	1.329
	(0.259)	(0.643)	(0.694)	(0.641)	(0.339)	(0.245)	(0.810)
Year 2007 dummy	0.276	0.852	1.302*	1.308**	0.328	−0.0427	1.272
	(0.198)	(0.671)	(0.732)	(0.626)	(0.264)	(0.179)	(0.823)
Year 2008 dummy	0	0.522	1.033	1.013	0	−0.402	0.950
	(0)	(0.808)	(0.793)	(0.690)	(0)	(0.270)	(0.996)
Year 2009 dummy	0.299	0.896	1.393*	1.394*	0.366	−0.110	1.355
	(0.290)	(0.687)	(0.813)	(0.732)	(0.229)	(0.216)	(0.872)
Year 2010 dummy	0.225	0.813	1.297*	1.266*	0.285*	−0.193	1.267
	(0.177)	(0.717)	(0.772)	(0.674)	(0.173)	(0.180)	(0.900)
Year 2011 dummy	0.413**	0.970	1.530*	1.503**	0.463**	−0.0490	1.440
	(0.188)	(0.704)	(0.839)	(0.720)	(0.212)	(0.221)	(0.910)
Year 2012 dummy	0.541*	1.051	1.675**	1.642**	0.547*	0	1.537*
	(0.288)	(0.670)	(0.792)	(0.681)	(0.304)	(0)	(0.855)
Constant	1.085	0	0	0	0.592	0.173	0
	(0.706)	(0)	(0)	(0)	(0.846)	(0.820)	(0)
Observations	381	383	383	383	383	383	382
Number of Countries	72	73	73	73	73	73	73
Number of instruments	65	67	65	65	67	67	67
Hansen J Test p-value	0.121	0.110	0.109	0.107	0.134	0.206	0.100

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.1.1.   *Overall Ease of Doing Business*

There appears to be a strong evidence that business creation is indeed positively affected by overall ease of doing business. As shown in Table 2, the overall EODB DTF has a positive and significant coefficient in all four specifications of the econometric model. This means that even after controlling for all these factors that may affect business creation, overall EODB still has a positive and significant coefficient. Their coefficient values are also not far from each other, ranging from 0.02 to 0.03, suggesting stability of results. This means that a one-point increase in the overall EODB DTF is associated with 0.02 to 0.03 new firms per 1,000 people aged 15 to 64.

A perusal of results would also show that most control variables have their anticipated signs. The first lag of new business density and real per

TABLE 4.

Regression Results with Disaggregated Starting a Business Indicators as the Variables of Interest; All Observations

Dependent Variable: New Business Density			
L.newbus_den	0.824***	0.858***	0.844***
	(0.0481)	(0.0463)	(0.0491)
start_cost	−0.00518*		
	(0.00312)		
start_days		0.00111	
		(0.000794)	
start_procedures			−0.0165
			(0.0279)
gdppercap	−0.0130	−0.0114	−0.0114
	(0.0101)	(0.00990)	(0.0102)
gdpcapgrwth	0.0638**	0.0611**	0.0660**
	(0.0267)	(0.0256)	(0.0258)
invest_gdp	−0.0384**	−0.0300*	−0.0331*
	(0.0181)	(0.0163)	(0.0173)
fdi	0.115	0.0963	0.0994
	(0.0864)	(0.0611)	(0.0851)
Inflation	0.0201	0.00948	0.0168
	(0.0185)	(0.0258)	(0.0171)
interest	−0.00736	−0.00812	−0.00541
	(0.00451)	(0.00503)	(0.00421)
tax	0.00266	1.24e-05	0.00106
	(0.00538)	(0.00617)	(0.00504)
exchrate	−0.00388	−0.00447	−0.00586
	(0.00679)	(0.00884)	(0.00688)
governance	0.838**	0.731*	0.772**
	(0.370)	(0.386)	(0.362)
infra	−0.193	−0.124	−0.146
	(0.141)	(0.122)	(0.116)
Year 2005 dummy	0	0	0
	(0)	(0)	(0)
Year 2006 dummy	0.356	0.299	0.335
	(0.262)	(0.280)	(0.240)
Year 2007 dummy	0.288	0.252	0.280
	(0.198)	(0.214)	(0.195)
Year 2008 dummy	0	0	0
	(0)	(0)	(0)

TABLE 4—*Continued*

Dependent Variable: New Business Density			
Year 2009 dummy	0.367	0.319	0.349
	(0.247)	(0.288)	(0.234)
Year 2010 dummy	0.263	0.199	0.216
	(0.173)	(0.206)	(0.160)
Year 2011 dummy	0.483**	0.426**	0.444**
	(0.220)	(0.203)	(0.204)
Year 2012 dummy	0.630**	0.549*	0.593**
	(0.255)	(0.288)	(0.259)
Constant	1.782**	1.232*	1.493*
	(0.777)	(0.736)	(0.811)
Observations	383	383	383
Number of Countries	73	73	73
Number of instruments	65	65	65
Hansen J Test p-value	0.158	0.127	0.147

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * p¡0.1

capita GDP growth rate are consistently positive and significant. The governance index is also positive and significant, suggesting that quality of government is an important determinant of business creation. Although real per capita GDP growth rate is significant, per capita GDP is not. This means that firms are being created in economies where demand is growing rather than where it is already large.

4.1.2.   Ease of Doing Business Components

There are mixed results for EODB components. Using the econometric specification with complete set of control variables, Starting a Business and Paying Taxes are the only EODB areas with positive effect on business creation. Some components actually turned significant when only some of the control variables were included, but only these two components remained significant when the set of control variables are complete. As shown in Table 3, Starting a Business DTF has a coefficient of 0.02, the highest among all EODB areas and almost the same as that of overall EODB. This means that a one-point increase in the Starting a Business DTF is associated with 0.02 new firms per 1,000 people aged 15 to 64. The other significant component of EODB is Paying Taxes, but it's coefficient is much lower than Starting a Business at 0.009. These results suggest that Starting a Business is the component that mostly drives EODB's effect on business creation. Paying Taxes is also important, but it has a much weaker marginal effect.

TABLE 5.

Regression Results with Overall EODB as the Variable of Interest; Non-High-Income Countries Only

Dependent Variable: New Business Density	(1)	(2)	(3)	(4)
L.newbus_den	0.823***	0.818***	0.868***	0.762***
	(0.0642)	(0.0677)	(0.0587)	(0.0536)
eodb_overall	0.0163**	0.0133*	0.0125*	0.0214**
	(0.00724)	(0.00785)	(0.00692)	(0.00842)
gdppercap	0.0328	0.0638*	0.0356	0.0384
	(0.0254)	(0.0325)	(0.0236)	(0.0554)
gdpcapgrwth	0.0320	0.0318	0.0647*	0.00744
	(0.0224)	(0.0271)	(0.0370)	(0.0416)
invest_gdp	−0.00539	−0.00289	0.00313	0.00885
	(0.00902)	(0.0106)	(0.0109)	(0.0159)
fdi	0.329	0.265	0.230	0.133
	(0.329)	(0.335)	(0.330)	(0.579)
Inflation		0.000207	$-5.96e-05$	0.0188**
		(0.00426)	(0.00820)	(0.00959)
interest		0.00337	0.000277	−0.00351
		(0.00449)	(0.00391)	(0.00538)
tax			0.00152	−0.00166
			(0.00367)	(0.00563)
exchrate			0.00660	−0.00445
			(0.00827)	(0.0122)
governance				0.761**
				(0.321)
infra				−0.257**
				(0.114)
Year 2005 dummy	0.00104	−0.00237	0.290*	0
	(0.0759)	(0.0955)	(0.161)	(0)
Year 2006 dummy	−0.0954	−0.0973	0.199	0.0354
	(0.113)	(0.137)	(0.153)	(0.652)
Year 2007 dummy			0.189	0.0365
			(0.165)	(0.682)
Year 2008 dummy	−0.226**	−0.273**	0.0771	−0.186
	(0.108)	(0.130)	(0.114)	(0.649)
Year 2009 dummy	−0.257*	−0.300		−0.195
	(0.152)	(0.191)		(0.719)

TABLE 5—*Continued*

Dependent Variable: New Businese Density	(1)	(2)	(3)	(4)
Year 2010 dummy	−0.289	−0.331	−0.00751	−0.172
	(0.199)	(0.219)	(0.106)	(0.708)
Year 2011 dummy	−0.287**	−0.301*	0.144	−0.122
	(0.120)	(0.167)	(0.160)	(0.762)
Year 2012 dummy	−0.164*	−0.184	0.192	0.0470
	(0.0904)	(0.114)	(0.128)	(0.714)
Constant	−0.530	−0.509	−1.053**	0
	(0.344)	(0.362)	(0.481)	(0)
Observations	540	460	341	254
Number of Countries	82	71	57	50
Number of instruments	68	70	58	51
Hansen J Test p-value	0.114	0.204	0.262	0.219

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The positive and significant effect of Starting a Business on firm creation is largely expected. Indeed, businesses are more likely to be created where it is easier and less costly to do so. However, it is interesting to also know which Starting a Business indicator drives this effect. Canare, Francisco, and Morales (2017) and Van Stel, Storey, and Thurik (2007) found evidence that the financial cost rather than the administrative cost of starting a business is the much stronger driver of firm creation. The former used cross-city and cross-municipal data from the Philippines while the latter used cross-country data from a much smaller sample compared to this paper. The Starting a Business component is composed of indicators of financial cost and administrative or time cost of starting a business. Here, financial cost is represented by the cost of starting a business expressed as percent of income per capita while administrative or time cost is represented by number of days and the number of procedures it takes to register a new business.

Table 4 shows the results of the regressions with disaggregated Starting a Business indicators as the variables of interest. It shows that the financial cost of starting a business is a significant predictor of firm creation, but the administrative or time cost is not. Note that the variables used for the three indicators of Starting a Business are not indices, i.e. the variables are actual cost of starting a business as share of per capita income, number of days, and number of procedures to start a business. Thus, the negative sign of the cost variable indicates that lower cost of starting a business is

associated with more firm creation. Table 4 only reports the results for the runs with a complete set of control variables. Number of procedures actually turned significant in some of the runs with an incomplete set of control variables. However, it lost its significance as more variables that affect firm creation are controlled for.

TABLE 6.

Regression Results with Disaggregated EODB as the Variables of Interest; Non-High-Income Countries Only

Dependent Variable: New Business Density

L.newbus_den	0.806***	0.827***	0.812***	0.794***	0.819***	0.783***	0.817***
	(0.0643)	(0.0615)	(0.0777)	(0.0746)	(0.0712)	(0.0743)	(0.0730)
eodb_construct	0.00361						
	(0.00500)						
eodb_credit		0.000501					
		(0.00317)					
eodb_contract			0.00544				
			(0.00577)				
eodb_tax				0.00839			
				(0.00646)			
eodb_property					0.00402		
					(0.00399)		
eodb_startbus						0.0113	
						(0.00901)	
eodb_trading							−0.00258
							(0.00434)
gdppercap	0.0267	0.0261	0.0160	0.0205	0.0284	0.0425	0.0270
	(0.0358)	(0.0453)	(0.0421)	(0.0556)	(0.0481)	(0.0602)	(0.0433)
gdpcapgrwth	0.00446	0.00576	0.0147	−0.00136	0.00257	0.0108	0.00993
	(0.0478)	(0.0462)	(0.0442)	(0.0426)	(0.0531)	(0.0385)	(0.0369)
invest_gdp	0.00157	0.00478	0.00353	0.00531	0.00273	0.00443	0.00107
	(0.0182)	(0.0152)	(0.0141)	(0.0137)	(0.0206)	(0.0166)	(0.0131)
fdi	0.349	0.288	0.272	0.379	0.253	0.167	0.378
	(0.459)	(0.522)	(0.499)	(0.580)	(0.538)	(0.759)	(0.473)
Inflation	0.0145	0.0143	0.01000	0.0159	0.0133	0.0198	0.0118
	(0.0135)	(0.0138)	(0.0119)	(0.0119)	(0.0153)	(0.0174)	(0.0121)
interest	−0.00410	−0.00349	−0.00319	−0.00338	−0.00378	−0.00390	−0.00249
	(0.00459)	(0.00412)	(0.00334)	(0.00680)	(0.00407)	(0.00416)	(0.00431)
tax	0.000853	0.000146	0.00261	0.000641	0.00251	0.00248	0.00236
	(0.00444)	(0.00516)	(0.00528)	(0.00599)	(0.00573)	(0.00688)	(0.00649)
exchrate	−0.00626	−0.00592	−0.00278	−0.00636	−0.00289	−0.00399	−0.00348
	(0.0141)	(0.0157)	(0.0112)	(0.0144)	(0.0105)	(0.0159)	(0.0135)

TABLE 6—*Continued*

Dependent Variable: New Business Density							
governance	0.798**	0.681**	0.728**	0.766**	0.673**	0.787***	0.746**
	(0.312)	(0.288)	(0.341)	(0.346)	(0.339)	(0.264)	(0.321)
infra	−0.185*	−0.148	−0.159	−0.180	−0.152	−0.206	−0.136
	(0.0951)	(0.102)	(0.121)	(0.144)	(0.126)	(0.129)	(0.106)
Year 2005 dummy	0	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Year 2006 dummy	0.207	0.108	0.145	0.152	0.613	0.209	0.180
	(0.263)	(0.231)	(0.238)	(0.244)	(0.617)	(0.682)	(0.207)
Year 2007 dummy	0.210	0.0905	0.146	0.128	0.610	0.169	0.168
	(0.266)	(0.210)	(0.227)	(0.226)	(0.639)	(0.678)	(0.178)
Year 2008 dummy	0.0111	−0.105	0.0235	−0.0949	0.413	−0.0751	0
	(0.204)	(0.186)	(0.163)	(0.199)	(0.595)	(0.682)	(0)
Year 2009 dummy	0	−0.123	0	−0.126	0.350	−0.0522	−0.0139
	(0)	(0.112)	(0)	(0.158)	(0.590)	(0.767)	(0.171)
Year 2010 dummy	0.0556	−0.0655	0.0587	−0.0496	0.449	−0.0235	0.0624
	(0.153)	(0.142)	(0.129)	(0.137)	(0.581)	(0.759)	(0.181)
Year 2011 dummy	0.120	0	0.132	0	0.516	0.0102	0.124
	(0.127)	(0)	(0.101)	(0)	(0.621)	(0.779)	(0.201)
Year 2012 dummy	0.318*	0.209	0.309	0.181	0.699	0.208	0.326
	(0.191)	(0.205)	(0.225)	(0.186)	(0.626)	(0.768)	(0.211)
Constant	0.723	0.704	0.430	0.427	0	0	0.779
	(0.695)	(0.619)	(0.604)	(0.588)	(0)	(0)	(0.723)
Observations	252	254	254	254	254	254	253
Number of Countries	49	50	50	50	50	50	50
Number of instruments	51	51	51	51	51	51	51
Hansen J Test p-value	0.133	0.141	0.241	0.157	0.228	0.226	0.213

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.1.3. *Results Using Non-High-Income Economies*

Results changed significantly when the regressions were run using only data from non-high-income countries. Overall EODB still has a positive effect on business creation, but the same is not true for the individual EODB areas. As shown in Tables 6 and 7, none among the areas of EODB turned significant. Even the Starting a Business component and its sub-indicators, which in the runs involving all countries appears to have the largest effect on firm creation, were insignificant. Paying Taxes, the other EODB component that was significant in the runs using all countries, is insignificant this time. This suggests that there are different factors that affect firm creation in developing and least developed countries.

TABLE 7.

Regression Results with Disaggregated Starting a Business Indicators as the Variables of Interest; Non-High-Income Countries Only

Dependent Variable: New Business Density			
L.newbus_den	0.806***	0.838***	0.823***
	(0.0893)	(0.0723)	(0.0679)
start_cost	−0.00265		
	(0.00276)		
start_days		0.000260	
		(0.00116)	
start_procedures			−0.0102
			(0.0330)
gdppercap	0.0244	0.0160	0.0227
	(0.0646)	(0.0537)	(0.0474)
gdpcapgrwth	0.00711	0.00813	0.00449
	(0.0471)	(0.0405)	(0.0482)
invest_gdp	0.00202	0.00342	0.00379
	(0.0205)	(0.0172)	(0.0105)
fdi	0.217	0.287	0.276
	(0.587)	(0.497)	(0.546)
Inflation	0.0105	0.0109	0.0113
	(0.0134)	(0.0189)	(0.00991)
interest	−0.00366	−0.00301	−0.00257
	(0.00425)	(0.00327)	(0.00374)
tax	0.00153	0.00140	0.00189
	(0.00494)	(0.00400)	(0.00504)
exchrate	−0.00359	−0.00381	−0.00407
	(0.00911)	(0.0110)	(0.0106)
governance	0.729*	0.658*	0.675**
	(0.395)	(0.394)	(0.325)
infra	−0.169	−0.110	−0.130
	(0.141)	(0.0976)	(0.139)
Year 2005 dummy	0	0	0
	(0)	(0)	(0)
Year 2006 dummy	0.158	−0.106	0.879
	(0.168)	(0.150)	(0.810)
Year 2007 dummy	0.163	−0.111	0.877
	(0.152)	(0.141)	(0.832)
Year 2008 dummy	0	−0.285	0.696
	(0)	(0.179)	(0.792)

TABLE 7—*Continued*

Dependent Variable: New Business Density			
Year 2009 dummy	−0.0728	−0.351	0.621
	(0.173)	(0.236)	(0.689)
Year 2010 dummy	−0.00968	−0.262	0.706
	(0.207)	(0.159)	(0.689)
Year 2011 dummy	0.0677	−0.195	0.773
	(0.218)	(0.216)	(0.729)
Year 2012 dummy	0.246	0	0.960
	(0.196)	(0)	(0.713)
Constant	0.936*	0.832	0
	(0.551)	(0.525)	(0)
Observations	254	254	254
Number of Countries	50	50	50
Number of instruments	51	51	51
Hansen J Test p-value	0.237	0.226	0.243

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.2.   Analysis and Implications

This paper provides strong evidence that overall Ease of Doing Business positively affects business creation. That is, after controlling for other factors that affect business creation, more businesses are created in countries where it is easier and less costly to do business. This finding is supported by existing literature on the effect of business-friendly environment on firm creation, private sector growth, and even foreign direct investments (Fonseca, Lopez-Garcia, and Pissarides 2001; Van Stel, Storey, and Thurik 2007; Klapper and Love 2010; Jayasuriya 2011). The easier and less costly it is to do business, the higher the return to firm creation; and therefore, more potential entrepreneurs are encouraged to start a firm and more existing businesses are incentivized to expand to new ventures.

Some important contributions of this paper to the literature are the use of the DTF score, which is a more absolute measure of ease of doing business compared to the EODB rank, and looking at which specific components of EODB drive firm creation. Results show that overall ease of doing business positively affects business creation, and this relationship is driven by certain areas of EODB. Starting a Business is the EODB component that is the strongest driver of business creation, both in terms of statistical significance and magnitude. Streamlined processes and lower financial cost of registering and starting a business are indeed important incentives that en-

courage firm creation; and these result is supported by literature (Fonseca, Lopez-Garcia, and Pissarides 2001; Van Stel, Storey, and Thurik 2007).

The significance of the Paying Taxes component indicates that high tax rates and/or complexity of tax regulations and the administrative and time cost of complying to them also hinders firm creation. Indeed, Djankov et al (2010) concluded that high tax rates decrease entrepreneurship, which is an essential element of firm creation.

While the result on Starting a Business is largely expected, this paper also tested for the individual components of this area — i.e. financial cost and administrative or time cost of starting a business — on whether they have differing effects on firm creation. The results suggest that it is the financial cost — rather than time and administrative cost — component that largely drives the effect of Starting a Business on firm creation. This also suggests that in deciding to establish a business, potential entrepreneurs are more driven by lower financial cost than by relatively easier processes of starting a business. Alternatively, they are discouraged more significantly by high financial costs than by the cumbersome and time-consuming procedures of starting a business.

Another notable result of the paper is the different results in the subset of non-high-income countries. The significance of overall EODB and insignificance of all EODB areas means there is no component that dominates EODB's effect on business creation, even Starting a Business. In fact, it suggests that for EODB to affect business creation, all its components must combine. This has important policy implications in designing programs aimed at promoting firm creation. This also suggests that to promote firm creation in developing and least developed countries, not only should business entry barriers be addressed, even actual operating costs and difficulties of a business should be tackled.

This further suggests that in non-high-income economies, firm creation is hindered not only by firm entry barriers but also by the costs and difficulties associated with operating a business. If the potential entrepreneur knows that operating a business is difficult and costly, then he/she will be discouraged to start the business. As discussed earlier, Pissarides (2003) explains that high operating costs diminishes the present value of the firm at start-up, which provides disincentive to establish the firm. Indeed, Kaplan, Piedra, and Seira (2007), in studying a Mexican program that makes business registration easier and less costly, concluded that there could be other factors aside from easing business registration regulations and procedures that could promote firm creation and formalization.

The result that certain EODB components drive business creation have policy implications, particularly in designing programs that encourage firm creation and entrepreneurship. For instance, some countries implement business registration reforms such as reducing the number of steps or implementing 'one-stop shops' that saves time for the potential entrepreneur. While these could be useful, results of this study show that removing capital requirements and reducing registration fees could have a larger effect on encouraging business creation. Especially when resources are limited, such programs would be more efficient and effective if they will target reforms on areas with the biggest effect on business creation.

5. SUMMARY AND CONCLUSIONS

To promote private sector growth, many countries implemented reforms targeted at streamlining and lowering the cost of doing and starting a business (Klapper and Love 2010). This policy is backed by literature providing evidence that a vibrant private sector and a good business environment has positive effects on economic growth and development (e.g. Djankov, McLiesh, and Ramalho 2006; Djankov et al 2002; Barseghyan 2008). There is also a rich body of literature providing evidence that barriers to firm entry are associated with weaker economic growth (Crafts 2006; Herrendorf and Teixeira 2011); and one of the transmission mechanisms from firm entry barriers to slower growth is through reduced firm creation (Fonseca, Lopez-Garcia, and Pissarides 2001; Klapper and Love 2010; Van Stel, Storey, and Thurik 2007).

This paper looked at the effect of ease of doing business on firm creation. The former was measured using the Distance-to-Frontier (DTF) score in the World Bank's Doing Business Reports while the latter used new business density as indicator. This paper also studied which components of ease of doing business drive this relationship, and if the results differ for non-high-income economies.

Using a panel data from about 120 countries from 2004 to 2012 and the System GMM estimation, results suggest that overall ease of doing business has a positive and significant effect on business creation; and this relationship is driven by some ease of doing business components. The strongest driver of firm creation is Starting a Business — the time, procedures, and cost of starting and registering a firm. Another significant driver is Paying Taxes — higher tax rates and more complicated tax compliance discourages firm creation.

The significance of Starting a Business is largely expected, but the results of its sub-components offered additional insights. It shows that the financial cost of starting a business is a bigger hindrance to firm creation than the administrative or time costs. This suggests that in deciding to start a business, potential entrepreneurs are more driven by lower financial cost than by relatively easier processes of starting a business. Or that they are discouraged more by high financial costs than by the cumbersome and time-consuming procedures of starting a business.

Another important finding is the difference in results when the analysis is limited to non-high-income countries. For middle- and low-income countries, overall EODB is a significant driver of firm creation, but none of its individual components are. This suggests that among these countries, there is no specific area that drives the effect of EODB on business creation. It means that for EODB to affect business creation, the effect of individual components must combine. This further suggests that business creation in non-high-income countries is hindered not only by firm entry barriers but also by the overall costs and difficulties associated with operating a business.

These results can have significant policy implications, particularly in designing programs that encourage entrepreneurship and firm creation. Especially when resources are limited, these programs would be more efficient and effective if they will concentrate reforms in areas with the strongest effect on business creation.

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