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The effect of informal employment and corruption on income levels in Brazil

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ABSTRACT

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This paper exploits a unique dataset on corruption and informal sector employment in 476 Brazilian municipalities to estimate whether corruption impacts GDP or income levels once variation in informal economic activity is taken into account. Overall, I find that higher levels of corruption and a large informal economy are generally associated with poor economic outcomes. However, only the size of the informal economy has a statistically significant effect. This effect is robust to the inclusion of a variety of controls and fixed effects, as well as an instrumental variable analysis. Further, these effects are large in magnitude. For example, a one standard deviation increase in the share of total employees that are informally employed explains a decrease in GDP per-capita of about 18%. *Journal of Comparative Economics* 000 (2015) 1–39. College of Business and Economics, West Virginia University Morgantown, WV 26506-6025, USA.

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1. Introduction

Public corruption, commonly defined as “the misuse of public office for private gain” (Svensson, 2005, p. 20), is considered to be a major detriment to development, particularly in low-income countries. In a review of the literature, Olken and Pande (2012) summarize the ways in which corruption has been measured and show that no matter how dramatically the estimates differ there is a strong negative association between income levels and corruption.¹ A major explanation for this finding is that corruption induces uncertainty, decreasing incentives for investment and thereby reducing growth (Shleifer & Vishny, 1993; Wei, 1997; Campos et al., 1999; Bologna, 2015).

An alternative, less direct, explanation of this finding is that corruption has an impact on the size of the informal sector (shadow economy) and the size of the informal sector subsequently impacts income levels and growth rates (La Porta and Shleifer, 2008). Specifically, in lower-income countries, corruption and the informal sector are found to be complements and therefore a higher level of corruption translates into a larger informal sector (Dreher & Schneider, 2010). Furthermore, it is highly plausible that the unofficial economy and the official economy are substitutes, rather than complements, in lower income countries causing the official economy to suffer when the unofficial economy is large (Dreher & Schneider, 2010; Johnson & Kaufmann, 1997). Therefore, it could be the case that we see this strong negative association between low-income countries and high corruption levels partly because corruption is driving individuals to participate in the informal sector, seemingly lowering income

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¹ This finding is common in much of the empirical literature (e.g., Li et al., 2000; Mo, 2001; Abed & Davoodi, 2002; Treisman, 2007; Aidt, 2009).

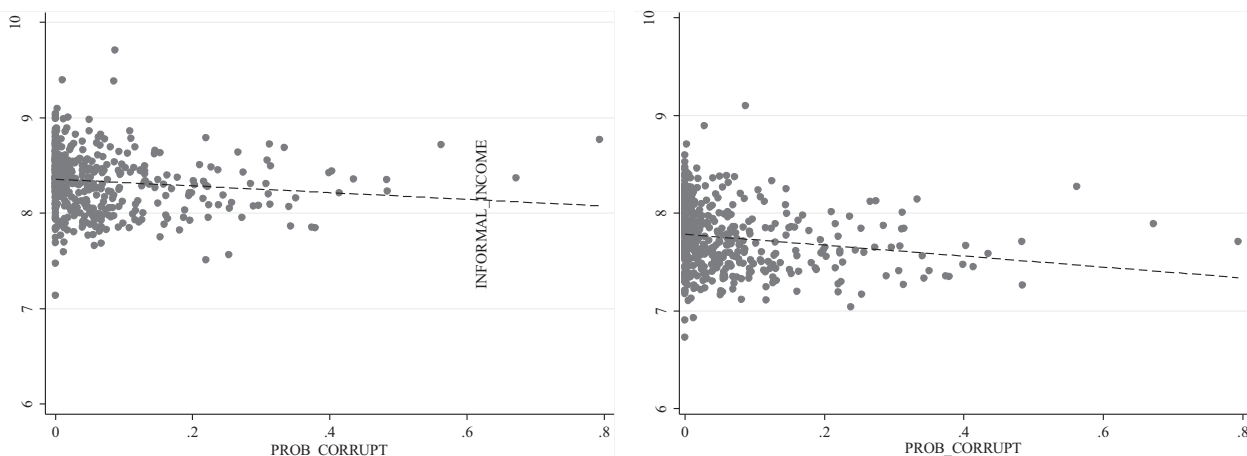


Fig. 1. The relationship between corruption, as measured by the share of resources (R\$) found to involve corruption, and formal and informal incomes per-worker.

Source: Formal and informal incomes per-capita (*FORMAL_INCOME*; *INFORMAL_INCOME*) from IBGE Census 2000 and the share of resources R\$ involving corruption (*PROB_CORRUPT*) from Ferraz and Finan (2011).

and GDP per-capita due to its negative impact on the formal economy alone. The goal of this paper is to see if corruption impacts income levels once variation in informal economic activity is taken into account. To the best of my knowledge, this is the first paper to explicitly do so.

The negative relationship between corruption and income levels is well-documented, and numerous papers also link corruption to the size of the shadow economy (Johnson & Kaufmann, 1997; Hindriks et al., 1999; Hibbs & Piculescu, 2005; Dreher et al., 2009; Dreher & Schneider, 2010). However, empirical studies that incorporate the effect of the informal sector when estimating the relationship between corruption and economic outcomes at the aggregate level are scarce and there are virtually no studies that incorporate this effect within a specific country.² For example, broad surveys of the corruption literature rarely mention the informal sector, other than the fact that its size may be influenced by corruption (e.g., Dreher & Herzfeld, 2005; Treisman, 2007). If the informal sector has a significant impact on economic outcomes and if corruption and the informal sector are significantly correlated, the previous empirical results are potentially biased. Therefore, I estimate the effect corruption has on economic outcomes, while incorporating the effects of the informal sector. I do this using a unique data set on corruption and informal sector employment across 476 Brazilian municipalities.

The size of the informal sector in Brazil is extremely large. Both employment and incomes from the informal sector are included in each decennial Census, making this an ideal country for this specific type of analysis. In the sample of municipalities used in this paper, the size of the Brazilian informal sector in 2000, as measured by share of employees without a formal contract, was over 50% of total employees. Furthermore, informal sector employees accounted for almost 40% of total income from employees of all types in these municipalities. Thus, it is clear that the informal sector is an integral part of the Brazilian economy.

In addition, corruption in Brazil has long been a serious problem. Due to a number of scandals exposing specific politician's behavior in the latter half of the 20th century, Brazil is recognized as a country that is suffering from corrupt acts (Geddes & Neto, 1992; da Silva, 1999). In order to combat corruption, in May of 2003, the government of Luiz Inácio Lula da Silva implemented a program based on random auditing of municipal governments' expenditures (Ferraz & Finan, 2008; Ferraz & Finan, 2011). This program randomly selects about one percent of the total number of municipalities with a population less than 500,000 (Controladoria-Geral da União (CGU)). The CGU auditors collect information on all federal funds transferred to the municipal government, inspects public work construction, and consults the population through community councils on any complaints of misconduct (CGU). This collected information is then organized into a report and made available to the public.

In a series of papers, Claudio Ferraz and Frederico Finan used these reports to construct measures of corruption in the audited municipalities (2008; 2011). This paper uses the corruption indicators developed in their 2011 paper, specifically. Ferraz and Finan (2011) focus on three different types of corruption that could be found in these audit reports: fraud in the public procurement of goods and services, diversion of funds, and the over invoicing of goods and services. They estimate that corruption in these local governments alone amounts to be about \$550 million per year.

The main corruption variable of interest in this paper is the share of total federal resources (R\$) associated with any of these three types of corruption.³ As can be seen in Fig. 1, this corruption variable is negatively related to average incomes of both formal

² Dreher and Gassebner, (2013) conduct a cross-sectional analysis and include the size of the informal sector in addition to corruption measures when examining how corruption impacts entrepreneurship, finding no change in their results. Wiseman, (2015) argues that corruption only impacts entrepreneurship through its effect on the shadow economy within the United States, but does not include both effects in a single regression.

³ Several other measures of corruption are discussed and used as robustness checks in the results section of this paper.

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