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ESSAYS ON ENTREPRENEURSHIP AND FIRM DYNAMICS IN EMERGING MARKETS

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Abstract. This dissertation explores three leading frictions to entrepreneurial behavior and firm dynamics in emerging markets, focusing on the context of Brazil. In the first chapter, I show that randomized anti-corruption initiatives have positive effects on local economic activity and on the growth of firms who depend on government relationships. In the second chapter, I find that political considerations distort hiring decisions within public organizations. In the third and final chapter, I characterize how local economic shocks affect the composition of entrepreneurs in the economy, finding that young and skilled individuals are the most responsive when investment opportunities arise.

1. Corruption and Firms: Evidence from Randomized Audits in Brazil (joint with Mounu Prem)

A vast literature at the intersection of economics, finance, and law has debated the importance of institutions for economic growth and allocative efficiency (Acemoglu et al., 2000, Glaeser et al., 2004). In the first chapter of my dissertation, I focus on one of the leading frictions to the functioning of government institutions, namely corruption. Its importance for economic growth has been of policy interest to governments, firms, entrepreneurs, and investors around the world, with the IMF estimating that corruption costs exceed 2% of world's GDP (IMF, 2016)

IMF estimates notwithstanding, the impact of corruption on economic activity remains an area of active theoretical and empirical debate.[1] On the one hand, it is argued that corruption acts as a "sand in the wheel" and hampers economic growth, through channels such as barriers to entrepreneurship and firm investment, limited

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[1]See Bardhan (1997), Jain (2001), and Olken and Pande (2011) for extensive reviews of the various theories of corruption and firms.

access to finance, and higher transaction costs (Shleifer and Vishny, 1993, Svensson, 2005), resulting in resource misallocation across firms (Hsieh and Klenow, 2009) and within firms (Murphy et al., 1991, Dal Bó and Rossi, 2007). On the other hand, it is argued that in presence of red-tape, corruption may act as a "grease in the wheel" of bureaucracy, reducing costs of doing business and improving performance (Leff, 1964, Huntington, 2006, Dreher and Gassebner, 2013), and potentially leading to efficient allocation as the most productive firms may have the highest willingness to pay (Lui, 1985, Shleifer and Vishny, 1994, Weaver, 2016). In this paper, we take a step at resolving this argument by empirically establishing that corruption impacts economic activity, and teasing out the channels that drive this relationship.

There are two main obstacles that researchers face when empirically investigating this question. First, corruption by its inherent nature is difficult to measure. Consequently, detailed data on firm-level corruption is often unavailable and researchers have mostly relied on survey and voluntary disclosure reports which could be biased. Second, and importantly, corruption and firm and economic activity are jointly determined, making it difficult to causally identify the effects of corruption. We rely on randomized anti-corruption audits in Brazil to circumvent these challenges.[2] Two features of this setting allow us to directly address the issues of measurement and endogeneity. One, we have access to detailed audit reports containing hard evidence on corruption cases in government procurement. And two, since these audits are randomized across municipalities, and have been shown to have long lasting effects in reducing corruption (Avis et al., 2016), they provide us with an exogenous variation in the level of corruption. Exploiting this variation, we argue we can trace the causal impact of corruption on economic activity, and the channels that drive this link.

We start constructing our data from audit reports that are available in text format. We extract detailed information on firms involved in corruption from these reports, and create firm-level measures of corruption in public procurement. Using tax identifiers, we then combine the corruption data to administrative matched employer-employee data for the entire Brazilian formal sector, as well as other sources. Our corruption data has around 12,800 firms involved in corruption, observed over 15 years (2000-2014). Over this horizon, we follow these firms as well as another 2.3 million firms that

[2]Investigative audits are one of the most common tools governments adopt to monitor and punish corrupt activities. Supreme Audit Institutions (SAIs) –specific agencies dedicated to anti-corruption audits– are present in almost every country in the world. See the International Organization of Supreme Audit Institutions (INTOSAI) website for a list of 194 countries with specific agencies designed to perform audit and anti-corruption activities: http://www.intosai.org/about-us/organisation/membership-list.html.

are located in roughly 5,500 municipalities that were eligible for the anti-corruption audit program. In addition, we validate our findings from this sample by conducting a representative face-to-face survey of 115 firms doing business with local governments, sampled from 15 eligible municipalities.

We then exploit the randomized nature of the audit program to estimate the causal impact of the anti-corruption crackdown on municipality and firm outcomes. If "sand in the wheel" arguments are at play, we would expect lower corruption to increase economic activity and entrepreneurial opportunities. In contrast, "grease in the wheel" arguments would predict lower corruption to reduce economic activity and entrepreneurial opportunities. Our evidence is inconsistent with the latter explanation, as we find that the anti-corruption crackdown has a positive net effect on the local economy – i.e., reducing corruption increases entrepreneurial activity and leads to improved access to finance.

Next, we use firm-level analysis to investigate what mechanisms may explain why corruption hampers local economic activity. We find that two channels explain these facts: allocation of resources to less efficient firms, and distortions in government dependent firms. Using firms involved in corrupt business with the municipality, i.e. "corrupt firms," we find that the second channel is more important. Difference in difference estimation suggests that, after audits, the performance of corrupt firms improves relative to a similar set of unaffected firms. Corrupt firms invest more, increase borrowing and leverage, reallocate labor inside the firm, restructure the organizational design by increasing hierarchical layers, rely less on government contracts, and grow faster. Overall, our results uniformly support the "sand in the wheel" view and suggest costs and distortions to government dependent firms as the main mechanism through which corruption inhibits the performance of firms and economic activity. These findings provide novel micro-evidence on why corruption acts as an institutional failure that is detrimental to firm performance and economic growth.

In conclusion, this paper has immediate policy implications for both governments' and firms' anti-corruption policy around the world. For governments, it shows that it is important to consider the role of the private sector when designing policies aimed at reducing corruption in the public sector, as the spillover effects on the former can be significant. For firms, our findings highlight various nuances about how corruption affects firm performance and how firms operate in corrupt environments, and can be informative for the design of anti-bribery laws such as the US Foreign Corrupt Practices Act and the UK Bribery Act. Further research exploring other forms of corruption and how corruption affects large multi-national firms can help paint a more comprehensive picture needed to evaluate these and other international efforts to combat corruption.

2. Patronage in the Allocation of Public Sector Jobs (joint with Mounu Prem and Edoardo Teso)

The quality of individuals employed in the public sector is a crucial determinant of government performance. While studies in this area have analyzed how various incentives shape the pool of individuals who decide to *apply* for public jobs, we know little about the process through which governments *select* public employees (Finan et al., 2015). Despite the introduction of rigid civil service systems, in virtually all countries politicians retain some discretion in this selection process (Evans and Rauch, 1999).[3] While this flexibility can allow politicians to select individuals deemed able and motivated to perform the job, it can also be susceptible to patronage: public sector jobs could be used to reward political supporters of the party in power.[4] As political support substitutes quality as a hiring criterion, patronage represents a potentially key impediment to the efficient recruitment of public sector workers.

Although accounts of this phenomenon are common,[5] we have little systematic evidence on the role of patronage in selection to public employment. In the second chapter of my dissertation, we ask the following questions: Does patronage affect hiring in a modern bureaucracy? And if so, what is the impact of patronage on the quality of the public workforce and, ultimately, on public service delivery? The lack of data and suitable empirical settings has made it challenging to convincingly document the presence of patronage in public employment, let alone to study its consequences. In this paper, we aim to fill this gap by testing for the presence and consequences of patronage in Brazilian local governments.

Brazilian local governments represent an ideal setting to study patronage in public employment. Among Latin American countries, Brazil is considered a primary example of a *de jure* professionalized and meritocratic civil service (Iacoviello, 2006); yet, *de*

[3]As described by Grindle (2012), despite the establishment of civil service systems throughout the world, political actors often manage to retain discretion in the allocation of jobs through the use of temporary contracts and the reliance on job categories exempted from the formal selection rules.

[4]The term patronage indicates a *quid pro quo* relationship between the party in power and its political supporters, in which public jobs are used as a reward and exchanged for political support (Weingrod, 1968).

[5]Patronage was at the core of local political machines in the early twentieth century United States (Riordon (1905), Wilson (1961)). Chubb (1982) (p. 91) writes that in Southern Italy "a substantial part of politics revolves around the posto ('job or position') [...] a job signifies a vote and vice versa". "[The use of patronage] in the governance of Latin America has a long tradition [...] easily dating to the conquest" (Grindle, 2010).

facto politicians can use temporary contracts and other exempt job categories to exert significant influence in the selection of public sector workers (Grindle, 2012).

The main challenge in the empirical investigation of patronage is the lack of comprehensive information on both the careers of public sector workers and their connections with the political power. We build a new dataset that allows us to overcome this challenge. To do so, we combine data from two sources. First, we use a matched employer-employee dataset covering the entire Brazilian public sector for the 1997-2014 period. Second, we use administrative data on about 2,000,000 political supporters of Brazilian local parties. These supporters are either *i)* local candidates, namely party members running for a seat in a Brazilian municipal council, or *ii)* campaign donors to a local party. Based on a candidate's party affiliation or on the recipient of a donor's contribution, we can clearly link these individuals to the local party that they support. The data allow us to track the labor market careers of supporters of different parties, investigating whether those supporting the party in power are favored in accessing public jobs. Crucially, the availability of data on the universe of public jobs allows us to analyze favoritism at all layers of the public hierarchy, from high level bureaucratic positions, to the middle-tiers of the bureaucracy and to jobs as front service providers. Moreover, we have rich information on the characteristics of political supporters, such as their education, private sector careers, and amount of support provided to a party, and of the public jobs that they obtain, such as the specific occupation and length of the employment spell. This allows us to conduct several empirical tests to show that patronage is the key driver of political favoritism in public employment, and to study its effects.

To isolate the causal link between the provision of political support and an individual's public sector career, we exploit quasi-experimental variation in connection to the party in power generated by very competitive municipal electoral races. Our regression discontinuity design compares supporters of the winning party in a municipal election (*i.e.* the party of the elected mayor) to supporters of the losing party in the same election (*i.e.* the party of the runner-up mayoral candidate), focusing on elections where the margin of victory of the winning party over the runner-up is small (e.g., less than 5%).

First, we show that supporters of the party in power are significantly favored in accessing public sector jobs. We find that providing political support to the party in power increases the probability of being employed in the public sector by 47%. This effect is large for both groups of supporters we analyze, implying that the provision of both electoral and financial support matters. Importantly, this political favoritism is not limited to a specific layer of the public sector hierarchy, but it is present across all categories of jobs, from managerial positions at the top of the bureaucracy, to lower levels of the bureaucracy, and to professional and blue collar jobs.

Second, we show that patronage is the leading explanation behind this favoritism in public employment: public sector jobs are exchanged for political support, in a *quid pro quo* relationship in which the amount of support provided substitutes qualifications as hiring criterion. Indeed, we document that a supporter's public sector return is proportional to the *amount* of support provided to the party.

Third, we establish that providing political support to the party in power acts as a substitute for individual quality. We find that supporters of the party in power are screened less on education than supporters of the runner-up party. Second, we use supporters' private sector wages before the election as a measure of skills and productivity, and we find that supporters of the party in power are screened less also along this dimension of quality. Political favoritism is particularly concentrated among supporters with lower private sector earnings.

Taken together, these and several additional sets of results indicate that patronage negatively affects selection to public employment, as the supporters who benefit most from patronage are less qualified on observable dimensions, are *not* characterized by better unobservable characteristics, and are *not* more ideologically aligned to the party in power. However, there may still be positive effects of patronage which we are unable to investigate. We therefore move a first step towards understanding the ultimate effect of patronage on the quality of public goods provision, by showing that high levels of patronage in a municipality are associated with worse public service delivery (as measured through education and health outcomes). Our findings illustrate the potential risks of allowing too much discretion in the hiring of bureaucrats, due to the pervasive presence of political connections within local governments.

3. Marginal Entrepreneurs

(joint with Shai Bernstein, Davide Malacrino, and Tim McQuade)

Entrepreneurship plays a critical role in aggregate job creation, with new businesses responsible for the majority of new employment in the economy (Decker et al. (2014); Haltiwanger et al. (2013a)). Of course, entrepreneurship and the creation of new firms is a multi-faceted phenomenon. Some types of entrepreneurship can be described as Schumpeterian, in which talented individuals personally create new technologies or products that facilitate a creative destruction process in the economy disrupting existing organizations. Other types of entrepreneurship would better be described as

Kirznerian, in which alert individuals identify the existence of new and exogenous investment opportunities created by changing market conditions, and take advantage of them by forming new businesses (Kirzner (1973, 1985)).

In the third chapter of my dissertation, we focus on the latter form of entrepreneurship, which is increasingly recognized as an important driver of economic dynamics. A growing theoretical and empirical literature shows that new business formation is key to understanding how economies respond to aggregate shocks. For example, a variety of macroeconomic studies have emphasized the role new firm creation plays in the amplification and propagation of exogenous economic shocks (e.g., Bilbiie et al. (2012); Clementi and Palazzo (2016); Sedláček and Sterk (2017)). At the micro level, Adelino et al. (2017) show that new firms are responsible for the majority of jobs created in response to changes in investment opportunities driven by local demand, and Decker et al. (2017) find that new firms account for most of the employment growth in regions that experienced a significant economic expansion due to the discovery of shale oil and gas.

While recognizing the importance of firm entry response to local economic shocks, little is known about the characteristics of the individual entrepreneurs who identify and act upon such opportunities when they arise. This issue is particularly salient. If these entrepreneurs are concentrated in a particular segment of the population, then characteristics of the local population and long-term demographic trends may have significant implications for the entrepreneurial responsiveness of the economy. Moreover, understanding the key traits of such individuals could be useful to policymakers in thinking through how to stimulate local entrepreneurship and ultimately foster vibrant, dynamic local economies. In this paper, we fill this gap and explore the personal and career characteristics of the individuals who create new firms in response to changes in local economic opportunities.

Tackling this question empirically poses two challenges. First, exploring this question is challenging due to the limited availability of employer-employee matched data needed to follow individuals over time.[6] Second, in order to study the entrepreneurial response of individuals to opportunities, we need a source of plausibly exogenous variation in

[6]Studying the question in the U.S. is challenging due to limited information on individual level behavior. For example, the The US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) is an employer-employee matched data but its coverage is limited to few states only and excludes key states such as California, New York and Massachusetts (Babina (2015)). Alternatively, various papers explore the use of survey data in the U.S. such as the PSID (used by Hurst and Lusardi (2004)), but is constrained to a sample of less than 5000 observations. The Survey of Small Business Finances compiles data on small businesses and offers information on their characteristics but does not follow firms over time. Moreover, while the survey provides a good description of the existing small businesses, it

local economic opportunities. For both these reasons, we choose to study the Brazilian economy.

First, we rely on access to the administrative employer-employee matched data from the Brazilian Ministry of Labor that captures all the employees in the formal sector, and includes information on their work history, wages, education, gender and occupation. These data allow us to not only identify the founders of new firms, but they also provide a rich set of information regarding their personal characteristics *before* the creation of the new firm. Second, the large agribusiness sector in the Brazilian economy allows us to identify exogenous local income and demand shocks arising from global commodity price fluctuations, and to study the firm creation response.[7]

Specifically, we interact municipality level historical production endowments of agricultural crops with contemporaneous changes in global commodity prices. These historical concentrations of agricultural crops are persistent due to the accumulation of expertise and economic activity over long time periods, as well as physical characteristics of the regions such as climate and soil. We find that, in affected municipalities, increases in commodity prices lead to a large increase in local income and local employment. Our estimated effects are economically meaningful. At the top 10% of commodity price increases, municipalities experience a 2.9% increase in local aggregate income and a 4.1% increase in local employment. This increase in local aggregate income arguably creates new investment opportunities in the non-tradable sector, which is heavily dependent on local demand (Mian and Sufi (2012); Basker and Miranda (2016); Mian and Sufi (2012); Stroebel and Vavra (2014)). Consistent with this idea, we find that the local demand shock triggers significant firm entry driven entirely by increases in the non-tradable sector.

We then turn to our main question, and explore the characteristics of those entrepreneurs who respond to local demand shocks by forming new firms. We find that such entrepreneurs are almost exclusively young individuals. These results are consistent with the idea that lifecycle considerations strongly influence individual entrepreneurial responses to local economic opportunities. In particular, younger individuals have been shown to have higher degrees of risk tolerance than older individuals,

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is not designed to specifically study the characteristics of new businesses - an important distinction noted by Haltiwanger et al. (2013b).

[7]Brazil is among the largest producers in the world of coffee, sugarcane, orange juice, soybean, corn and ethanol, among others. These crops provide the basis for the large agribusiness industry in Brazil, which represents 22% of Brazil's GDP, a third of its employment, and almost 40% of its export (PwC, 2013). The agribusiness industry includes not only farming production, but also the supply of farming inputs such as machinery, the selling, exporting and marketing the products, warehousing facilities, wholesalers, processors, and retailers, among others.

and thus may be better able to tolerate the risk associated with entrepreneurial activity (Kihlstrom and Laffont (1979); Miller (1984); Levesque and Minniti (2006)). Likewise, young individuals may have less constraints in the form of family or looming retirement needs, and may therefore have sufficient flexibility to quickly respond to changes in economic opportunities. Finally, younger individuals, being at the early stage of their career, may have less attractive outside options, which may enhance their flexibility to respond to local economic opportunities when they arise.

While the results so far suggest that lifecycle considerations are important, it turns out that being young in itself is insufficient to explain the entrepreneurial response. We find that among the young, those who have acquired certain skills through previous employment and education are more responsive to local opportunities. For example, it is those individuals who have the most industry experience, those that are more educated, and those that have worked in managerial occupations who are most responsive to these new economic opportunities.

Our finding that both age and skill matter for the individual-level decision whether to become an entrepreneur when local opportunities arise suggest that several characteristics of the local economy may affect its entrepreneurial responsiveness. First, since the ability to create new firms hinges on access to finance (Evans and Jovanovic (1989); Hurst and Lusardi (2004)), and since young individuals have less time to accumulate wealth, we posit that in municipalities with better access to finance, we are likely to find an even stronger entrepreneurial response of the young. Moreover, Lucas (1988) and Gennaioli et al. (2012) argue that the presence of other skilled individuals generates human capital externalities making it easier for potential entrepreneurs to learn how to start a business, suggesting that given the importance of skill, the overall stock of entrepreneurial knowledge might impact dynamics firm creation. Finally, given the importance of life-cycle considerations, younger demographics may incentivize entrepreneurial responsiveness. In fact, younger age demographics may also lead to potential indirect effects, as suggested by Liang et al. (2014). Specifically, older populations may make it more difficult for younger individuals to move up the job ladder and thereby acquire the requisite skills for entrepreneurship. This suggests that younger individuals would generally be less responsive in localities with older populations.

We find suggestive support for all of these three hypotheses using cross-municipality regressions. Younger individuals are indeed more responsive in municipalities with better access to finance. Moreover, younger individuals are also more responsive in municipalities where the population is endowed with more generalist and managerial skills and more entrepreneurs, consistent with human capital externalities. Finally, we find that individuals do take longer to acquire generalist and managerial skills in municipalities with older demographics. In line with these findings, we document that young individuals are more responsive to local opportunities in municipalities with younger demographics.

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