

# The Impact of Ethnic Fractionalization on Labor Productivity

Does Firm Size Matter?

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## Abstract

Ethnic fractionalization has both positive and negative consequences. It is contended that the positive effects due to skill complementarity in the production process apply to large firms that have more complex and diversified production structures. Because small businesses rely more on public goods and have less access to institutions, the negative effects of lower quality public goods and higher transaction costs have a greater impact on them. Consistent with this viewpoint, it is found that a larger firm size significantly mitigates the negative impact of higher ethnic fractionalization on the level and growth rate of labor productivity in

manufacturing firms across 84 developing countries. There is no robust and significant impact of ethnic fractionalization on large firms for the main and most of the other firm size categorizations considered. The results are confirmed by the instrumental variables estimation method, which uses the duration of early human settlement in each country to instrument ethnic fractionalization. Evidence is provided on the potential mechanisms by which ethnic fractionalization affects small versus large firms. The findings have significant policy implications, which are discussed in detail.

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# The Impact of Ethnic Fractionalization on Labor Productivity: Does Firm Size Matter?

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*Data availability statement:* The firm-level survey data used in this study are publicly available at <https://www.enterprisesurveys.org/en/enterprisesurveys>

## **1. Introduction**

Economists have paid close attention to ethnic fractionalization and cultural diversity. More ethnic diversity has both positive and negative consequences (see Alesina and Ferrara, 2005). The positive effects are due to the availability of a more diverse set of skills that are complementary in the production process. The negative consequences are due to a poorer provision of public goods, higher transaction costs, lower trust, less cooperation between workers, and more civil conflicts. The present paper argues that the productivity benefits of skill complementarities are realized only when the production process is sufficiently complex and diversified, as in large firms. Large firms also have an advantage over small firms in the management of workplace diversity. Further, the consequences of the poorer provision of public goods and higher transaction costs are mitigated, at least to some extent, when there is better access to institutions, less reliance on the public provision of goods, and greater vertical integration. Again, this is more likely for large firms than small firms. As a result, we hypothesize that a larger firm size significantly mitigates the negative impact of ethnic fractionalization on firms. This hypothesis is tested using the level and rate of growth of labor productivity in manufacturing firms in a large cross-section of developing countries. The empirical findings show that greater ethnic fractionalization has a negative impact on a firm's labor productivity level and growth rate. A larger firm size, on the other hand, significantly mitigates this negative effect. We also present evidence on some of the potential channels by which ethnic fractionalization affects small and large firms differently.

Interest in ethnic fractionalization and its economic effects was sparked by the work of Easterly and Levine (1997), who argued that more ethnically diverse countries grow less. They demonstrated that higher ethnic fractionalization hurts economic growth in Sub-Saharan Africa through a variety of channels, including lower schooling, slower financial development, less

physical infrastructure investment, and foreign exchange distortion. Later studies also showed that higher ethnic fractionalization led to worse outcomes in areas such as macroeconomic growth (Alesina and Ferrara, 2005; Campos et al., 2011), the quality of institutions (Alesina and Zhuravskaya, 2011; La Porta et al., 1999; Casey and Owens, 2014), conflicts (Montalvo and Reynal-Querol, 2005a; Esteban et al., 2012), trust (Alesina and Zhuravskaya, 2011; Putnam, 2007; Leigh, 2006), poverty (Awaworyi Churchill and Smyth, 2017), investment (Montalvo and Reynal-Querol, 2005b; Mauro, 1995), corruption (Treisman, 2000; Glaeser and Saks 2006); physical infrastructure availability (Alesina et al., 1999 and 2003; Khwaja, 2009; Easterly and Levine, 1997; Beach and Jones, 2017), sense of community (Algan et al., 2016), and entrepreneurship (Awaworyi Churchill, 2017).

While most studies show that ethnic fractionalization hurts development outcomes, a few show that it has a positive impact. A positive impact is found for macroeconomic growth (Bove and Elia, 2017; Ager and Brückner, 2013), entrepreneurial activity (Audretsch et al., 2010), firm and plant-level productivity (Trax et al., 2015; Sparber, 2009; Bellini et al., 2013; Brunow and Nijkamp, 2018), wages and worker productivity (Ottaviano and Peri, 2005; Suedekum et al., 2014), and innovation (Ozgen et al., 2013).

Our empirical exercise reveals that higher ethnic fractionalization is associated with a significantly lower labor productivity level and growth rate. More importantly, a larger firm size significantly mitigates this negative effect. For our main and most of the other firm size categorizations, there is no statistically significant and robust impact of higher ethnic fractionalization on large firms. In contrast, higher ethnic fractionalization is associated with a statistically significant and economically large decline in the level and growth rate of labor productivity for small firms. We also find evidence that higher production complexity, lower

power supply quality, and higher corruption are some of the channels responsible for the differential impact of ethnic fractionalization on small and large firms. We pay close attention to endogeneity concerns. Apart from accounting for several confounding factors, we provide instrumental variables estimation results. Based on the work of Ahlerup and Olsson (2012), we instrument for ethnic fractionalization using the duration of human settlements since prehistoric times. The instrument has been used in other studies (see Awaworyi Churchill and Smith, 2017; Casey and Owen, 2014).

We contribute to the literature in a variety of ways. First, we use firm-level survey data from many developing countries that is cross-country comparable. The same questionnaire and sampling methodology are used to collect these data. We can account for differences across data points within a country, such as the quality of the business environment and firm characteristics, by using firm-level data. In the literature on ethnic fractionalization, the use of firm-level data on developing countries is unusual. Awaworyi Churchill and Valenzuela (2019) do use firm-level data for 62 countries. However, over 70 percent of their sampled firms are from developed countries, such as the U.S., U.K., Germany, and so on.

Our second contribution is that we analyze how the impact of ethnic fractionalization on firms' labor productivity level and growth rate depends on the size of the firms. To the best of our knowledge, this is the first such attempt. The heterogeneous impact of ethnic fractionalization has been discussed in the literature, but not regarding firm size. Studies show that the negative impact of higher ethnic and cultural diversity on growth and productivity is mitigated at higher income levels (Alesina and Ferrara, 2005), in countries with good institutions (Easterly, 2001), and in countries with more developed democratic institutions (Collier, 2000; Bluhm and Thomsson, 2020). As we find below, a higher ethnic fractionalization hurts the labor productivity of the

relatively small firms but not the large firms. This has important implications for the design and targeting of policies to counter the harmful effects of ethnic fractionalization (discussed below).

A third contribution of the paper is that it provides evidence on the potential channels through which ethnic fractionalization influences labor productivity, and how this varies by firm size. At least in the short- and medium-run, ethnic fractionalization cannot be changed by policy measures. Thus, it is important to identify the channels that are amenable to policies through which ethnic fractionalization impacts firm productivity and other outcomes.

## **2. Conceptual Framework and Literature Review**

In this section, we review the existing literature on the various channels or mechanisms by which ethnic fractionalization affects firm productivity. We also investigate how these mechanisms apply to firms of various sizes. We draw on a broader body of research on ethnic and cultural diversity in countries, workplaces, and teams. We also consult the literature on the business environment and how it affects businesses of various sizes.

### *2.1 Ethnic diversity and skill complementarity*

The literature emphasizes the positive and negative effects of ethnic and cultural diversity on a variety of development outcomes and firm performance measures. On the plus side, greater cultural or ethnic diversity in the workforce can boost firm productivity by providing a more diverse set of perspectives, ideas, and skills. The basic premise is that people of different ethnicities differ in their productive abilities, innovative ideas, and how they interpret problems and use their cognitive skills and abilities to solve them. An individual's efficiency in performing a task, solving a problem, or coming up with innovative ideas is more dependent on her having a different

perspective than the other group members than on her own expected high score. As a result of these skill complementarities, ethnic or cultural diversity within a team can boost productivity, as workers from various backgrounds bring a diverse set of skills and abilities to the table (Alesina and Ferrara, 2005; Hong and Page, 1998; Lazear, 1999; Ottaviano and Peri, 2006; Suedekum et al., 2014).

Several studies find positive effects of greater cultural and ethnic diversity on worker and firm productivity, arguably due to the skills complementarity effect mentioned above. They also discover beneficial effects of ethnic and cultural diversity on firms' innovation activity, which is a key determinant of firm productivity. Most of these studies are on developed countries, and they focus on diversity in teams and workplaces. There are a few studies that are at the country or local (sub-national) level.

Ottaviano and Peri (2006) investigated the relationship between diversity at the city level in the United States and wage (and rent) distribution in a seminal study in this field. They examine 160 metropolitan areas from 1970 to 1990 using data from the Census Public Use Microdata Sample (PUMS). To assess diversity, the authors employ a fractionalization index inspired by Mauro (1995). Their main findings show that a 0.1 point increase in the diversity index increased natives' average labor productivity (wages) by 13 percent. Cooke and Kemeny (2017) also discover that greater diversity in employees' countries of origin has a positive impact on labor productivity. This is especially true for workers who are involved in complex problem-solving activities that require a high level of knowledge as well as participation in creativity, innovation, and STEM fields. Trax et al. (2015) estimate the impact of cultural diversity on total factor productivity (TFP) at the establishment level using data from German establishments. They discover that greater cultural diversity within establishments and in local communities has a



significant positive effect on TFP. The positive effect that they discover is largely due to firms in knowledge- and technology-intensive industries, as well as firms producing differentiated vs. homogeneous goods.

Several studies have also analyzed the impact of diversity on innovation, which is a key factor in firm productivity and growth. Parrotta et al. (2014a) discover a positive relationship between ethnic fractionalization and patenting activity at the firm level in Denmark from 1980 to 2006. Ozgen et al. (2014) and Brunow and Stockinger (2013), among others, find a positive impact of cultural diversity on firm innovation. Lee (2015), Nathan (2015), Ozgen et al. (2012), and Dohse and Gold (2014) report a positive relationship between diversity and innovation at the European or country level.

The positive impact of ethnic or cultural diversity among workers on firm or country outcomes is not a given. This is because increased workplace diversity may impede potential knowledge transfer among workers due to cultural and linguistic barriers, reduce peer pressure by weakening social ties and trust, and reduce worker cooperation due to the disutility of interacting with ethnically and culturally diverse workers (see Alesina and Ferrara, 2002; Glaeser et al., 2000; Lazear, 1999; Parrotta et al., 2014b). Consistent with this viewpoint, some studies find no effect, weak or contradictory effects, or a negative effect of more workplace diversity on firm and regional productivity and innovation. Examples include Parrotta et al. (2014b), Fassio et al. (2020), Elias and Paradies (2016), Suedekum et al. (2014), and Østergaard et al. (2011).

## *2.2 Firm size and skill complementarity*

The impact of ethnic diversity on firm labor productivity via the skill complementarity channel may differ across firms. This is due to two factors. First, the positive effect of skill

complementarities associated with greater ethnic diversity necessitates a knowledge-intensive and diverse manufacturing process (see Trax et al., 2015; Alesina and Ferrara, 2005). According to Alesina and Ferrara (2005, page 763), “productivity benefits of skill complementarities are realized only when the production process is sufficiently diversified”. Large firms are clearly more likely to use complex, diversified, and knowledge-intensive production methods than small firms. As a result, we hypothesize that larger firms benefit more than small firms from the more diverse pool of skills available in more ethnically diverse countries.

Second, the impact of ethnic fractionalization on firm productivity is partially determined by the firm’s ability to effectively manage the challenges posed by a more ethnically diverse workforce. These challenges were discussed in Section 2.1 (last paragraph). There is little direct evidence on how to manage workplace ethnic and cultural diversity, let alone the role of firm size. However, we can draw on the broader literature on diversity management practices and human resource management.

Management of workplace diversity (ethnic or otherwise) requires resources, a dedicated human resources (HR) team, and a formal system of resolving conflicts and grievances. On all these counts, large firms tend to have an advantage over small firms. Compared to small firms, large firms have more resources (financial and time) to manage workforce-related issues, the flexibility to take their staff off the job to undertake the necessary training, HR departments and in-house trainers dedicated to developing their human resources, stricter regulations on acceptable workplace behavior, and more formal, structured, and documented communication between employees. Large firms are also more likely to engage in diversity training practices, which can help in developing behavioral norms that constrain workplace conflicts and in maximizing firms’ diversity-based competitive advantage. For more details, see, for example, Kochan et al. (2003),

Yang and Konrad (2011), Storey (2004), Matlay and Addis (2002), van Eerde et al. (2008), Johnston and Loader (2003), Marlow (2006), Garavan et al. (2016), Psychogios et al. (2016), Atkinson et al. (2022), and Harney and Alkhalaf (2021).

Another factor favoring large firms is that large firms are frequently distinguished by complex, bureaucratic systems defined by multiple hierarchies (Delmastro, 2002; Connell, 2001). Because these hierarchies involve a large number of teams under many departments, employees may belong to multiple “in-groups” at the same time. These group memberships encourage employees to adopt pro-ingroup bias and conform to group norms (Dovidio et al., 1997). It also promotes open communication, interdependence, and cooperation in order to generate innovative solutions that are focused on the group’s collective work-based goals rather than employees’ diverse identities (Dovidio et al., 1997; 2008). These options are limited for small businesses. Small businesses have few employees and a limited hierarchy, so employees have vastly different responsibilities (Nooteboom, 1994). Employees may develop a general sense of belonging to their organization, but they may not share enough collective goals with their coworkers to internalize pro-ingroup attitudes, which would otherwise make their work identities more salient than their social identities (Jetten et al., 2004; Turner et al., 2011).

To summarize, larger firms are expected to benefit more (or suffer less) from increased ethnic fractionalization in the country due to their complex and diverse production methods, hierarchical structures that allow for stronger group memberships, and proclivity to engage in training and workforce management practices.

### *2.3 Business environment and public goods*

There is a rich literature that seeks to analyze the impact of cultural and ethnic diversity on the provision of public goods such as education, roads, power supply, and so on. One key motivator here is that ethnic groups have different preferences about the types and quantities of public goods to fund with tax revenues. As a result of greater ethnic or cultural diversity, a “compromise” good is adopted, which citizens are unwilling to fund due to its distance from their preferred position. This limits public spending and, as a result, the availability and quality of public goods. Another factor that could contribute is that an ethnic group’s utility level for a given public good is reduced if other groups use it as well (Alesina et al., 1999). According to political theories, as ethnic fractionalization increases, governments become more interventionist and inefficient, and the quality of public goods, as well as the size of government and political freedom, decline (see La Porta et al., 1999). An alternative viewpoint is that, regardless of their ethnic identities, electoral pressure may result in elected representatives with policy positions that are relatively similar. There is no disagreement on public spending in this case (see Beach and Jones, 2017). The theoretical arguments presented here are applicable not only to public goods such as education and electricity supply, but also to governance and institutional quality.

The majority of empirical evidence suggests that greater ethnic and cultural diversity has a negative impact on public spending, public goods provision, and institutional quality. Easterly and Levine (1997) find that ethnic diversity (based on language) has a strong negative impact on indicators of public goods, such as the number of telephones, the percentage of roads paved, the efficiency of the electricity network, and years of schooling. According to Alesina et al. (1999), in the United States, the proportions of spending on productive public goods, such as education, roads, sewers, and trash collection, are significantly lower in more ethnically diverse cities. Beach and Jones (2017) concentrate on California city councils. They discover, using regression

discontinuity analysis, that greater ethnic diversity is associated with significantly lower spending on public goods.

Miguel and Gugerty (2005) find that greater ethnic diversity is associated with a significant decrease in school funding, poorer quality of school facilities, and possibly poorer well maintenance in western Kenya. Banerjee et al. (2005) estimate the impact of social fragmentation in India in 1991 on 26 indicators of public goods availability. Their indicators cover education, transportation, health, communication, water, and electricity. They discover that increased social fragmentation has a significant negative impact on 10 of the 26 indicators, including electricity for all uses, all transportation indicators (bus service, train service, and paved roads), and schools (primary, middle, and high). Jackson (2013) reports on the negative effects of greater ethnic and cultural diversity on public provision of water, electricity, and education in Sub-Saharan Africa. Greater ethnic or cultural diversity has a negative impact on public goods, according to Alesina et al. (2019) for Indonesia and Miyazawa et al. (2022) for Japan. Also see Alesina and Ferrara (2005). There are some studies, however, that find no effect or a weak effect of ethnic fractionalization on the provision of public goods (see for example, Boustan et al., 2013; Hopkins, 2011; and Gisselquist, 2014).

Regarding governance and institutional quality, studies show that greater ethnic and cultural diversity is associated with a significantly higher level of corruption (Cerqueti et al., 2012; Triesman, 2000; Glaeser and Saks, 2006; Dincer, 2008; La Porta et al., 1999); weaker rule of law and property rights (Touchton, 2013; Keefer and Knack, 2000<sup>1</sup>; La Porta et al., 1999); and more government intervention in terms of stricter business regulations, and lower government efficiency

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<sup>1</sup> Keefer and Knack (2000) focus on ethnic polarization rather than ethnic fractionalization. However, they note that the two are highly inversely correlated (correlation of -0.60) and often have similar effects on outcome variables.

in terms of lower tax compliance, more corruption, and longer delays in obtaining public services (see La Porta et al., 1999).

The literature does not address the role of firm size in mitigating the negative effects of ethnic fractionalization on the public provision of goods and institutional quality. However, one could argue that large firms are better equipped to deal with the potentially negative effects. Alesina and Ferrara (2005) point out that more developed institutional features and a stronger rule of law may enable (richer) societies to “better cope with the conflict element intrinsic in diversity and isolate or moderate its negative effect” (page 763). While the authors make this point in terms of rich vs. poor countries, it can also be applied to large vs. small businesses. Large firms, for example, have more resources to deal with lower-quality institutions and poorer infrastructure availability (see Islam et al., 2021; Tybout, 2000; Aterido et al., 2011) that accompanies higher ethnic fractionalization. Large corporations have greater access to institutions and are more connected. As a result, they have easier access to public goods such as power, water, and courts. Large firms also have more resources to deal with contract enforcement issues that arise as a result of weaker rule of law in ethnically more diverse countries. Large firms can mitigate, at least partially, the higher transaction costs associated with lower levels of trust in more ethnically fragmented countries through vertical integration and subsidiaries. Finally, because large firms have stronger ties to the bureaucracy and politicians, higher levels of corruption in ethnically diverse countries may be less relevant for them. One counter-argument is that small businesses operate under the radar and can avoid much of the corruption. Regardless, corruption as a channel through which ethnic fractionalization affects firms cannot be ruled out. The problem can only be solved empirically (see Section 6.3 for more details).

Aterido et al. (2011) examine the impact of access to finance, the regulatory environment, corruption, and access to electricity on the employment growth of small and large firms in 85 countries. They observe that market failures or policy-induced distortions can create fixed costs in business operations, resulting in cost advantages for larger firms; large firms may also wield more political power, influencing regulations and policies in their favor; however, lax enforcement of laws may benefit small businesses. Aterido et al. (2011) do find that micro and small firms have less access to formal finance, face significantly greater interruptions in infrastructure services, and pay more in bribes—as a percentage of sales—than do larger firms. In turn, larger firms spend significantly more time dealing with officials and red tape. In general, the evidence suggests that smaller firms may be more vulnerable to lower-quality institutions and public goods provision because of greater ethnic fractionalization.

### **3. Data and Main Variables**

#### *3.1 Data description*

The main data source we use is firm-level surveys conducted by the World Bank's Enterprise Surveys (ES) between 2007 and 2019. The ES are nationally representative surveys of formal (registered) private firms with five or more employees. The surveys cover manufacturing and service firms but exclude some industries such as banking and finance, health care, extractive industries, and agriculture. The sampling methodology used is stratified random sampling with the region (sub-national), sector, and size as the strata. The use of a standardized survey instrument and methodology allows for comparisons across economies. Sampling weights are provided to correct for oversampling and are used throughout. We complement the ES with country-level data obtained from World Development Indicators (WDI, World Bank), Worldwide Governance

Indicators (WGI, World Bank), and the Fraser Institute’s Economic Freedom of the World project. We obtain data on ethnic fractionalization from Alesina et al. (2003).

Our baseline results for the level of labor productivity are based on a sample of 25,541 manufacturing firms in 84 developing countries for which data are available. The sample for the baseline results for the growth rate of labor productivity includes 23,852 manufacturing firms in 84 countries. Throughout, the sample used is a pure cross-section in that each country and firm is included only once. The latest round of ES in the country is used. In Appendix A, Table A1 provides the list of countries and observations by country, and Table A2 contains the summary statistics of the variables used in the regressions.

### 3.2 Estimation method

The main empirical exercise involves estimating the following equation:

$$\begin{aligned}
 Y_{ijk} = & \alpha + \beta_1 \text{Ethnic Fractionalization}_k + \beta_2 \text{Ethnic Fractionalization}_k * \text{Firm Size}_{ijk} \\
 & + \beta_3 \text{Firm Size}_{ijk} + \text{IFE}_j + \text{Firm Controls}_{ijk} + \text{Country Controls}_k \\
 & + u_{ijk} \qquad \qquad \qquad \dots (1)
 \end{aligned}$$

where subscript  $i$  denotes firm,  $j$  the industry and  $k$  the country;  $Y_{ijk}$  is the dependent variable (labor productivity level and annual growth rate); IFE denotes industry fixed effects, Firm Controls and Country Controls are controls for various firm and country characteristics, respectively, and  $u$  is the error term. The interaction term between ethnic fractionalization and firm size captures how the relationship between the dependent variables and ethnic fractionalization varies with the size of the firm.



The equation is estimated using the ordinary least squares (OLS) method with robust Huber-White standard errors. All standard errors are clustered by country. We also provide estimation results separately for small and large firms (split sample estimation). Unless stated otherwise, the data source for all the variables discussed in the remainder of the paper is ES.

### 3.3 *Dependent variable*

In separate regressions, the dependent variable is the level of labor productivity and its annual growth rate. Labor productivity is widely used in the literature dealing with firm performance and efficiency, in part due to data availability issues (see, for example, Frazer and Van Biesebroeck 2019, Islam et al. 2019).<sup>2</sup>

The level of labor productivity is defined as the log of the total annual sales of the firm (deflated and in 2009 USD) during the last fiscal year prior to the year ES was conducted divided by the total number of workers employed at the firm at the end of the last fiscal year (*Labor Productivity*). In our baseline sample, the mean value of labor productivity (in logs) equals 10.01, and the standard deviation is 1.67.

The growth rate of labor productivity equals annual sales per worker (in 2009 USD) in the final year (last fiscal year prior to the year the ES was administered in the country) minus the same in the initial year (3 fiscal years ago prior to the year the ES was administered in the country) and divided by the average value of sales per worker in the initial and final years (Haltiwanger growth measure). This ratio is divided by the number of years between the final and initial years and multiplied by 100 to arrive at the average annual percentage change in labor productivity (*Growth Rate of Labor Productivity*). By construction, the growth measure has the advantage that it is bound

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<sup>2</sup> In the ES, information on capital stock is missing for several firms. This prevents us from using capital stock in the regressions or using total factor productivity (TFP) instead of labor productivity.

between plus and minus 100, and so, it is less affected by extreme values. For our baseline sample, the mean value of the growth rate is -2.36 and the standard deviation is 25.96.

We also experimented with the more commonly used growth measure, which is the annual change in the log of labor productivity (log difference). All the results discussed throughout the paper hold for this alternative growth measure and are available on request from the authors.

### *3.4 Main explanatory variable*

Our primary explanatory variables are the country's level of ethnic fractionalization, a measure of firm size, and the interaction term between the two. Ethnic fractionalization describes the extent of ethnic diversity and division in a country. A more ethnically fractionalized location is one in which the likelihood of two randomly drawn individuals belonging to the same ethnic group is lower. We use the ethnic fractionalization measure from Alesina et al. (2003), which is reproduced in Table A3 in Appendix A. The measure is based on the ethnic composition of countries in the early to mid-1990s. Because of the large gap between the reference year for the ethnic fractionalization index (early to mid-1990s) and the ES (2007–2019) and the lack of a year-by-year match between the two, it is critical that the ethnic fractionalization index be relatively stable over time. The stability of the ethnic fractionalization index is discussed in detail by Alesina et al. (2003). They argue and provide evidence that the index is stable over at least a 30-year time horizon, which is adequate for our case.

Our main measure of firm size is a dummy variable equal to 1 if the firm is a small or medium enterprise and 0 otherwise (*SME*). We follow the definition used by Enterprise Surveys for survey stratification, whereby an SME is a firm with fewer than 100 full-time permanent workers and the rest (100 or more workers) are large firms. The firm size categories are determined

by the number of employees at the firm three fiscal years ago (lagged values) from the year the ES was administered in the country. Of the total 25,541 firms in the baseline sample, there are 19,485 SMEs and 6,056 large firms.

One concern here is that our results may be dependent on the cut-off level (of 100 workers) used to distinguish between SMEs and large firms. Thus, they may not be applicable in general for small vs. large businesses. We show that this is not the case, and our results hold more generally for relatively small vs. large firms. Specifically, in the robustness section, we provide our main results using three alternative firm size measures. These include a dummy variable equal to 1 if the firm has fewer than 20 workers and 0 otherwise (*Small*);<sup>3</sup> a dummy variable equal to 1 if the firm has below the median number of workers (<30 workers) and 0 otherwise; and a continuous measure, which is the log of the total number of workers at the firm.<sup>4</sup>

### 3.5 Controls

Most studies concur that reverse causality from current economic outcomes to ethnic fractionalization several decades ago is highly unlikely (see Alesina et al., 2003; Awaworyi Churchill and Valenzuela, 2019; Easterly and Levine, 1997; Green, 2005). One reason for this is that ethnic fractionalization is determined by historical factors and stable over long periods of time. In contrast, most economic outcomes, such as firm labor productivity, frequently change over time. Besides, our dependent variables are defined at the firm level. It is inconceivable that a single firm's level or growth rate of labor productivity could have affected ethnic fractionalization a few decades ago.

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<sup>3</sup> The ES uses the same definition of small firms (<20 workers) for sample stratification purposes.

<sup>4</sup> As for the *SME* variable, all the other firm size measures are based on the number of workers at the firm three fiscal years ago from the year the ES was administered in the country.

A relatively more serious problem for us is the omitted variable bias. It is possible that ethnic fractionalization may proxy for other correlated drivers of labor productivity. However, this will bias the estimation of our main interaction term *only if* the correlated or confounding variable impacts the labor productivity of SMEs and large firms differently. Thus, our results are less affected by the omitted variable bias problem than is typically the case with cross-country regressions. Nevertheless, the problem cannot be ruled out completely.

To guard against the omitted variable bias problem, we control for several macro- and firm-level labor productivity determinants that have been highlighted in the literature. We use a common set of controls for the level and growth rate of labor productivity, except for the growth rate of labor productivity, we include an additional control for convergence-related effects. This control equals the log of the ratio of the annual sales (in 2009 USD) of the firm in the initial year (three fiscal years ago) to the total number of workers at the firm in the initial year (*Initial Labor Productivity*). Except for our measure the *Initial Labor Productivity* and our firm size measures, all the other firm-level controls are for the last fiscal year prior to the year the ES was administered in the country.

This discussion on the controls below is from the point of view of the drivers of the level of labor productivity. However, it can be extended to the growth rate of labor productivity.

Industry-wide factors such as technological advances, level of demand, etc., may lead to productivity differences across countries. Similarly, since the ES were conducted in different years across countries, global shocks may drive part of the productivity differences. We account for all such factors using dummy variables for the industry to which the firm belongs (*Industry fixed effects*) and dummy variables for the year covered by the ES (*Year fixed effects*). There are 23 industries in our baseline sample, defined at the 2-digit ISIC Revision 3.1 level.

There is a large literature identifying various firm and country characteristics that impact firm productivity. These include the age of the firm (Jensen et al., 2001; Thompson, 2010); exporting activity (Melitz, 2003; Wagner, 2007); foreign ownership; gender of the top manager (Du Rietz & Henrekson, 2000; Islam et al., 2020); management quality and top manager experience (Bloom et al., 2012; Pfeifer, 2015; Syverson, 2011); financial constraints faced by firms (Beck et al., 2000; Fafchamps and Schündeln, 2013); physical infrastructure availability (Aterido et al., 2011, Dollar et al., 2005); worker skills and human capital (Syverson, 2011); quality of institutions and property rights (Aterido et al., 2011; Hall & Jones, 1999; Syverson, 2011); regulatory burden on the firms (Aghion et al., 2004; Djankov et al., 2002); corruption (Mauro, 1995; Fisman and Svensson, 2007); and other factors associated with overall economic development.

Our firm-level controls, all taken from the ES, include the following: proportion of firms' annual sales exported directly (*Exports*); dummy variable equal to 1 if foreign individuals, companies or organizations own 10 percent or more of the firm and 0 otherwise (*Foreign Ownership*); the log of the age of the firm (*Age of Firm*); dummy variable equal to 1 if the top manager of the firm is female and 0 otherwise (*Female Top Manager*); the log of the number of years of firms' top manager's experience in the industry (*Manager Experience*); dummy variable equal to 1 if the firm is financially constrained based on its recent loan applications (or lack of it) and 0 otherwise (*Firm is Financially Constrained*); hours of power outages in a typical month over the last year (*Power Outages*); regulatory burden proxied by the proportion of firms' senior management's time spent in dealing with business regulations (*Time Tax*); dummy variable equal to 1 if the firm provides training to its employees and 0 otherwise (*Firm Provides Training*); dummy variable equal to 1 if the firm reports the functioning of courts as an obstacle for its

operations and 0 otherwise (*Courts Obstacle*). Information on the capital stock used by firms is missing for most firms in the sample. Thus, we follow Amin and Soh (2021) and Islam et al. (2019) and use a proxy measure, which is a dummy variable equal to 1 if the firm purchased fixed assets during the last year and 0 otherwise (*Firm Purchased Fixed Assets*).

The country-level controls, all taken from WDI unless stated otherwise, include the following: the log of GDP per capita, PPP adjusted and in constant 2011 International Dollars (*GDP per capita*); a measure of the overall regulatory burden proxied by the Fraser Institute’s “Freedom from Regulation” sub-index; *Rule of Law* and *Control of Corruption* indicators from the WGI; the ratio of merchandise exports plus imports to GDP; the gross enrollment rate in primary education (*Primary Education*); market size proxied by the log of the total population of the country (*Population*); the annual rate of inflation based on the GDP deflator (*Inflation rate*); and the annual growth rate of real GDP per capita (*Growth Rate of GDP per capita*).

#### **4. Empirical Results for Labor Productivity**

This section discusses the main regression results for the level of labor productivity (log values). Results for the growth rate of labor productivity are provided in the next section.

##### *4.1 Overall Relationship*

Table 1 presents the regression results for the overall or linear relationship between ethnic fractionalization and the level of labor productivity in the full sample. All specifications include controls for industry and year fixed effects. The remaining controls discussed above are added sequentially.

The results in Table 1 reveal that there is a negative relationship between labor productivity and ethnic fractionalization. The relationship is significant at the 1 percent level in all the specifications. Without any other controls (except for industry and year fixed effects), the estimated coefficient value of ethnic fractionalization equals -2.13 (column 1). It drops sharply (in absolute terms) to -1.22 when we control for the log of GDP per capita (not shown) and to -1.11 when we also control for the log of the number of workers at the firm (column 2). Adding the remaining controls causes the coefficient value to decline somewhat to -0.91 (column 5).

According to the most conservative estimate in Table 1 (column 5), a one standard deviation increase in ethnic fractionalization is associated with a decrease in labor productivity of 0.21 log points. In terms of levels (without logs), this equates to a drop of approximately 18.9 percent ( $\exp(-0.21)-1$ ) from the initial level. Alternatively, moving from the country with the lowest to the highest level of ethnic fractionalization in our sample is associated with a decline in the level of labor productivity by 0.81 log points (or about 55.6 percent of its initial level). This is an economically large decline.

Regarding the various controls in Table 1, several of them are significantly correlated (at the 10 percent level or less) with labor productivity and in the expected direction. Labor productivity is significantly higher for firms that are larger, older, export more, have foreign ownership, are not financially constrained, experience fewer power outages (conditional on other controls), have a female top manager, provide training to their workers, and have purchased fixed assets. The level of labor productivity is also significantly higher in countries with a higher log of GDP per capita. Other country-level controls do not show a significant relationship with the dependent variable. One reason for the lack of significance of most of the country-level controls could be their high correlation with the log of GDP per capita and with one another. We

investigated this possibility by adding one country-level control at a time and discovered that 5 of the 9 macro-level controls were statistically significant at the 5 percent level or less. These include the log of GDP per capita, primary education attainment, corruption control, the rule of law, and the GDP per capita growth rate.

#### 4.2 *Heterogeneity by firm size*

We repeat the regression exercise from Table 1, but this time we include our main interaction term between ethnic fractionalization and the SME dummy. We also control for the SME dummy. Regression results are provided in Table 2. They show that the interaction term between ethnic fractionalization and the SME dummy is negative, and statistically significant at the 1 percent level in all the specifications. Panel B in Table 2 computes the estimated change in labor productivity (log points) associated with a unit increase in ethnic fractionalization separately for SMEs and large firms. For the SMEs, the relationship is negative and statistically significant at the 1 percent level. The estimated change in labor productivity ranges between -2.29 log points (column 1, Panel B) and -1.13 log points (column 5, Panel B). In contrast, for large firms, the relationship is much smaller (in absolute terms), positive in most specifications, and statistically insignificant at the 10 percent level or less. Consider, for example, the final specification, which includes all the controls (column 5, Table 2). A one standard deviation (or 0.23 point) increase in ethnic fractionalization is associated with a decrease in the level of labor productivity by 0.26 log points (or 22.8 percent of its initial level) for SMEs, which is significant at the 1 percent level. For large firms, the corresponding change is an increase of 0.028 log points (or 2.8 percent of the initial level of labor productivity), which is insignificant at the 10 percent level.



### 4.3 *Split sample results*

Next, we estimate the relationship between ethnic fractionalization and labor productivity separately for the SME and large firm samples. One advantage of this estimation is that it allows the impact of all the controls (including industry and year fixed effects) to be different for SMEs and large firms.

To this end, we repeat the regression exercise of Table 1, but separately for SME and large firm samples. Regression results are provided in Table 3. Results for the SME sample are provided in columns 1-5, and the same for the large firm sample are provided in columns 6-10. These results are consistent with the interaction term results in the previous section. That is, for the SME sample, there is a negative relationship, significant at the 1 percent level, between ethnic fractionalization and labor productivity. We also find a negative relationship between ethnic fractionalization and labor productivity for large firms. However, this relationship is quantitatively smaller than in the case of SMEs, and statistically insignificant (at the 10 percent level or less) once we control for the log of GDP per capita, which is one of our main controls. To provide an example, consider the final specification that includes all the controls. For this specification, a unit increase in ethnic fractionalization is associated with a decrease in labor productivity of SMEs of 1.056 log points, significant at the 1 percent level (column 5). For the large firm sample, the corresponding decline equals 0.354 log points, which is insignificant at the 10 percent level (column 10). Alternatively, a one standard deviation (0.23 point) increase in ethnic fractionalization is associated with a decrease in labor productivity for SMEs by 0.243 log points compared to a decline of 0.081 log points for the large firm sample.

#### 4.4 Robustness

We check whether the results above are robust to alternative measures of firm size. To this end, we repeat the interaction term and split sample results above using three other measures of firm size. Recall that the alternative firm size measures are the dummy for fewer than 20 employees (*Small*), dummy for below-median number of workers (30 workers), and the log of the number of workers at the firm.

Regression results are provided in Tables A4-A8 in Appendix A. Results for the interaction term between ethnic fractionalization and *Small* are provided in Table A4, and the corresponding split sample results (for *Small*=0 and *Small*=1) are provided in Table A5. Interaction term results using the log of the number of workers are provided in Table A6, and the same using the dummy for below-median number of workers are provided in Table A7. The corresponding split sample results for the previous two measures are the same and provided in Table A8 (for the below-median number of workers dummy equal to 1 and 0).

All these results are like the ones discussed above for our main firm size measure (*SME*). For instance, consider the results using the log of the number of workers. As can be seen from Table A6, the interaction term between ethnic fractionalization and the log of the number of workers is positive and statistically significant at the 1 percent level. Thus, the negative relationship between ethnic fractionalization and labor productivity becomes significantly weaker (less negative) as the log of the number of workers increases.<sup>5</sup> The corresponding split sample

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<sup>5</sup> Across all specifications, an increase in ethnic fractionalization is associated with a significant decline in labor productivity for firms with fewer than a critical threshold number of workers. In our final specification, these firms account for about 82.4 percent of all firms. Similarly, for firms above a critical threshold level (about 1,100 workers), an increase in ethnic fractionalization leads to a statistically significant increase in labor productivity. However, these firms are very few (less than 1 percent of all firms). For our final specification, they constitute about 0.6 percent of all firms.

results in Table A8 show that the relationship between ethnic fractionalization and labor productivity is negative and statistically significant at the 1 percent level for the sample of firms with below the median number of workers (columns 1-5). The relationship is also negative for the sample of firms with above the median number of workers. However, this is much smaller quantitatively, and ceases to be significant (at the 10 percent level or less) in the final baseline specification.

## **5. Empirical Results for the Growth Rate of Labor Productivity**

In this section, we present the results for the relationship between the growth rate of labor productivity and ethnic fractionalization. We do so by repeating the regression exercise in the previous section with the growth rate of labor productivity as the dependent variable. We control for the initial level of labor productivity in all the specifications.

### *5.1 Overall relationship*

Regression results for the overall or linear relationship between ethnic fractionalization and the growth rate of labor productivity are provided in Table 4. These results show that a higher level of ethnic fractionalization is associated with a decline in the growth rate of labor productivity. This negative relationship is significant at the 1 percent level in all the specifications. The estimated coefficient value of ethnic fractionalization varies between -18.8 (for the specification without any controls except for industry and year fixed effects and the initial level of labor productivity; column 1) and -12.1 (for the specification with all the controls; column 5). According to our most conservative estimate (column 5), a one standard deviation increase in ethnic fractionalization is associated with a decline in the growth rate of labor productivity of approximately 2.8 percentage

points. Alternatively, moving from the country with the lowest to the highest level of ethnic fractionalization is associated with a decline in the labor productivity growth rate of 10.8 percentage points.

### *5.2 Heterogeneity with respect to firm size*

We repeat the regression exercise of Table 4, but now include the interaction term between ethnic fractionalization and the SME dummy. The regression results are provided in Table 5. The interaction term between ethnic fractionalization and the SME dummy is negative and statistically significant at the 5 percent or 10 percent level across the different specifications. For the final specification, which includes all the baseline controls, the estimated coefficient value of the interaction term is the largest and statistically significant at the 5 percent level (column 5, Panel A).

Panel B in Table 5 computes the marginal effect of ethnic fractionalization on the labor productivity growth rate of SMEs and large firms. The results here indicate that for the SMEs, an increase in ethnic fractionalization is associated with a statistically significant (at the 1 percent level) decline in the growth rate of labor productivity in all the specifications. On the other hand, for large firms, the corresponding decline in the growth rate of labor productivity is much smaller and statistically insignificant in all the specifications except for the specification with no controls other than the initial level of labor productivity, industry fixed effects, and year fixed effects (column 1, Panel B). Even for this specification, the decline in the growth rate of labor productivity due to a unit increase in ethnic fractionalization equals 10.2 percentage points for large firms compared with a much larger decline of 19.8 percentage points for SMEs (column 1, Panel B). Moreover, the statistically significant coefficient of ethnic fractionalization for the large firm

sample becomes insignificant (at the 10 percent level or less) when we control for the log of GDP per capita (see column 2, Panel B), which is one of our basic controls. For our final specification, which includes all the baseline controls, a one standard deviation increase in ethnic fractionalization reduces the growth rate of labor productivity by 3.3 percentage points for SMEs but only by 0.88 percentage points for large firms.

### *5.3 Split sample results for small vs. large firms*

The split sample results with the growth rate of labor productivity as the dependent variable are provided in Table 6. These results were obtained by separately running the baseline regressions for the SME and large firm samples. The results for the SME sample are provided in columns 1-5, and columns 6-10 contain the results for the large firm sample. These results are similar to the interaction term results discussed in the previous section, qualitatively. That is, the split sample results show a negative and statistically significant (at the 1 percent level) relationship between the growth rate of labor productivity and ethnic fractionalization in the SME sample. This holds across all the specifications.

In the large firm sample, the relationship between ethnic fractionalization and the growth rate of labor productivity is negative, but much smaller than in the SME sample and statistically insignificant (at the 10 percent level). As we found for the interaction terms results in Section 5.2, the only exception is the specification without any other controls except for the initial level of labor productivity, industry fixed effects, and year fixed effects (column 6). In this specification, the relationship between ethnic fractionalization and labor productivity growth rate for the large firm sample is negative and significant at the 1 percent level. Nonetheless, even for this specification, the relationship between the growth rate of labor productivity and ethnic

fractionalization is much stronger (more negative) for SMEs than for large firms. That is, the estimated coefficient value of ethnic fractionalization equals -12.3 in the large firm sample (column 6) versus a much larger -19 in the SMEs sample (column 1). Regardless, the significant relationship for the large firm sample here is not robust to the log of GDP per capita control, which is one of our basic controls (see column 7).

To put the results into perspective, consider the final specification in Table 6 that includes all the controls (columns 5 and 10). Split sample results for this specification reveal that a one standard deviation increase in ethnic fractionalization is associated with a decrease in the growth rate of labor productivity in SMEs by 3.2 percentage points, significant at the 1 percent level. For the large firm sample, the corresponding decline is much smaller, equaling 0.50 percentage points, which is insignificant at the 10 percent level.

#### 5.4 Robustness

For robustness, we repeat the interaction term and split sample results in sections 5.2 and 5.3 using three other measures of firm size: *Small* ( $\leq 19$  workers dummy), log of the number of workers as defined above, and the dummy for below-median number of workers.

In Appendix A, Table A9 contains the regression results for the interaction term between ethnic fractionalization and the *Small* dummy, and Table A10 contains the corresponding split sample results. Interaction term results using the log of the number of workers are provided in Table A11; interaction term results using the below median number of workers dummy are provided in Table A12; and the corresponding split sample results are provided in Table A13. All these results are similar to the baseline results using the *SME* dummy.

For instance, it can be seen from Table A11 that the interaction term between ethnic fractionalization and the log of the number of workers is positive and statistically significant at the 5 percent level in all the specifications. Thus, the negative impact of ethnic fractionalization on the growth rate of labor productivity becomes less negative as firm size increases. Split sample results in Table A13 show that the relationship between ethnic fractionalization and labor productivity growth rate is negative and statistically significant at the 1 percent level for the sample of firms with below-median number of workers (columns 1-5). The relationship is also negative for the sample of firms with above-median number of workers. However, this is quantitatively much smaller and ceases to be significant (at the 10 percent level or less) in the final baseline specification.

## **6. Mechanisms**

In this section, we look at some of the mechanisms or channels by which ethnic fractionalization affects the level and growth rate of labor productivity. We also consider how these channels affect SMEs and large firms differently.

### *6.1 Quality certification*

Above, we argued that greater ethnic fractionalization benefits firms that have a more complex and diversified production structure. This was one of the channels by which larger firms benefitted more than smaller firms from higher ethnic fractionalization. We now provide some evidence to support the argument.

As a proxy for firms with more complex and diversified production structures, we use a dummy variable equal to 1 if the firm has an internationally recognized quality certificate and 0

otherwise (*Quality Certification*). Quality certification is hardly required when the production process is simple and the product is standardized. Thus, it can serve as a useful proxy for complex and diversified production methods. We repeat the baseline regressions but replace the interaction term between ethnic fractionalization and the SME dummy with the interaction term between ethnic fractionalization and the quality certification dummy. The interaction term is expected to be positive, implying that higher ethnic fractionalization is more beneficial (or less harmful) to firms with a more complex and diverse production structure, as proxied by quality certification. As above, we also provide split sample results by separately estimating the labor productivity (level and growth) and ethnic fractionalization relationship for the sample of firms that have quality certificates and those that do not.

Regression results from the exercise for the final baseline specification are presented in Table 7. Columns 1-3 contain results for the level of labor productivity, and columns 4-6 contain results for the growth rate of labor productivity. Regression results for the full set of specifications are presented in tables A14–A17 in Appendix A. The results are similar for the level and growth rate of labor productivity.

We find that the interaction term between ethnic fractionalization and quality certification is positive and statistically significant in all the specifications (see Tables A14 and A16). Thus, as predicted, ethnic fractionalization's negative effect is significantly attenuated for firms with more complex production structures. The split sample results present a similar picture. That is, the impact of ethnic fractionalization on labor productivity level and growth rate is negative and statistically significant at the 1 percent level across all specifications for firms that do not have quality certification. Even in the sample of firms with quality certification, the effect of ethnic fractionalization is still negative, but it is much smaller. It is statistically significant in some



specifications but not in others, including the final specification (see Table A15 and A17). For example, for our final baseline specification, a unit increase in ethnic fractionalization lowers labor productivity by 1.09 log points for firms that have quality certification (see column 2 of Table 7). The corresponding decline for firms that have quality certification is much smaller, equal to 0.425 log points (see column 3 of table 7).

## 6.2 *Power outages*

We previously argued that another mechanism by which ethnic fractionalization harms smaller firms more is that it leads to poorer public infrastructure facilities, especially for smaller firms. We provide some evidence to support this argument.

For the quality of public infrastructure provision, we focus on the total hours of power outages experienced by a firm in a typical month last year (henceforth, power outages). We repeat the baseline regression exercise but replace labor productivity with power outages as the dependent variable. We first check if higher ethnic fractionalization leads to more power outages. Next, we check if the increase in power outages due to higher ethnic fractionalization is bigger for SMEs than large firms. This is done by estimating the interaction term between ethnic fractionalization and the SME dummy and performing the split sample estimation.

Results from the regression exercise for the final baseline specification are provided in columns 1-4 of Table 8. Results for the full set of specifications are provided in Tables A18-A19 in Appendix A. These results show that the impact of higher ethnic fractionalization on power outages is positive and statistically significant at the 1 percent level in all the specifications (see columns 1-5 of Table A18). This confirms the first part of the mechanism, which is that higher ethnic fractionalization lowers the quality of the power supply.

Next, the interaction term results in columns 6-10 in Table A18 indicate that the positive relationship between ethnic fractionalization and power outages is significantly bigger for SMEs than large firms. That is, the interaction term is positive, quantitatively large, and statistically significant at the 5 percent level in all the specifications. The split sample results in Table A19 present a similar picture. There is a large, positive, and statistically significant relationship between ethnic fractionalization and power outages in the SME firm sample and the large firm sample. However, the relationship is much larger—almost twice as large—for SMEs than large firms. As a result, we confirm that higher ethnic fractionalization degrades power supply quality significantly more for SMEs than large firms.

### 6.3 Corruption

The final channel to consider is corruption. Several studies have shown that higher ethnic fractionalization may lead to more corruption (see Sections 1 and 2). We also contended that the increase in corruption may be greater for small businesses. However, issues with firm visibility may negate this effect. As a result, empirical testing is required to determine whether corruption is a mechanism through which higher ethnic fractionalization hurts smaller firms more.

To test for this, we repeat the regression exercise in Section 6.2, replacing power outages with a measure of corruption as the dependent variable. The corruption measure we use is based on a question in the ES that asks firms how much bribes do firms like itself pay as a proportion of their annual sales to public officials to “get things done” (*Bribery rate*).

Regression results using the bribery rate as the dependent variable are provided in tables A20 and A21 in Appendix A. Results for the final specification are also provided in columns 5–8 in Table 8. As for power outages, we find that higher ethnic fractionalization is associated with a

higher bribery rate (see columns 1–5 in Table A20). This positive relationship between the two is statistically significant at the 1 percent level in all the specifications. This confirms the first part of the mechanism, which is that higher ethnic fractionalization is associated with more corruption.

The results for the interaction term between ethnic fractionalization and the SME dummy are provided in columns 6–10 in Table A20. We find that the interaction term is positive but not statistically significant. Nonetheless, it is quantitatively large. For instance, in the final specification, a unit increase in ethnic fractionalization is associated with an increase in the bribery rate of 0.010 percentage points for large firms and a much bigger increase of 0.027 percentage points for SMEs (see column 8 in Table 8).

The split sample results provided in Table A21 are more encouraging. They indicate a positive and statistically significant relationship between ethnic fractionalization and bribery rate in the SME sample. For the large firm sample, the relationship is also positive but statistically insignificant and much smaller in magnitude. For instance, for the final specification that includes all the baseline controls, a unit increase in ethnic fractionalization is associated with an increase in the bribery rate of 0.026 percentage points in the SME sample, which is significant at the 1 percent level (see column 7 in Table 8). The corresponding increase for the large firm sample is statistically insignificant and much smaller, equal to 0.012 percentage points (see column 8 of Table 8).

Summarizing, higher ethnic fractionalization is associated with a higher bribery rate. This positive relationship is stronger for SMEs than large firms, although the evidence using the interaction term is somewhat weak statistically. By and large, our results do not reject the possibility that corruption is a channel by which ethnic fractionalization hurts SMEs more than large firms.

## 7. IV Regression Results

In this section, we discuss the results from the instrumental variables (IV) estimation. According to Ahlerup and Ollson (2012) and Ahlerup (2009), the antiquity of uninterrupted human settlement in each area should be positively correlated with current levels of ethnic fractionalization in that area. This hypothesis is based on the idea that among prehistoric hunter-gatherer populations, random genetic and cultural drift accumulated over time and caused new groups to form to secure an efficient provision of collective goods. This process of group formation is slow and occurs over long periods of time. Thus, longer periods of human settlement correspond to more time for ethnic group formation. Following this body of work, our instrument for ethnic fractionalization is the duration of uninterrupted human settlement in the country, scaled to 100,000 years (*Origtime*). The data source for the variable is Ahlerup and Ollson (2012). Instrument relevance is confirmed by a large, positive, and statistically significant relationship between ethnic fractionalization and the duration of human settlement. Regarding the exclusion restriction, there is no known reason to expect any direct effects of the duration of human settlement on labor productivity level and growth rate between 2007 and 2019.

IV regression results are presented in Table 9. For brevity, only the results for the final specification are shown. Columns 1-4 contain the results for the level of labor productivity and columns 5-8 contain the results for the growth rate of labor productivity. For the interaction term estimation, we first obtain the instrumented values of ethnic fractionalization from a linear regression (without any interaction terms). The instrumented values are multiplied by the SME dummy and used directly in the regression. The split sample results are obtained by separately

running the 2SLS regression for the SME and large firm samples. This entire exercise is conducted separately for the level and growth rate of labor productivity as dependent variables.

The first stage IV regression results are provided in Panel B. These show that a longer duration of human settlement is positively correlated with ethnic fractionalization in the current time. The relationship is significant at the 1 percent level. The F-statistic for the first stage IV estimation is above the recommended level of 10, implying that our instrument does reasonably well in predicting ethnic fractionalization.

The second stage IV results are provided in Panel A in Table 9. These results confirm our baseline results above. That is, higher ethnic fractionalization is associated with a significantly lower level and growth rate of labor productivity (columns 1 and 5). Further, the interaction term between (instrumented values of) ethnic fractionalization and the SME dummy is negative and significant (columns 2 and 6). Thus, larger firm size significantly mitigates the negative impact of higher ethnic fractionalization on the level and growth rate of labor productivity. The split sample results reveal a similar picture. Higher ethnic fractionalization is associated with a significantly lower level and growth rate of labor productivity in the SME firm sample (columns 3 and 6). For the large firm sample, the relationship is also negative but much smaller in magnitude. It is statistically insignificant when the dependent variable is the level of labor productivity (column 4) and significant when it is the growth rate of labor productivity (column 8).

## **8. Conclusion**

We investigated the impact of ethnic fractionalization on the level and growth rate of labor productivity in private firms in 84 developing countries. The focus of the paper was on how the impact is attenuated by firm size. The motivation for the exercise came from the existing studies

that suggest that there are positive and negative effects associated with ethnic fractionalization. We argued that the positive effects of ethnic fractionalization were more likely to be relevant for large firms, and the negative effects were more likely for small firms. Consistent with this viewpoint, we found that ethnic fractionalization has a much bigger negative effect on SMEs than large firms. We also provided evidence on some of the mechanisms that may be driving the differential impact of ethnic fractionalization on the level and growth rate of labor productivity in SMEs vs. large firms.

Our results have important policy implications. While policies may not be able to alter the degree of ethnic fractionalization in a country, they can mitigate the harmful effects of ethnic fractionalization on trust, the quality of public goods, the business environment, and discrimination. For instance, lower levels of trust due to greater ethnic fractionalization can be overcome, at least partly, by policies that improve the function of courts and strengthen contract enforcement mechanisms and property rights institutions. Poor power supply and other infrastructure facilities due to high ethnic fractionalization can be partly countered through greater investments in infrastructure provision. Education may also be a policy tool that can reduce mistrust and misinformation between ethnic communities.

These policies have been recommended in several other studies on ethnic fractionalization. However, the existing studies do not distinguish between SMEs and large firms. Thus, their policy recommendations apply uniformly to all firms. Our results indicate that it is the SMEs that are negatively impacted by ethnic fractionalization and not the large firms. Thus, policies to mitigate the negative effects of ethnic fractionalization will be much more effective when targeted towards SMEs. This also means that the choice of policies and their optimal levels need to be tailored to the needs of SMEs rather than firms in general.

Several issues remain to be explored. First, our analysis can be extended to other firm performance measures such as sales growth, employment, R&D activity, and total factor productivity. Second, other heterogeneities in the impact of ethnic fractionalization may exist. For instance, some studies indicate that greater ethnic fractionalization may help exporting firms more than others. Similar results can be explored with respect to foreign investments, the age of the firm, and so on. Third, it will be interesting to investigate how policy-relevant business environment factors moderate the impact of ethnic fractionalization. For instance, the lack of trust associated with greater ethnic fractionalization may be compensated for by a stronger rule of law, stricter enforcement of contracts, and better functioning courts. Fourth, it will be interesting to check if some industries are more affected by ethnic fractionalization than others. For instance, industries that rely more on trust may shrink, while others expand due to higher ethnic fractionalization. This is likely to have important implications for a country's growth prospects, international trade, and so on. Last, there is scope for country-specific studies on the effects of ethnic fractionalization. Such studies may focus on large countries that have substantial variation in ethnic fractionalization across different regions. We hope that the present paper motivates future research in these and other related areas.

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**Table 1: Base regression results for the level of labor productivity**

Dependent variable: Labor Productivity (logs)	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization	-2.127*** (0.395)	-1.107*** (0.322)	-1.045*** (0.324)	-0.969*** (0.318)	-0.911*** (0.315)
GDP per capita (logs)		0.594*** (0.090)	0.573*** (0.088)	0.570*** (0.088)	0.514*** (0.113)
Log of Number of workers (lagged)		0.247*** (0.036)	0.192*** (0.034)	0.169*** (0.034)	0.163*** (0.035)
Age of firm (logs)			0.115* (0.059)	0.134** (0.060)	0.135** (0.060)
Manager experience (years, logs)			0.041 (0.060)	0.021 (0.059)	0.012 (0.056)
Exports (proportion of sales)			0.232* (0.119)	0.209* (0.113)	0.244** (0.113)
Foreign Ownership Y:1 N:0			0.188* (0.101)	0.186* (0.101)	0.182* (0.100)
Firm is Financially Constrained Y:1 N:0			-0.288*** (0.075)	-0.261*** (0.076)	-0.261*** (0.072)
Female Top Manager Y:1 N:0				-0.240*** (0.070)	-0.216*** (0.068)
Firm Provides Training Y:1 N:0				0.001* (0.001)	0.001* (0.001)
Courts Obstacle Y:1 N:0				-0.023 (0.064)	-0.009 (0.059)
Total hours of power outages				-0.001** (0.000)	-0.001** (0.000)
Firm Purchased Fixed Assets Y:1 N:0				0.143** (0.063)	0.157** (0.065)
Time Tax				-0.001 (0.002)	-0.001 (0.002)
Population (logs)					0.028 (0.054)
Primary Education					-0.008 (0.005)
Freedom from Business Regulations					0.021 (0.098)
Merchandize Trade to GDP ratio					-0.002 (0.003)
Growth rate of GDP per capita (% , annual)					0.022 (0.021)
Inflation (GDP deflator)					0.015 (0.013)
Rule of Law					-0.063

					(0.260)
Control of Corruption					0.188
					(0.276)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	11.372***	4.499***	4.411***	4.370***	5.202**
	(0.425)	(1.037)	(0.986)	(0.959)	(2.086)
Number of observations	25,541	25,541	25,541	25,541	25,541
R-squared	0.244	0.327	0.335	0.343	0.351

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 2: Interaction term results for level of labor productivity**

Dependent variable: Labor Productivity (logs)	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Regression results</b>					
Ethnic Fractionalization*SME Y:1 N:0	-1.654*** (0.438)	-1.386*** (0.454)	-1.339*** (0.440)	-1.394*** (0.414)	-1.247*** (0.413)
Ethnic Fractionalization	-0.637 (0.487)	0.028 (0.442)	0.077 (0.440)	0.207 (0.421)	0.121 (0.402)
SME Y:1 N:0	0.193 (0.180)	0.056 (0.171)	0.288 (0.174)	0.405** (0.166)	0.350** (0.166)
GDP per capita (logs)		0.590*** (0.090)	0.562*** (0.087)	0.559*** (0.086)	0.506*** (0.113)
Age of firm (logs)			0.182*** (0.058)	0.195*** (0.059)	0.195*** (0.058)
Manager experience (years, logs)			0.035 (0.059)	0.011 (0.059)	0.002 (0.055)
Exports (proportion of sales)			0.420*** (0.112)	0.376*** (0.106)	0.403*** (0.104)
Foreign Ownership Y:1 N:0			0.272** (0.105)	0.256** (0.104)	0.252** (0.104)
Firm is Financially Constrained Y:1 N:0			-0.319*** (0.079)	-0.277*** (0.079)	-0.275*** (0.073)
Female Top Manager Y:1 N:0				-0.262*** (0.071)	-0.239*** (0.069)
Firm Provides Training Y:1 N:0				0.002*** (0.001)	0.002*** (0.001)
Courts Obstacle Y:1 N:0				-0.010 (0.064)	0.000 (0.059)
Total hours of power outages				-0.001** (0.000)	-0.001** (0.000)
Firm Purchased Fixed Assets Y:1 N:0				0.171*** (0.062)	0.187*** (0.064)
Time Tax				-0.001 (0.002)	-0.000 (0.002)
Population (logs)					0.033 (0.055)
Primary Education					-0.009* (0.005)
Freedom from Business Regulations					0.033 (0.098)
Merchandize Trade to GDP ratio					-0.002 (0.003)
Growth rate of GDP per capita (% ,					0.022



annual)					(0.021)
Inflation (GDP deflator)					0.014 (0.013)
Rule of Law					-0.029 (0.261)
Control of Corruption					0.127 (0.275)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	11.080*** (0.441)	5.375*** (1.033)	4.759*** (0.970)	4.511*** (0.939)	5.268** (2.120)
Number of observations	25,541	25,541	25,541	25,541	25,541
R-squared	0.260	0.311	0.327	0.337	0.345
<b>Panel B: Estimated impact of Ethnic Fractionalization on SMEs and Large firms</b>					
SMEs	-2.291*** (0.405)	-1.357*** (0.336)	-1.262*** (0.335)	-1.187*** (0.327)	-1.127*** (0.333)
Large (>=100 workers)	-0.637 (0.487)	0.028 (0.442)	0.077 (0.440)	0.207 (0.421)	0.121 (0.402)
Huber-White robust standard errors clustered on country in brackets. Significance is denoted by *** (1%), ** (5%), * (10%)					

**Table 3: Split sample results for the level of labor productivity**

Dependent variable: Labor Productivity (logs)	SMEs (<100 workers)					Large firms (>=100 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	-2.171*** (0.412)	-1.244*** (0.336)	-1.155*** (0.336)	-1.099*** (0.328)	-1.056*** (0.331)	-1.816*** (0.564)	-0.673 (0.449)	-0.665 (0.443)	-0.540 (0.425)	-0.354 (0.399)
GDP per capita (logs)		0.605*** (0.091)	0.580*** (0.087)	0.579*** (0.087)	0.546*** (0.114)		0.751*** (0.145)	0.708*** (0.143)	0.690*** (0.138)	0.628*** (0.180)
Age of firm (logs)			0.152** (0.059)	0.168*** (0.061)	0.168*** (0.060)			0.349*** (0.090)	0.332*** (0.087)	0.368*** (0.086)
Manager experience (years, logs)			0.037 (0.056)	0.011 (0.056)	0.006 (0.054)			-0.006 (0.101)	-0.025 (0.096)	-0.065 (0.086)
Exports (proportion of sales)			0.505*** (0.119)	0.457*** (0.112)	0.487*** (0.108)			0.348** (0.159)	0.282* (0.154)	0.418** (0.170)
Foreign Ownership Y:1 N:0			0.348*** (0.106)	0.331*** (0.105)	0.332*** (0.107)			0.157 (0.185)	0.128 (0.177)	0.100 (0.169)
Firm is Financially Constrained Y:1 N:0			-0.295*** (0.079)	-0.256*** (0.079)	-0.258*** (0.074)			-0.357* (0.197)	-0.280 (0.193)	-0.312 (0.189)
Female Top Manager Y:1 N:0				-0.248*** (0.074)	-0.228*** (0.072)				-0.219 (0.144)	-0.158 (0.149)
Firm Provides Training Y:1 N:0				0.002*** (0.001)	0.002*** (0.001)				0.001 (0.001)	0.001 (0.001)
Courts Obstacle Y:1 N:0				-0.009 (0.067)	-0.001 (0.061)				0.068 (0.117)	0.102 (0.109)
Total hours of power outages				-0.001 (0.001)	-0.001 (0.001)				-0.001 (0.001)	-0.001 (0.001)
Firm Purchased Fixed Assets Y:1 N:0				0.140** (0.066)	0.158** (0.068)				0.371*** (0.112)	0.390*** (0.114)
Time Tax				-0.000 (0.066)	0.000 (0.068)				-0.003 (0.112)	-0.003 (0.114)

					(0.002)	(0.002)			(0.003)	(0.003)
Population (logs)						0.028				0.090
						(0.056)				(0.065)
Primary Education						-0.009*				0.006
						(0.005)				(0.010)
Freedom from Business Regulations						0.035				0.008
						(0.098)				(0.099)
Merchandize Trade to GDP ratio						-0.001				-0.004
						(0.003)				(0.003)
Growth rate of GDP per capita (% , annual)						0.018				0.054***
						(0.023)				(0.014)
Inflation (GDP deflator)						0.016				0.016
						(0.013)				(0.015)
Rule of Law						-0.115				0.346
						(0.266)				(0.336)
Control of Corruption						0.171				-0.149
						(0.284)				(0.317)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	11.170***	5.262***	4.965***	4.838***	5.240***	10.615***	3.226**	2.394*	2.344*	0.954
	(0.488)	(1.092)	(1.027)	(0.999)	(1.945)	(0.577)	(1.417)	(1.382)	(1.369)	(2.994)
Number of observations	19,485	19,485	19,485	19,485	19,485	6,056	6,056	6,056	6,056	6,056
R-squared	0.265	0.322	0.338	0.347	0.355	0.198	0.265	0.287	0.302	0.322

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 4: Base regression results for growth rate of labor productivity**

Dependent variable: Growth Rate of Labor Productivity	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization	-18.785*** (4.464)	-13.716*** (4.551)	-13.624*** (4.601)	-13.157*** (4.613)	-12.101*** (4.294)
Initial Labor Productivity (logs)	-5.424*** (0.556)	-6.051*** (0.527)	-6.061*** (0.520)	-6.088*** (0.540)	-6.040*** (0.566)
GDP per capita (logs)		3.116** (1.243)	3.088** (1.268)	3.002** (1.238)	3.788*** (1.360)
Log of Number of workers (lagged)		2.925*** (0.502)	2.813*** (0.540)	2.826*** (0.546)	2.950*** (0.559)
Age of firm (logs)			-0.767 (0.985)	-0.688 (0.975)	-0.622 (0.965)
Manager experience (years, logs)			0.999 (1.025)	0.925 (0.978)	1.048 (0.957)
Exports (proportion of sales)			1.895 (1.744)	1.828 (1.724)	1.687 (1.764)
Foreign Ownership Y:1 N:0			1.374 (1.446)	1.301 (1.456)	1.344 (1.475)
Firm is Financially Constrained Y:1 N:0			0.512 (1.784)	0.367 (1.715)	0.422 (1.693)
Female Top Manager Y:1 N:0				0.444 (1.186)	0.409 (1.244)
Firm Provides Training Y:1 N:0				0.000 (0.012)	-0.002 (0.012)
Courts Obstacle Y:1 N:0				-1.169 (1.193)	-1.185 (1.199)
Total hours of power outages				-0.005 (0.009)	-0.003 (0.008)
Firm Purchased Fixed Assets Y:1 N:0				0.822 (1.043)	0.605 (1.046)
Time Tax				-0.056 (0.056)	-0.058 (0.056)
Population (logs)					-0.392 (0.845)
Primary Education					0.057 (0.087)
Freedom from Business Regulations					-0.457 (0.996)
Merchandize Trade to GDP ratio					0.007 (0.028)
Growth rate of GDP per capita (% annual)					-0.185 (0.207)

Inflation (GDP deflator)					-0.262** (0.113)
Rule of Law					-7.225* (4.187)
Control of Corruption					6.481* (3.795)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	68.825*** (14.155)	32.474* (19.185)	32.463* (18.832)	34.203* (18.891)	41.069 (32.260)
Number of observations	23,852	23,852	23,852	23,852	23,852
R-squared	0.145	0.166	0.167	0.169	0.176

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 5: Interaction term results for growth rate of labor productivity**

	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Regression results</b>					
Ethnic Fractionalization*SME Y:1 N:0	-9.553** (4.713)	-8.605* (4.840)	-9.347* (4.739)	-9.916** (4.653)	-10.653** (4.706)
Ethnic Fractionalization	-10.205** (4.758)	-6.991 (4.775)	-6.121 (4.820)	-5.215 (4.929)	-3.844 (4.693)
SME Y:1 N:0	-1.372 (1.788)	-2.024 (1.822)	-0.097 (1.976)	0.510 (1.840)	0.754 (1.877)
Initial Labor Productivity (logs)	-5.586*** (0.562)	-5.864*** (0.544)	-5.963*** (0.529)	-6.026*** (0.547)	-5.974*** (0.570)
GDP per capita (logs)		2.979** (1.216)	2.915** (1.249)	2.861** (1.214)	3.662*** (1.363)
Age of firm (logs)			0.260 (0.955)	0.363 (0.960)	0.468 (0.951)
Manager experience (years, logs)			0.894 (1.028)	0.762 (0.985)	0.878 (0.964)
Exports (proportion of sales)			4.427** (1.742)	4.199** (1.721)	4.168** (1.722)
Foreign Ownership Y:1 N:0			2.584* (1.447)	2.404 (1.468)	2.547* (1.502)
Firm is Financially Constrained Y:1 N:0			-0.015 (1.790)	-0.014 (1.715)	0.066 (1.689)
Female Top Manager Y:1 N:0				0.173 (1.212)	0.101 (1.273)
Firm Provides Training Y:1 N:0				0.010 (0.012)	0.009 (0.012)
Courts Obstacle Y:1 N:0				-0.874 (1.227)	-0.936 (1.232)
Total hours of power outages				-0.005 (0.009)	-0.003 (0.007)
Firm Purchased Fixed Assets Y:1 N:0				1.305 (1.049)	1.180 (1.046)
Time Tax				-0.058 (0.058)	-0.059 (0.058)
Population (logs)					-0.277 (0.869)
Primary Education					0.047 (0.086)
Freedom from Business Regulations					-0.225 (0.966)
Merchandize Trade to GDP ratio					0.004 (0.028)
Growth rate of GDP per capita (%)					-0.178

annual)					(0.206)
Inflation (GDP deflator)					-0.279**
					(0.115)
Rule of Law					-6.725
					(4.206)
Control of Corruption					5.506
					(3.791)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	70.593***	44.578**	40.802**	41.381**	46.291
	(14.050)	(19.378)	(18.905)	(19.163)	(32.466)
Number of observations	23,852	23,852	23,852	23,852	23,852
R-squared	0.150	0.155	0.158	0.160	0.166

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**Panel B: Estimated impact of Ethnic Fractionalization on SMEs and Large firms**

SMEs	-19.756***	-15.596***	-15.468***	-15.132***	-14.498***
	(4.734)	(4.919)	(4.930)	(4.840)	(4.666)
Large (>=100 workers)	-10.205**	-6.991	-6.121	-5.215	-3.844
	(4.758)	(4.775)	(4.820)	(4.929)	(4.693)

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 6: Split sample results for growth rate of labor productivity**

Dependent variable: Labor Productivity (logs)	SMEs (<100 workers)					Large firms (>=100 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic	-18.968***	-14.914***	-14.743***	-14.596***	-14.056***	-12.257***	-7.187	-7.016	-3.243	-2.190
Fractionalization	(4.749)	(4.925)	(4.946)	(4.945)	(4.679)	(4.420)	(5.028)	(4.919)	(4.606)	(4.295)
Initial Labor Productivity (logs)	-5.500***	-5.801***	-5.918***	-5.958***	-5.893***	-6.971***	-7.310***	-7.502***	-7.470***	-7.511***
GDP per capita (logs)		3.034**	2.952**	2.897**	4.031***		3.771**	3.750**	3.856**	2.929
Age of firm (logs)		(1.254)	(1.296)	(1.276)	(1.434)		(1.658)	(1.731)	(1.623)	(2.125)
Manager experience (years, logs)			0.092	0.196	0.367			2.523	2.775*	2.980**
			(1.022)	(1.026)	(1.014)			(1.534)	(1.438)	(1.477)
Exports (proportion of sales)			0.986	0.852	0.937			0.889	0.374	0.409
			(1.126)	(1.088)	(1.057)			(1.302)	(1.278)	(1.310)
Foreign Ownership			6.229***	5.961***	6.109***			1.437	0.733	-0.330
Y:1 N:0			(2.130)	(2.126)	(2.136)			(2.282)	(2.103)	(1.943)
Firm is Financially Constrained			2.996	2.737	2.993			2.882*	2.950*	2.390
Y:1 N:0			(1.833)	(1.874)	(1.896)			(1.637)	(1.556)	(1.584)
Female Top			0.119	0.103	0.183			-3.849	-4.191	-4.128
Manager Y:1 N:0			(1.908)	(1.828)	(1.788)			(2.603)	(2.727)	(2.732)
Firm Provides				0.460	0.344				-2.347	-2.441
Training Y:1 N:0				(1.334)	(1.398)				(1.801)	(1.767)
Courts Obstacle				0.011	0.010				-0.021	-0.023
Y:1 N:0				(0.013)	(0.013)				(0.016)	(0.016)
Total hours of power outages				-0.675	-0.795				-4.791***	-4.441**
Firm Purchased Fixed Assets Y:1				(1.274)	(1.278)				(1.675)	(1.714)
N:0				-0.002	-0.001				-0.029**	-0.021*
Time Tax				(0.010)	(0.009)				(0.012)	(0.012)
				1.362	1.264				3.301	2.758
				(1.097)	(1.104)				(2.075)	(2.019)
				-0.061	-0.061				-0.026	-0.046



					(0.058)	(0.058)			(0.064)	(0.065)
Population (logs)						-0.352				-1.183
						(0.911)				(0.908)
Primary Education						0.043				0.132
						(0.090)				(0.088)
Freedom from Business Regulations						-0.281				-0.508
						(1.044)				(0.979)
Merchandize Trade to GDP ratio						0.005				-0.012
						(0.029)				(0.035)
Growth rate of GDP per capita (% annual)						-0.222				0.409
						(0.221)				(0.302)
Inflation (GDP deflator)						-0.286**				-0.160
						(0.118)				(0.157)
Rule of Law						-7.518*				-2.965
						(4.400)				(3.692)
Control of Corruption						5.588				5.453
						(4.044)				(3.794)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	51.342***	24.072*	21.501*	21.615*	11.533	117.807***	86.667***	79.135***	79.023***	94.387**
	(8.128)	(12.627)	(12.519)	(12.575)	(31.581)	(19.448)	(21.101)	(20.046)	(21.136)	(38.076)
Number of observations	18,296	18,296	18,296	18,296	18,296	5,556	5,556	5,556	5,556	5,556
R-squared	0.143	0.148	0.152	0.154	0.160	0.290	0.298	0.307	0.327	0.340

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 7: Quality Certification**

	Dependent variable: Labor Productivity (logs)			Dependent variable: Growth Rate of Labor Productivity		
	Full sample	SME firm sample (SME=1)	Large firm sample (SME=0)	Full sample	SME firm sample (SME=1)	Large firm sample (SME=0)
	(1)	(2)	(3)	(4)	(5)	(6)
Ethnic Fractionalization*Quality Certification Y:1 N:0	0.688* (0.359)			11.871*** (4.200)		
Ethnic Fractionalization	-1.116*** (0.346)	-1.085*** (0.344)	-0.425 (0.326)	-15.684*** (4.712)	-14.968*** (4.611)	-5.972 (3.633)
Initial Labor Productivity (logs)				-6.101*** (0.558)	-6.135*** (0.663)	-6.167*** (0.540)
Quality Certification Y:1 N:0	0.234 (0.144)			-1.086 (1.841)		
GDP per capita (logs)	0.479*** (0.115)	0.517*** (0.118)	0.307** (0.125)	3.478** (1.394)	4.291*** (1.536)	-0.499 (1.338)
Age of firm (logs)	0.193*** (0.056)	0.175*** (0.063)	0.294*** (0.074)	0.644 (0.975)	0.907 (1.102)	0.505 (1.028)
Manager experience (years, logs)	0.005 (0.055)	-0.008 (0.064)	0.060 (0.069)	0.989 (0.975)	1.315 (1.172)	-0.167 (0.960)
Exports (proportion of sales)	0.292*** (0.101)	0.351** (0.156)	0.250** (0.108)	4.159** (1.698)	5.564** (2.742)	1.308 (1.560)
Foreign Ownership Y:1 N:0	0.227** (0.108)	0.263** (0.116)	0.156 (0.169)	2.916* (1.484)	2.531 (2.040)	3.210** (1.466)
Firm is Financially Constrained Y:1 N:0	-0.262*** (0.073)	-0.275*** (0.077)	-0.027 (0.145)	-0.046 (1.744)	0.099 (1.959)	-0.937 (1.727)
Female Top Manager Y:1 N:0	-0.245*** (0.071)	-0.248*** (0.080)	-0.294* (0.152)	-0.119 (1.261)	-0.035 (1.509)	-1.255 (2.059)
Firm Provides Training Y:1 N:0	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.003 (0.012)	-0.004 (0.015)	0.028* (0.015)
Courts Obstacle Y:1 N:0	-0.015 (0.054)	0.014 (0.058)	-0.082 (0.082)	-0.998 (1.226)	-0.416 (1.427)	-1.726 (1.236)
Total hours of power outages	-0.001** (0.000)	-0.001 (0.001)	-0.002*** (0.001)	-0.002 (0.008)	-0.001 (0.008)	0.000 (0.015)
Firm Purchased Fixed Assets Y:1 N:0	0.182*** (0.061)	0.196*** (0.070)	0.051 (0.083)	1.265 (1.096)	1.427 (1.298)	-0.165 (1.636)
Time Tax	0.000 (0.002)	0.000 (0.002)	0.001 (0.003)	-0.052 (0.059)	-0.065 (0.067)	0.048 (0.054)
Population (logs)	0.044 (0.054)	0.038 (0.059)	0.075 (0.054)	-0.003 (0.865)	-0.253 (0.947)	0.741 (0.788)
Primary Education	-0.007	-0.005	-0.016**	0.062	0.086	-0.086

	(0.005)	(0.005)	(0.007)	(0.088)	(0.094)	(0.070)
Freedom from Business Regulations	0.075	0.100	-0.066	0.287	0.503	-0.590
	(0.093)	(0.099)	(0.095)	(0.901)	(1.042)	(1.005)
Merchandize Trade to GDP ratio	-0.002	-0.001	-0.004	0.012	0.025	-0.044
	(0.003)	(0.003)	(0.003)	(0.028)	(0.033)	(0.029)
Growth rate of GDP per capita (% annual)	0.025	0.024	0.045	-0.151	-0.236	0.573*
	(0.020)	(0.021)	(0.027)	(0.210)	(0.218)	(0.316)
Inflation (GDP deflator)	0.012	0.009	0.020	-0.292**	-0.335***	-0.130
	(0.014)	(0.014)	(0.013)	(0.114)	(0.123)	(0.134)
Rule of Law	-0.039	-0.103	0.138	-6.791	-9.322*	1.973
	(0.253)	(0.273)	(0.233)	(4.261)	(4.963)	(3.247)
Control of Corruption	0.061	0.047	0.241	4.809	6.070	1.314
	(0.266)	(0.278)	(0.242)	(3.812)	(4.216)	(3.452)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.878**	4.969**	8.198***	27.929	9.695	76.241**
	(1.957)	(2.183)	(2.255)	(35.201)	(33.088)	(31.387)
Number of observations	25,088	16,734	8,354	23,445	15,663	7,782
R-squared	0.354	0.329	0.246	0.170	0.172	0.237

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 8: Power outages and corruption**

	Dependent variable: Total hours of power outages in a month				Dependent variable: Bribery rate			
	Full sample		SME firm sample (SME=1)	Large firm sample (SME=0)	Full sample		SME firm sample (SME=1)	Large firm sample (SME=0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ethnic Fractionalization*SME Y:1 N:0		27.711** (11.427)				0.017 (0.011)		
Ethnic Fractionalization	43.980*** (16.481)	20.074 (12.507)	48.718*** (18.450)	26.611** (11.738)	0.024*** (0.008)	0.010 (0.013)	0.026*** (0.009)	0.012 (0.008)
Log of Number of workers (lagged)	-1.571* (0.846)				-0.001 (0.002)			
SME Y:1 N:0		-4.395 (4.838)				-0.003 (0.004)		
GDP per capita (logs)	-7.513 (5.683)	-7.467 (5.659)	-7.808 (6.013)	-4.254 (4.396)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	0.000 (0.004)
Age of firm (logs)	-0.017 (1.721)	0.016 (1.362)	-0.043 (1.670)	0.624 (1.329)	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)	-0.001 (0.001)
Manager experience (years, logs)	1.563 (1.847)	1.629 (1.815)	2.115 (2.161)	-2.380 (2.792)	-0.004 (0.003)	-0.004 (0.003)	-0.004 (0.003)	-0.002 (0.002)
Exports (proportion of sales)	-7.537 (6.753)	-7.626 (6.043)	-10.549 (8.222)	1.905 (2.628)	0.002 (0.004)	0.002 (0.003)	0.001 (0.004)	-0.001 (0.004)
Foreign Ownership Y:1 N:0	14.938 (9.117)	15.341 (9.539)	21.310 (12.972)	0.044 (3.034)	0.008 (0.005)	0.008 (0.006)	0.008 (0.006)	0.003 (0.005)
Firm is Financially Constrained Y:1 N:0	-1.244 (2.402)	-1.393 (2.391)	-1.385 (2.512)	-1.043 (3.958)	-0.007* (0.004)	-0.007* (0.004)	-0.007* (0.004)	-0.009** (0.004)
Female Top Manager Y:1 N:0	-5.676* (3.022)	-5.670* (3.097)	-6.188* (3.158)	1.192 (4.668)	-0.003 (0.003)	-0.003 (0.003)	-0.004 (0.003)	-0.006* (0.003)

Firm Provides Training Y:1 N:0	0.019 (0.024)	0.017 (0.022)	0.018 (0.025)	0.042 (0.033)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Courts Obstacle Y:1 N:0	1.542 (2.857)	1.726 (2.930)	1.231 (3.149)	5.480* (2.778)	0.008*** (0.003)	0.008*** (0.003)	0.007*** (0.002)	0.009** (0.004)
Total hours of power outages					0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Firm Purchased Fixed Assets Y:1 N:0	5.304* (2.747)	5.324* (2.924)	6.298* (3.327)	0.423 (3.035)	-0.001 (0.003)	-0.001 (0.003)	-0.000 (0.003)	-0.003 (0.004)
Time Tax	0.142* (0.078)	0.141* (0.078)	0.160* (0.090)	0.058 (0.091)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000 (0.000)
Population (logs)	4.654* (2.508)	4.725* (2.531)	4.858* (2.734)	5.836** (2.541)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004* (0.002)
Primary Education	-0.016 (0.293)	-0.013 (0.292)	-0.000 (0.311)	0.081 (0.206)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Freedom from Business Regulations	-1.177 (2.200)	-1.247 (2.209)	-1.487 (2.390)	-1.116 (1.879)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	0.001 (0.003)
Merchandize Trade to GDP ratio	-0.055 (0.059)	-0.052 (0.059)	-0.053 (0.063)	-0.052 (0.059)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Growth rate of GDP per capita (% annual)	-0.689 (0.426)	-0.651 (0.415)	-0.723 (0.463)	0.244 (0.399)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.001* (0.000)
Inflation (GDP deflator)	0.049 (0.338)	0.062 (0.336)	0.086 (0.373)	-0.009 (0.317)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Rule of Law	25.019** (11.404)	24.443** (11.338)	25.389** (12.089)	17.773** (8.515)	0.002 (0.003)	0.002 (0.003)	0.001 (0.003)	0.002 (0.005)
Control of Corruption	-19.903** (9.125)	-19.192** (9.084)	-19.759** (9.525)	-13.657 (8.630)				
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-28.457 (89.347)	-31.202 (87.681)	-56.800 (100.466)	-106.662 (82.585)	-0.074 (0.054)	-0.075 (0.054)	-0.066 (0.049)	-0.123 (0.081)
Number of observations	18,781	18,781	14,148	4,633	22,230	22,230	17,037	5,193

R-squared	0.120	0.122	0.127	0.146		0.089	0.089	0.095	0.099
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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table 9: IV regression results for the level and growth rate of labor productivity**

	Dependent variable: Labor Productivity (logs)				Dependent variable: Growth Rate of Labor Productivity			
	Full sample	Full sample	SME=1	SME=0 (Large firms)	Full sample	Full sample	SME=1	SME=0 (Large firms)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel A: Second stage IV regression results</b>								
Ethnic Fractionalization IV	-1.775*	-0.509	-1.892*	-1.508	-36.358**	-24.231	-39.781**	-21.659**
	(1.039)	(1.121)	(1.124)	(1.040)	(15.727)	(15.409)	(17.383)	(9.532)
Ethnic Fractionalization IV*SME Y:1 N:0		-1.473**				-14.710**		
		(0.680)				(6.286)		
SME Y:1 N:0		0.462				3.071		
		(0.293)				(2.778)		
Initial Labor Productivity (logs)					-6.249***	-6.181***	-6.360***	-7.008***
					(0.600)	(0.639)	(0.681)	(0.727)
Log of Number of workers (lagged)	0.156***		0.220***	-0.055	2.699***		3.579***	0.910
	(0.036)		(0.044)	(0.083)	(0.559)		(0.768)	(0.838)
GDP per capita (logs)	0.436***	0.433***	0.477***	0.190	1.681	1.575	2.014	0.812
	(0.142)	(0.164)	(0.143)	(0.166)	(1.988)	(1.960)	(2.103)	(1.876)
Age of firm (logs)	0.136**	0.193***	0.095	0.327***	-0.544	0.443	-0.725	1.175
	(0.058)	(0.059)	(0.061)	(0.064)	(0.993)	(0.924)	(1.072)	(0.978)
Manager experience (years, logs)	-0.007	-0.018	-0.008	-0.028	0.459	0.280	0.267	0.890
	(0.061)	(0.059)	(0.062)	(0.064)	(0.994)	(0.983)	(1.066)	(1.058)
Exports (proportion of sales)	0.211*	0.349***	0.341***	0.312*	0.962	3.199*	3.630	-2.129
	(0.125)	(0.117)	(0.116)	(0.179)	(1.987)	(1.674)	(2.245)	(1.783)
Foreign Ownership Y:1 N:0	0.191*	0.272***	0.254**	0.130	1.612	2.834*	1.809	1.793
	(0.101)	(0.099)	(0.113)	(0.172)	(1.661)	(1.549)	(2.162)	(1.899)
Firm is Financially Constrained Y:1 N:0	-0.218***	-0.235***	-0.183**	-0.579***	1.485	1.161	2.015	-3.766
	(0.077)	(0.089)	(0.081)	(0.213)	(1.731)	(1.880)	(1.792)	(2.454)
Female Top Manager Y:1 N:0	-0.203***	-0.227***	-0.198***	-0.246	0.627	0.339	0.734	-2.353
	(0.068)	(0.078)	(0.071)	(0.173)	(1.220)	(1.284)	(1.351)	(2.197)

Firm Provides Training Y:1 N:0	0.001*	0.002***	0.001*	-0.000	-0.002	0.008	0.000	-0.013
	(0.001)	(0.001)	(0.001)	(0.001)	(0.012)	(0.012)	(0.013)	(0.013)
Courts Obstacle Y:1 N:0	-0.010	0.001	-0.018	0.050	-1.169	-0.908	-1.193	-1.014
	(0.060)	(0.059)	(0.065)	(0.089)	(1.179)	(1.215)	(1.257)	(1.135)
Total hours of power outages	-0.001	-0.001	-0.000	-0.002**	0.005	0.005	0.008	-0.005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.008)	(0.008)	(0.009)	(0.009)
Firm Purchased Fixed Assets Y:1 N:0	0.163**	0.194***	0.125*	0.326***	0.773	1.334	0.722	0.336
	(0.064)	(0.063)	(0.066)	(0.104)	(1.006)	(1.029)	(1.070)	(1.545)
Time Tax	-0.000	0.000	0.000	0.001	-0.046	-0.046	-0.049	-0.010
	(0.002)	(0.002)	(0.002)	(0.004)	(0.054)	(0.059)	(0.055)	(0.066)
Population (logs)	-0.012	-0.004	-0.023	0.114*	-1.509	-1.389	-1.740	-0.804
	(0.076)	(0.081)	(0.078)	(0.061)	(1.114)	(1.071)	(1.209)	(0.836)
Primary Education	-0.011	-0.011**	-0.010	-0.016*	-0.025	-0.035	-0.018	-0.031
	(0.007)	(0.005)	(0.007)	(0.009)	(0.121)	(0.091)	(0.124)	(0.107)
Freedom from Business Regulations	0.038	0.049	0.049	-0.101	0.015	0.229	0.079	-0.840
	(0.097)	(0.114)	(0.096)	(0.109)	(1.099)	(1.157)	(1.163)	(1.082)
Merchandize Trade to GDP ratio	-0.003	-0.003	-0.003	-0.003	-0.033	-0.036	-0.030	-0.063*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.039)	(0.034)	(0.042)	(0.034)
Growth rate of GDP per capita (% , annual)	0.020	0.020	0.017	0.058**	-0.233	-0.232	-0.282	0.704*
	(0.021)	(0.021)	(0.022)	(0.023)	(0.237)	(0.203)	(0.249)	(0.414)
Inflation (GDP deflator)	0.014	0.014	0.015	0.010	-0.287**	-0.300**	-0.301**	-0.255*
	(0.013)	(0.015)	(0.012)	(0.015)	(0.144)	(0.128)	(0.151)	(0.153)
Rule of Law	0.057	0.084	-0.063	0.596*	-3.839	-3.392	-5.272	3.421
	(0.304)	(0.311)	(0.303)	(0.324)	(5.259)	(4.756)	(5.585)	(3.428)
Control of Corruption	0.019	-0.029	0.068	-0.266	1.814	0.973	2.045	0.290
	(0.354)	(0.339)	(0.369)	(0.352)	(5.004)	(4.710)	(5.445)	(3.347)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.775**	7.438*	5.327*	7.953**	81.460*	90.235*	79.382*	83.072**
	(2.734)	(3.810)	(2.788)	(3.096)	(42.713)	(47.735)	(45.844)	(34.514)



Number of observations	25,541	25,541	19,485	6,056	23,852	23,852	18,296	5,556
<b>Panel B: First stage IV regression results</b>								
Dependent variable: Ethnic Fractionalization								
Oritime	0.204*** (0.058)	0.204*** (0.058)	0.196*** (0.057)	0.236*** (0.067)	0.202*** (0.058)	0.202*** (0.058)	0.194*** (0.057)	0.240*** (0.064)
Other controls (As above)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F statistic	12.31***	12.31***	11.94***	12.64***	11.99***	11.99***	11.56***	14.09***

Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%). Robust Huber-White standard errors clustered on the country are in brackets.

Instrumented values of Ethnic Fractionalization obtained from column 1 are used in columns 2. Similarly, instrumented values of Ethnic Fractionalization obtained in column 5 are used in columns 6.

## Appendix A

**Table A1: Sample size by country**

Country	LP level sample	LP Growth sample	Country	LP level sample	LP Growth sample	Country	LP level sample	LP Growth sample
Albania	100	91	Ethiopia	245	228	North Macedonia	97	92
Argentina	428	372	Georgia	92	82	Pakistan	377	355
Armenia	131	119	Ghana	163	145	Panama	58	40
Azerbaijan	12	10	Guatemala	100	95	Paraguay	66	63
Bangladesh	1002	971	Guyana	51	46	Peru	388	363
Belarus	222	216	Honduras	60	55	Philippines	435	416
Belize	65	63	Hungary	346	332	Poland	267	202
Benin	50	48	India	5427	5114	Russian Federation	531	517
Bhutan	62	60	Indonesia	806	799	Rwanda	100	99
Bolivia	73	61	Israel	160	157	Senegal	72	59
Botswana	64	54	Jamaica	71	34	Serbia	79	76
Brazil	700	641	Jordan	82	49	Sierra Leone	60	60
Bulgaria	212	203	Kazakhstan	476	432	Slovak Republic	164	161
Cambodia	95	94	Kenya	316	306	Slovenia	123	120
Cameroon	50	48	Kyrgyz Republic	86	84	Sri Lanka	225	220
Chile	645	590	Lao PDR	91	88	Suriname	42	42
China	1380	1321	Latvia	94	92	Tajikistan	52	39
Colombia	444	430	Liberia	54	52	Tanzania	119	104
Congo, Dem. Rep.	133	109	Lithuania	96	92	Thailand	420	371
Costa Rica	217	173	Malawi	102	93	Trinidad and Tobago	99	90
Côte d'Ivoire	45	40	Malaysia	262	217	Tunisia	171	151
Croatia	135	135	Mexico	930	846	Türkiye	340	325
Czech Republic	236	236	Moldova	76	72	Uganda	110	93
Dominican Republic	55	39	Mongolia	115	115	Ukraine	501	441
Ecuador	89	88	Morocco	176	169	Uruguay	58	51
Egypt, Arab Rep.	1623	1604	Namibia	59	42	Vietnam	312	295
El Salvador	291	272	Nepal	194	191	Zambia	126	123
Estonia	90	87	Nigeria	560	484	Zimbabwe	210	198

LP: Labor Productivity (logs)

**Table A2: Summary statistics**

<b>Variable</b>	<b>Mean</b>	<b>Std. deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Observations</b>
Labor Productivity (logs)	10.009	1.665	-4.108	18.690	25,541
Growth Rate of Labor Productivity	-2.364	25.958	-100	100	23,852
Ethnic Fractionalization	0.485	0.230	0.039	0.930	25,541
SME Y:1 N:0	0.893	0.309	0	1	25,541
Initial Labor Productivity (logs)	9.972	1.775	-8.442	18.312	23,852
Small (<19 workers) Y:1 N:0	0.585	0.493	0	1	25,541
GDP per capita (logs)	9.120	0.918	6.797	10.567	25,541
Log of Number of workers (lagged)	2.941	1.225	0	13.122	25,541
Age of firm (logs)	2.856	0.625	0.693	5.226	25,541
Manager experience (years, logs)	2.863	0.624	0.693	4.263	25,541
Exports (proportion of sales)	0.093	0.234	0	1	25,541
Foreign Ownership Y:1 N:0	0.096	0.294	0	1	25,541
Firm is Financially Constrained Y:1 N:0	0.149	0.357	0	1	25,541
Female Top Manager Y:1 N:0	0.161	0.368	0	1	25,541
Firm Provides Training Y:1 N:0	32.583	46.869	0	100	25,541
Courts Obstacle Y:1 N:0	0.499	0.500	0	1	25,541
Total hours of power outages	21.438	78.155	0	720	25,541
Firm Purchased Fixed Assets Y:1 N:0	0.435	0.496	0	1	25,541
Time Tax	8.831	15.132	0	100	25,541
Population (logs)	16.433	1.627	12.615	21.014	25,541
Primary Education	104.975	11.565	80.618	148.999	25,541
Freedom from Business Regulations	6.243	1.088	3.600	8.970	25,541
Merchandize Trade to GDP ratio	68.937	33.955	19.670	173	25,541
Growth rate of GDP per capita (%, annual)	2.749	3.849	-22.312	11.315	25,541
Inflation (GDP deflator)	6.663	6.048	-4.621	26.580	25,541
Rule of Law	-0.266	0.624	-1.618	1.313	25,541
Control of Corruption	-0.306	0.637	-1.428	1.377	25,541
Bribes	0.011	0.058	0	1	22,230
Quality Certificate Y:1 N:0	0.196	0.397	0	1	25,088

Sample size varies due to missing data

**Table A3: Ethnic fractionalization index by country**

<b>Country</b>	<b>Ethnic Fractionalization</b>	<b>Country</b>	<b>Ethnic Fractionalization</b>	<b>Country</b>	<b>Ethnic Fractionalization</b>
Albania	0.2204	Ethiopia	0.7235	North Macedonia	0.5023
Argentina	0.225	Georgia	0.4923	Pakistan	0.7098
Armenia	0.1272	Ghana	0.6733	Panama	0.5528
Azerbaijan	0.2047	Guatemala	0.5122	Paraguay	0.1689
Bangladesh	0.0454	Guyana	0.6195	Peru	0.6566
Belarus	0.3222	Honduras	0.1867	Philippines	0.2385
Belize	0.7015	Hungary	0.1522	Poland	0.1183
Benin	0.7872	India	0.4182	Russian Federation	0.2452
Bhutan	0.605	Indonesia	0.7351	Rwanda	0.3238
Bolivia	0.7396	Israel	0.3436	Senegal	0.6939
Botswana	0.4102	Jamaica	0.4129	Serbia	0.5736
Brazil	0.5408	Jordan	0.5926	Sierra Leone	0.8191
Bulgaria	0.4021	Kazakhstan	0.6171	Slovak Republic	0.2539
Cambodia	0.2105	Kenya	0.8588	Slovenia	0.2216
Cameroon	0.8635	Kyrgyz Republic	0.6752	Sri Lanka	0.415
Chile	0.1861	Lao PDR	0.5139	Suriname	0.7332
China	0.1538	Latvia	0.5867	Tajikistan	0.5107
Colombia	0.6014	Liberia	0.9084	Tanzania	0.7353
Congo, Dem. Rep.	0.8747	Lithuania	0.3223	Thailand	0.6338
Costa Rica	0.2368	Malawi	0.6744	Trinidad and Tobago	0.6475
Côte d'Ivoire	0.8204	Malaysia	0.588	Tunisia	0.0394
Croatia	0.369	Mexico	0.5418	Türkiye	0.32
Czech Republic	0.3222	Moldova	0.5535	Uganda	0.9302
Dominican Republic	0.4294	Mongolia	0.3682	Ukraine	0.4737
Ecuador	0.655	Morocco	0.4841	Uruguay	0.2504
Egypt, Arab Rep.	0.1836	Namibia	0.6329	Vietnam	0.2383
El Salvador	0.1978	Nepal	0.6632	Zambia	0.7808
Estonia	0.5062	Nigeria	0.8505	Zimbabwe	0.3874

Source: Alesina et al. (2003).

**Table A4: Interaction term results for level of labor productivity using the Small (<=19 workers) dummy**

Dependent variable: Labor Productivity (logs)	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Small (<=19 workers) Y:1 N:0	-1.355***	-1.112***	-1.074***	-1.161***	-1.085***
	(0.342)	(0.346)	(0.324)	(0.322)	(0.321)
Ethnic Fractionalization	-1.274***	-0.535	-0.475	-0.340	-0.323
	(0.394)	(0.333)	(0.331)	(0.329)	(0.308)
Small (<=19 workers) Y:1 N:0	0.155	0.046	0.165	0.259*	0.241*
	(0.145)	(0.137)	(0.135)	(0.131)	(0.130)
GDP per capita (logs)		0.577***	0.555***	0.552***	0.505***
		(0.088)	(0.086)	(0.085)	(0.113)
Age of firm (logs)			0.158***	0.171***	0.173***
			(0.060)	(0.060)	(0.059)
Manager experience (years, logs)			0.027	0.004	-0.003
			(0.060)	(0.060)	(0.056)
Exports (proportion of sales)			0.386***	0.342***	0.375***
			(0.109)	(0.100)	(0.099)
Foreign Ownership Y:1 N:0			0.252**	0.235**	0.233**
			(0.107)	(0.106)	(0.105)
Firm is Financially Constrained Y:1 N:0			-0.295***	-0.257***	-0.258***
			(0.074)	(0.074)	(0.070)
Female Top Manager Y:1 N:0				-0.262***	-0.239***
				(0.071)	(0.069)
Firm Provides Training Y:1 N:0				0.002***	0.002**
				(0.001)	(0.001)
Courts Obstacle Y:1 N:0				-0.019	-0.009
				(0.064)	(0.058)
Total hours of power outages				-0.001**	-0.001**
				(0.000)	(0.000)
Firm Purchased Fixed Assets Y:1 N:0				0.165***	0.181***
				(0.060)	(0.062)
Time Tax				-0.001	-0.001
				(0.002)	(0.002)
Population (logs)					0.037
					(0.054)
Primary Education					-0.008
					(0.005)
Freedom from Business Regulations					0.032
					(0.099)
Merchandize Trade to GDP ratio					-0.002
					(0.003)
Growth rate of GDP per capita (% , annual)					0.020
					(0.020)
Inflation (GDP deflator)					0.013
					(0.013)
Rule of Law					-0.069
					(0.258)
Control of Corruption					0.166
					(0.271)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes

Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	11.079***	5.445***	5.013***	4.832***	5.306**
	(0.438)	(1.016)	(0.954)	(0.925)	(2.100)
Number of observations	25,541	25,541	25,541	25,541	25,541
R-squared	0.273	0.321	0.335	0.344	0.352

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A5: Split sample results for the level of labor productivity using the Small (<=19 workers) dummy**

Dependent variable:	Small (<20 workers)					Medium & Large firms (>=20 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Labor Productivity (logs)										
Ethnic Fractionalization	-2.347*** (0.433)	-1.369*** (0.358)	-1.314*** (0.358)	-1.294*** (0.349)	-1.224*** (0.349)	-1.611*** (0.426)	-0.732* (0.372)	-0.665* (0.364)	-0.501 (0.362)	-0.399 (0.317)
GDP per capita (logs)		0.632*** (0.095)	0.605*** (0.091)	0.607*** (0.092)	0.593*** (0.121)		0.578*** (0.099)	0.560*** (0.099)	0.555*** (0.099)	0.464*** (0.125)
Age of firm (logs)			0.059 (0.075)	0.079 (0.075)	0.083 (0.076)			0.273*** (0.071)	0.274*** (0.070)	0.274*** (0.065)
Manager experience (years, logs)			0.052 (0.072)	0.039 (0.071)	0.039 (0.069)			0.022 (0.069)	-0.004 (0.070)	-0.037 (0.064)
Exports (proportion of sales)			0.509*** (0.170)	0.486*** (0.165)	0.522*** (0.164)			0.373*** (0.125)	0.315** (0.120)	0.369*** (0.119)
Foreign Ownership Y:1 N:0			0.246* (0.139)	0.246* (0.137)	0.258* (0.135)			0.247** (0.114)	0.228** (0.111)	0.236** (0.110)
Firm is Financially Constrained Y:1 N:0			-0.239*** (0.082)	-0.206** (0.083)	-0.212*** (0.080)			-0.306*** (0.112)	-0.282*** (0.106)	-0.244** (0.103)
Female Top Manager Y:1 N:0				-0.241*** (0.083)	-0.231*** (0.081)				-0.232** (0.093)	-0.193** (0.088)
Firm Provides Training Y:1 N:0				0.001 (0.001)	0.001 (0.001)				0.002** (0.001)	0.002** (0.001)
Courts Obstacle Y:1 N:0				-0.016 (0.081)	-0.001 (0.076)				0.008 (0.077)	0.001 (0.072)
Total hours of power outages				-0.001 (0.001)	-0.001 (0.001)				-0.002*** (0.000)	-0.002*** (0.001)
Firm Purchased Fixed Assets Y:1 N:0				0.172** (0.072)	0.184** (0.074)				0.102 (0.080)	0.125 (0.077)
Time Tax				0.000 (0.072)	0.000 (0.074)				-0.004 (0.080)	-0.003 (0.077)

Population (logs)				(0.002)	(0.003)				(0.003)	(0.003)
					0.016					0.077
					(0.060)					(0.058)
Primary Education					-0.004					-0.015***
					(0.005)					(0.005)
Freedom from Business Regulations					0.060					-0.033
					(0.102)					(0.092)
Merchandize Trade to GDP ratio					-0.000					-0.003
					(0.003)					(0.003)
Growth rate of GDP per capita (% , annual)					0.017					0.037**
					(0.024)					(0.016)
Inflation (GDP deflator)					0.015					0.013
					(0.014)					(0.014)
Rule of Law					-0.219					0.017
					(0.267)					(0.256)
Control of Corruption					0.211					0.180
					(0.293)					(0.267)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	10.907***	4.548***	4.445***	4.395***	4.220**	12.247***	6.228***	5.310***	5.300***	6.612***
	(0.482)	(1.036)	(1.002)	(0.986)	(1.985)	(0.345)	(1.092)	(1.065)	(1.033)	(2.289)
Number of observations	9,779	9,779	9,779	9,779	9,779	15,762	15,762	15,762	15,762	15,762
R-squared	0.300	0.363	0.371	0.378	0.383	0.197	0.246	0.268	0.281	0.304

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)



**Table A6: Interaction term results for the level of labor productivity using the log of the number of workers**

Dependent variable: Labor Productivity (logs)	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Log of Number of workers (lagged)	0.551***	0.449***	0.435***	0.460***	0.423***
	(0.143)	(0.141)	(0.138)	(0.133)	(0.132)
Ethnic Fractionalization	-3.647***	-2.463***	-2.366***	-2.361***	-2.196***
	(0.628)	(0.564)	(0.560)	(0.535)	(0.556)
Log of Number of workers (lagged)	-0.018	0.031	-0.019	-0.056	-0.043
	(0.065)	(0.058)	(0.057)	(0.055)	(0.055)
GDP per capita (logs)		0.578***	0.557***	0.553***	0.506***
		(0.087)	(0.086)	(0.085)	(0.111)
Age of firm (logs)			0.108*	0.127**	0.130**
			(0.059)	(0.060)	(0.060)
Manager experience (years, logs)			0.036	0.015	0.006
			(0.061)	(0.061)	(0.057)
Exports (proportion of sales)			0.295***	0.274***	0.304***
			(0.110)	(0.104)	(0.103)
Foreign Ownership Y:1 N:0			0.183*	0.179*	0.177*
			(0.101)	(0.101)	(0.100)
Firm is Financially Constrained Y:1 N:0			-0.258***	-0.229***	-0.231***
			(0.072)	(0.072)	(0.069)
Female Top Manager Y:1 N:0				-0.242***	-0.218***
				(0.069)	(0.067)
Firm Provides Training Y:1 N:0				0.001**	0.001**
				(0.001)	(0.001)
Courts Obstacle Y:1 N:0				-0.032	-0.019
				(0.063)	(0.058)
Total hours of power outages				-0.001**	-0.001**
				(0.000)	(0.000)
Firm Purchased Fixed Assets Y:1 N:0				0.150**	0.163**
				(0.061)	(0.063)
Time Tax				-0.001	-0.001
				(0.002)	(0.002)
Population (logs)					0.026
					(0.053)
Primary Education					-0.008
					(0.005)
Freedom from Business Regulations					0.012
					(0.098)
Merchandize Trade to GDP ratio					-0.002
					(0.003)
Growth rate of GDP per capita (% , annual)					0.020
					(0.020)
Inflation (GDP deflator)					0.014
					(0.013)
Rule of Law					-0.063
					(0.254)
Control of Corruption					0.184
					(0.269)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	11.146***	5.296***	5.215***	5.228***	5.974***

	(0.480)	(1.005)	(0.956)	(0.929)	(2.066)
Number of observations	25,541	25,541	25,541	25,541	25,541
R-squared	0.285	0.333	0.341	0.349	0.356

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A7: Interaction term results for the level of labor productivity using the dummy for below median number of workers**

Dependent variable: Labor Productivity (logs)	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Below median number of workers Y:1 N:0	-1.457*** (0.379)	-1.226*** (0.381)	-1.173*** (0.366)	-1.232*** (0.355)	-1.136*** (0.350)
Ethnic Fractionalization	-1.066** (0.411)	-0.337 (0.357)	-0.293 (0.358)	-0.169 (0.353)	-0.186 (0.333)
Below median number of workers Y:1 N:0	0.131 (0.162)	0.022 (0.151)	0.146 (0.150)	0.233 (0.142)	0.211 (0.140)
GDP per capita (logs)		0.582*** (0.089)	0.560*** (0.087)	0.556*** (0.086)	0.509*** (0.113)
Age of firm (logs)			0.139** (0.058)	0.154** (0.059)	0.158*** (0.058)
Manager experience (years, logs)			0.035 (0.061)	0.012 (0.060)	0.005 (0.056)
Exports (proportion of sales)			0.366*** (0.110)	0.329*** (0.102)	0.361*** (0.100)
Foreign Ownership Y:1 N:0			0.242** (0.106)	0.228** (0.105)	0.227** (0.105)
Firm is Financially Constrained Y:1 N:0			-0.284*** (0.078)	-0.249*** (0.078)	-0.250*** (0.073)
Female Top Manager Y:1 N:0				-0.255*** (0.071)	-0.233*** (0.069)
Firm Provides Training Y:1 N:0				0.001** (0.001)	0.002** (0.001)
Courts Obstacle Y:1 N:0				-0.023 (0.065)	-0.012 (0.059)
Total hours of power outages				-0.001** (0.000)	-0.001** (0.000)
Firm Purchased Fixed Assets Y:1 N:0				0.156** (0.062)	0.172*** (0.063)
Time Tax				-0.001 (0.002)	-0.001 (0.002)
Population (logs)					0.033 (0.054)
Primary Education					-0.008 (0.005)
Freedom from Business Regulations					0.034 (0.098)
Merchandize Trade to GDP ratio					-0.002 (0.003)
Growth rate of GDP per capita (% , annual)					0.020 (0.021)
Inflation (GDP deflator)					0.013 (0.013)
Rule of Law					-0.049

					(0.253)
Control of Corruption					0.145
					(0.269)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	11.072***	5.400***	4.989***	4.810***	5.374**
	(0.408)	(1.014)	(0.959)	(0.930)	(2.087)
Number of observations	25,541	25,541	25,541	25,541	25,541
R-squared	0.275	0.325	0.336	0.345	0.352

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A8: Split sample results for the level of labor productivity using the dummy for below median number of workers**

Dependent variable: Labor Productivity (logs)	Below median Number of workers (<30 workers)					Above median Number of workers (>=30 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	-2.264*** (0.420)	-1.227*** (0.341)	-1.190*** (0.341)	-1.146*** (0.335)	-1.096*** (0.338)	-1.669*** (0.465)	-0.786** (0.395)	-0.778** (0.384)	-0.676* (0.388)	-0.517 (0.345)
o.yr_f7	(dropped)	-0.501*** (0.094)	-0.443*** (0.102)	-0.394*** (0.115)	-0.130 (0.271)	-0.960*** (0.114)	-0.710*** (0.130)	-0.760*** (0.138)	-0.733*** (0.150)	-0.392 (0.247)
GDP per capita (logs)		0.633*** (0.088)	0.612*** (0.085)	0.613*** (0.086)	0.598*** (0.113)		0.568*** (0.124)	0.538*** (0.121)	0.533*** (0.122)	0.444*** (0.159)
Log of Number of workers (lagged)		0.275*** (0.057)	0.236*** (0.055)	0.217*** (0.055)	0.226*** (0.055)		0.166*** (0.045)	0.081* (0.041)	0.063 (0.041)	0.055 (0.040)
Age of firm (logs)			0.012 (0.068)	0.034 (0.069)	0.036 (0.069)			0.284*** (0.078)	0.287*** (0.078)	0.306*** (0.073)
Manager experience (years, logs)			0.033 (0.065)	0.011 (0.065)	0.009 (0.063)			0.054 (0.068)	0.038 (0.068)	0.006 (0.062)
Exports (proportion of sales)			0.511*** (0.136)	0.493*** (0.132)	0.522*** (0.130)			0.250* (0.136)	0.221* (0.132)	0.290** (0.145)
Foreign Ownership Y:1 N:0			0.193 (0.132)	0.188 (0.133)	0.195 (0.132)			0.223** (0.105)	0.221** (0.102)	0.231** (0.100)
Firm is Financially Constrained Y:1 N:0			-0.216*** (0.075)	-0.197** (0.077)	-0.200** (0.076)			-0.204 (0.162)	-0.165 (0.157)	-0.172 (0.151)
Female Top Manager Y:1 N:0				-0.201** (0.078)	-0.187** (0.078)				-0.233** (0.110)	-0.188* (0.101)
Firm Provides Training Y:1 N:0				0.001* (0.001)	0.001* (0.001)				0.001 (0.001)	0.001 (0.001)
Courts Obstacle Y:1 N:0				-0.011 (0.074)	0.001 (0.070)				0.027 (0.089)	0.048 (0.084)
Total hours of power outages				-0.001 (0.001)	-0.001 (0.001)				-0.001** (0.001)	-0.001** (0.001)
Firm Purchased Fixed Assets Y:1 N:0				0.136** (0.065)	0.147** (0.067)				0.074 (0.098)	0.103 (0.097)
Time Tax				-0.001 (0.002)	-0.000 (0.002)				-0.002 (0.004)	-0.001 (0.003)
Population (logs)					0.011 (0.058)					0.061 (0.063)

Primary Education					-0.006 (0.005)					-0.008 (0.006)
Freedom from Business Regulations					0.026 (0.104)					-0.032 (0.091)
Merchandize Trade to GDP ratio					-0.000 (0.003)					-0.003 (0.003)
Growth rate of GDP per capita (% , annual)					0.012 (0.024)					0.054*** (0.014)
Inflation (GDP deflator)					0.016 (0.013)					0.013 (0.015)
Rule of Law					-0.173 (0.260)					-0.021 (0.276)
Control of Corruption					0.207 (0.291)					0.217 (0.277)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	9.834*** (0.574)	3.644*** (1.130)	3.871*** (1.117)	3.781*** (1.101)	3.920** (1.918)	10.836*** (0.752)	4.132*** (1.505)	3.864*** (1.456)	3.888*** (1.429)	4.462* (2.644)
Number of observations	12,739	12,739	12,739	12,739	12,739	12,802	12,802	12,802	12,802	12,802
R-squared	0.296	0.370	0.377	0.383	0.388	0.175	0.227	0.243	0.250	0.270

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A9: Interaction term results for growth rate of labor productivity using the Small (<=19 workers) dummy**

Dependent variable: Growth Rate of Labor Productivity	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Small (<=19 workers) Y:1 N:0	-16.117*** (5.014)	-15.284*** (5.087)	-15.801*** (5.079)	-16.552*** (5.189)	-17.255*** (4.942)
Initial Labor Productivity (logs)	-5.753*** (0.561)	-6.018*** (0.543)	-6.075*** (0.532)	-6.137*** (0.553)	-6.080*** (0.576)
Ethnic Fractionalization	-8.871** (4.069)	-5.460 (4.136)	-5.067 (4.199)	-4.101 (4.340)	-2.732 (4.085)
Small (<=19 workers) Y:1 N:0	1.770 (2.285)	1.294 (2.303)	2.167 (2.411)	2.698 (2.374)	2.759 (2.284)
GDP per capita (logs)		2.873** (1.217)	2.850** (1.243)	2.777** (1.207)	3.669*** (1.365)
Age of firm (logs)			-0.203 (0.930)	-0.090 (0.938)	-0.011 (0.924)
Manager experience (years, logs)			0.731 (1.021)	0.607 (0.979)	0.744 (0.958)
Exports (proportion of sales)			3.953** (1.638)	3.795** (1.609)	3.711** (1.602)
Foreign Ownership Y:1 N:0			2.154 (1.462)	2.030 (1.478)	2.138 (1.491)
Firm is Financially Constrained Y:1 N:0			0.569 (1.765)	0.522 (1.690)	0.611 (1.654)
Female Top Manager Y:1 N:0				0.087 (1.202)	0.012 (1.257)
Firm Provides Training Y:1 N:0				0.007 (0.012)	0.005 (0.012)
Courts Obstacle Y:1 N:0				-1.029 (1.201)	-1.108 (1.207)
Total hours of power outages				-0.007 (0.009)	-0.005 (0.008)
Firm Purchased Fixed Assets Y:1 N:0				1.174 (1.038)	1.009 (1.028)
Time Tax				-0.057 (0.056)	-0.059 (0.055)
Population (logs)					-0.259 (0.839)
Primary Education					0.064 (0.086)
Freedom from Business Regulations					-0.261 (0.999)
Merchandize Trade to GDP ratio					0.007 (0.028)
Growth rate of GDP per capita (% , annual)					-0.221 (0.206)
Inflation (GDP deflator)					-0.298** (0.114)
Rule of Law					-7.120* (4.134)
Control of Corruption					5.894

Industry fixed effects	Yes	Yes	Yes	Yes	(3.693)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	68.260***	42.869**	41.445**	42.601**	44.497
	(13.657)	(19.035)	(18.648)	(18.814)	(32.625)
Number of observations	23,852	23,852	23,852	23,852	23,852
R-squared	0.161	0.166	0.168	0.170	0.177

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)



**Table A10: Split sample results for the growth rate of labor productivity using the Small (<=19 workers) dummy**

Dependent variable: Growth Rate of Labor Productivity	Small (<20 workers)					Medium & Large firms (>=20 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	-22.304*** (5.529)	-17.705*** (5.672)	-17.388*** (5.665)	-17.242*** (5.730)	-18.000*** (5.560)	-9.012*** (3.244)	-4.837 (3.400)	-4.981 (3.403)	-3.738 (3.426)	-1.312 (3.358)
Initial Labor Productivity (logs)	-5.788*** (0.735)	-6.151*** (0.719)	-6.236*** (0.696)	-6.271*** (0.723)	-6.200*** (0.754)	-5.908*** (0.497)	-6.180*** (0.508)	-6.188*** (0.529)	-6.275*** (0.525)	-6.274*** (0.526)
GDP per capita (logs)		3.462** (1.474)	3.187** (1.528)	3.207** (1.523)	4.772*** (1.736)		2.994** (1.229)	3.098** (1.236)	3.042** (1.210)	2.653** (1.297)
Age of firm (logs)			-0.214 (1.287)	-0.112 (1.259)	0.031 (1.237)			-0.344 (0.828)	-0.201 (0.846)	0.001 (0.832)
Manager experience (years, logs)			2.015 (1.414)	1.777 (1.384)	1.848 (1.357)			-0.587 (0.933)	-0.692 (0.929)	-0.626 (0.940)
Exports (proportion of sales)			9.542** (3.934)	9.887** (4.014)	9.944** (3.985)			1.458 (1.383)	1.111 (1.370)	1.191 (1.421)
Foreign Ownership Y:1 N:0			1.775 (2.969)	1.340 (2.982)	1.305 (2.955)			2.127 (1.467)	2.118 (1.405)	2.215 (1.374)
Firm is Financially Constrained Y:1 N:0			0.307 (2.087)	0.171 (2.013)	0.541 (1.960)			1.508 (2.229)	1.680 (2.211)	1.642 (2.212)
Female Top Manager Y:1 N:0				-0.433 (1.683)	-0.535 (1.698)				-0.543 (1.674)	-0.392 (1.627)
Firm Provides Training Y:1 N:0				0.007 (0.019)	0.005 (0.019)				0.004 (0.010)	-0.000 (0.010)
Courts Obstacle Y:1 N:0				-0.404 (1.521)	-0.613 (1.477)				-0.925 (1.227)	-0.622 (1.309)
Total hours of power outages				-0.002 (0.014)	-0.000 (0.012)				-0.013** (0.006)	-0.009 (0.006)
Firm Purchased Fixed Assets Y:1 N:0				1.749 (1.411)	1.564 (1.377)				1.349 (1.243)	1.079 (1.263)
Time Tax				-0.111* (0.062)	-0.104* (0.061)				0.008 (0.045)	0.002 (0.044)
Population (logs)					-0.664 (0.995)					-0.103 (0.793)
Primary Education					0.053 (0.098)					0.040 (0.068)
Freedom from Business Regulations					0.073 (1.282)					-1.380 (0.921)

Merchandise Trade to GDP ratio					-0.019 (0.034)					0.031 (0.024)
Growth rate of GDP per capita (% , annual)					-0.321 (0.261)					0.343* (0.194)
Inflation (GDP deflator)					-0.344** (0.143)					-0.305*** (0.111)
Rule of Law					-6.806 (5.165)					-7.331** (2.979)
Control of Corruption					3.974 (4.790)					7.879*** (2.932)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	47.098*** (11.284)	16.066 (16.079)	15.768 (15.388)	17.091 (16.328)	7.896 (35.501)	64.599*** (9.472)	36.540** (14.185)	37.638*** (14.238)	37.378*** (13.984)	39.516 (28.819)
Number of observations	9,111	9,111	9,111	9,111	9,111	14,741	14,741	14,741	14,741	14,741
R-squared	0.151	0.158	0.163	0.168	0.176	0.196	0.201	0.203	0.206	0.218

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A11: Interaction term results for growth rate of labor productivity using the log of the number of workers**

Dependent variable: Growth Rate of Labor Productivity	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Log of Number of workers (lagged)	4.335** (1.915)	3.947** (1.949)	4.208** (1.955)	4.404** (1.957)	4.755** (1.935)
Initial Labor Productivity (logs)	-5.840*** (0.555)	-6.120*** (0.535)	-6.128*** (0.529)	-6.164*** (0.550)	-6.116*** (0.575)
Ethnic Fractionalization	-30.884*** (8.288)	-25.628*** (8.549)	-26.367*** (8.555)	-26.461*** (8.438)	-26.533*** (8.125)
Log of Number of workers (lagged)	0.798 (0.879)	1.044 (0.878)	0.795 (0.920)	0.700 (0.900)	0.659 (0.872)
GDP per capita (logs)		3.015** (1.240)	2.980** (1.262)	2.885** (1.228)	3.717*** (1.356)
Age of firm (logs)			-0.813 (0.992)	-0.723 (0.982)	-0.663 (0.973)
Manager experience (years, logs)			0.921 (1.035)	0.835 (0.988)	0.947 (0.966)
Exports (proportion of sales)			2.489 (1.712)	2.437 (1.688)	2.332 (1.708)
Foreign Ownership Y:1 N:0			1.314 (1.469)	1.232 (1.478)	1.278 (1.497)
Firm is Financially Constrained Y:1 N:0			0.782 (1.741)	0.657 (1.672)	0.734 (1.637)
Female Top Manager Y:1 N:0				0.396 (1.186)	0.356 (1.246)
Firm Provides Training Y:1 N:0				0.001 (0.012)	-0.001 (0.012)
Courts Obstacle Y:1 N:0				-1.225 (1.192)	-1.261 (1.194)
Total hours of power outages				-0.006 (0.008)	-0.004 (0.007)
Firm Purchased Fixed Assets Y:1 N:0				0.888 (1.040)	0.666 (1.036)
Time Tax				-0.058 (0.055)	-0.060 (0.055)
Population (logs)					-0.427 (0.836)
Primary Education					0.060 (0.086)
Freedom from Business Regulations					-0.561 (1.006)
Merchandize Trade to GDP ratio					0.007 (0.029)
Growth rate of GDP per capita (% , annual)					-0.209 (0.208)
Inflation (GDP deflator)					-0.275** (0.113)
Rule of Law					-7.160* (4.175)
Control of Corruption					6.423* (3.739)

Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	67.423*** (14.060)	39.735** (19.719)	40.559** (19.419)	42.747** (19.465)	40.812 (31.865)
Number of observations	23,852	23,852	23,852	23,852	23,852
R-squared	0.163	0.168	0.169	0.172	0.178

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%).

**Table A12: Interaction term results for growth rate of labor productivity using the dummy for below median number of workers**

Dependent variable: Growth Rate of Labor Productivity	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Below median number of workers Y:1 N:0	-13.566*** (4.383)	-12.768*** (4.481)	-13.450*** (4.489)	-14.067*** (4.436)	-14.835*** (4.366)
Ethnic Fractionalization	-9.407** (4.156)	-5.965 (4.283)	-5.316 (4.359)	-4.449 (4.462)	-3.112 (4.318)
Below median number of workers Y:1 N:0	1.550 (1.803)	1.038 (1.816)	2.207 (1.885)	2.682 (1.741)	2.801 (1.701)
Initial Labor Productivity (logs)	-5.710*** (0.560)	-5.984*** (0.543)	-6.056*** (0.530)	-6.114*** (0.546)	-6.060*** (0.568)
GDP per capita (logs)		2.940** (1.236)	2.891** (1.262)	2.825** (1.224)	3.705*** (1.377)
Age of firm (logs)			-0.095 (0.952)	0.015 (0.955)	0.090 (0.947)
Manager experience (years, logs)			0.875 (1.034)	0.743 (0.987)	0.878 (0.969)
Exports (proportion of sales)			4.360** (1.676)	4.168** (1.649)	4.089** (1.641)
Foreign Ownership Y:1 N:0			2.433* (1.426)	2.264 (1.449)	2.382 (1.477)
Firm is Financially Constrained Y:1 N:0			0.328 (1.780)	0.299 (1.706)	0.392 (1.673)
Female Top Manager Y:1 N:0				0.156 (1.194)	0.086 (1.253)
Firm Provides Training Y:1 N:0				0.009 (0.012)	0.006 (0.012)
Courts Obstacle Y:1 N:0				-1.030 (1.214)	-1.114 (1.219)
Total hours of power outages				-0.006 (0.008)	-0.003 (0.007)
Firm Purchased Fixed Assets Y:1 N:0				1.242 (1.044)	1.091 (1.041)
Time Tax				-0.060 (0.057)	-0.061 (0.056)
Population (logs)					-0.276 (0.853)
Primary Education					0.059 (0.086)
Freedom from Business Regulations					-0.208 (0.977)
Merchandize Trade to GDP ratio					0.006 (0.028)
Growth rate of GDP per capita (% , annual)					-0.207 (0.208)

Inflation (GDP deflator)					-0.291** (0.114)
Rule of Law					-6.966* (4.155)
Control of Corruption					5.665 (3.717)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	68.629*** (13.664)	42.732** (19.210)	40.612** (18.777)	41.681** (19.001)	44.329 (32.567)
Number of observations	23,852	23,852	23,852	23,852	23,852
R-squared	0.154	0.159	0.162	0.165	0.171

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%).

**Table A13: Split sample results for the growth rate of labor productivity using the dummy for below median number of workers**

Dependent variable: Growth Rate of Labor Productivity	Below median Number of workers (<30 workers)					Above median Number of workers (>=30 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	-20.626*** (5.195)	-14.806*** (5.291)	-14.861*** (5.303)	-14.680*** (5.310)	-14.622*** (5.026)	-12.456*** (3.853)	-8.256** (3.966)	-8.464** (3.947)	-6.667* (3.766)	-4.556 (3.451)
Initial Labor Productivity (logs)	-5.725*** (0.676)	-6.229*** (0.631)	-6.266*** (0.617)	-6.272*** (0.643)	-6.207*** (0.677)	-5.935*** (0.534)	-6.240*** (0.564)	-6.257*** (0.574)	-6.281*** (0.566)	-6.321*** (0.569)
GDP per capita (logs)		3.566*** (1.350)	3.387** (1.393)	3.354** (1.390)	4.878*** (1.519)		2.861* (1.551)	3.021* (1.556)	2.930* (1.570)	2.152 (1.695)
Log of Number of workers (lagged)		5.799*** (1.222)	5.618*** (1.278)	5.507*** (1.254)	5.682*** (1.259)		1.753*** (0.656)	1.293** (0.639)	1.360** (0.643)	1.309** (0.653)
Age of firm (logs)			-1.244 (1.203)	-1.177 (1.162)	-1.050 (1.151)			0.435 (1.005)	0.608 (1.014)	0.980 (0.976)
Manager experience (years, logs)			1.448 (1.357)	1.267 (1.311)	1.289 (1.280)			-0.674 (0.924)	-0.637 (0.934)	-0.703 (0.969)
Exports (proportion of sales)			6.876** (3.101)	7.022** (3.149)	7.105** (3.139)			1.232 (1.742)	1.095 (1.719)	1.089 (1.746)
Foreign Ownership Y:1 N:0			0.306 (2.320)	-0.088 (2.377)	-0.005 (2.369)			3.388** (1.681)	3.630** (1.567)	3.640** (1.539)
Firm is Financially Constrained Y:1 N:0			0.778 (2.029)	0.569 (1.963)	0.756 (1.928)			1.557 (2.617)	1.479 (2.571)	1.505 (2.522)
Female Top Manager Y:1 N:0				0.502 (1.536)	0.443 (1.583)				-0.542 (1.895)	-0.518 (1.790)
Firm Provides Training Y:1 N:0				0.008 (0.018)	0.007 (0.017)				-0.005 (0.012)	-0.009 (0.012)
Courts Obstacle Y:1 N:0				-0.613 (1.410)	-0.761 (1.406)				-1.404 (1.377)	-0.754 (1.376)
Total hours of power outages				-0.001 (0.011)	0.000 (0.009)				-0.022** (0.011)	-0.016 (0.011)
Firm Purchased Fixed Assets Y:1 N:0				0.946 (1.228)	0.630 (1.225)				0.289 (1.571)	0.026 (1.533)
Time Tax				-0.100* (0.058)	-0.097* (0.056)				0.045 (0.057)	0.045 (0.055)
Population (logs)					-0.851 (0.963)					-0.414 (0.804)
Primary Education					0.033 (0.093)					0.076 (0.082)

Freedom from Business Regulations					-0.700					-1.260
					(1.186)					(0.836)
Merchandize Trade to GDP ratio					0.005					-0.004
					(0.033)					(0.026)
Growth rate of GDP per capita (% , annual)					-0.387					0.690***
					(0.246)					(0.214)
Inflation (GDP deflator)					-0.255**					-0.296**
					(0.126)					(0.118)
Rule of Law					-8.538*					-6.789**
					(4.600)					(3.217)
Control of Corruption					6.689					7.918**
					(4.278)					(3.045)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	52.339***	5.718	8.018	9.744	9.654	65.463***	30.911*	32.400**	31.694*	55.388*
	(9.957)	(14.711)	(13.979)	(14.593)	(32.937)	(7.459)	(16.190)	(16.178)	(16.375)	(30.361)
Number of observations	11,888	11,888	11,888	11,888	11,888	11,964	11,964	11,964	11,964	11,964
R-squared	0.150	0.173	0.176	0.180	0.188	0.208	0.216	0.220	0.225	0.241

Huber-White robust standard errors clustered on the country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)



**Table A14: Interaction term results for the level of labor productivity and quality certification**

Dependent variable: Labor Productivity (logs)	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization*Quality Certification Y:1 N:0	0.950** (0.363)	0.869** (0.376)	0.732** (0.359)	0.769** (0.349)	0.688* (0.359)
Ethnic Fractionalization	-2.174*** (0.400)	-1.360*** (0.339)	-1.242*** (0.341)	-1.170*** (0.336)	-1.116*** (0.346)
Quality Certification Y:1 N:0	0.424*** (0.149)	0.348** (0.145)	0.275* (0.146)	0.203 (0.142)	0.234 (0.144)
GDP per capita (logs)		0.534*** (0.090)	0.520*** (0.088)	0.523*** (0.087)	0.479*** (0.115)
Age of firm (logs)			0.182*** (0.058)	0.193*** (0.058)	0.193*** (0.056)
Manager experience (years, logs)			0.030 (0.058)	0.010 (0.058)	0.005 (0.055)
Exports (proportion of sales)			0.306*** (0.110)	0.268** (0.102)	0.292*** (0.101)
Foreign Ownership Y:1 N:0			0.240** (0.110)	0.231** (0.110)	0.227** (0.108)
Firm is Financially Constrained Y:1 N:0			-0.303*** (0.080)	-0.268*** (0.081)	-0.262*** (0.073)
Female Top Manager Y:1 N:0				-0.264*** (0.073)	-0.245*** (0.071)
Firm Provides Training Y:1 N:0				0.001 (0.001)	0.001 (0.001)
Courts Obstacle Y:1 N:0				-0.021 (0.061)	-0.015 (0.054)
Total hours of power outages				-0.001** (0.000)	-0.001** (0.000)
Firm Purchased Fixed Assets Y:1 N:0				0.162*** (0.059)	0.182*** (0.061)
Time Tax				0.000 (0.002)	0.000 (0.002)
Population (logs)					0.044 (0.054)
Primary Education					-0.007 (0.005)
Freedom from Business Regulations					0.075 (0.093)
Merchandize Trade to GDP ratio					-0.002 (0.003)
Growth rate of GDP per capita (% , annual)					0.025 (0.020)
Inflation (GDP deflator)					0.012 (0.014)

Rule of Law					-0.039 (0.253)
Control of Corruption					0.061 (0.266)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	11.337*** (0.412)	6.082*** (1.009)	5.528*** (0.957)	5.354*** (0.934)	4.878** (1.957)
Number of observations	25,088	25,088	25,088	25,088	25,088
R-squared	0.283	0.325	0.339	0.347	0.354

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A15: Split sample results for the level of labor productivity and quality certification**

Dependent variable: Labor Productivity (logs)	Firm has Quality Certification: No					Firm has Quality Certification: Yes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	-2.149*** (0.398)	-1.295*** (0.335)	-1.174*** (0.336)	-1.110*** (0.331)	-1.085*** (0.344)	-1.260*** (0.384)	-0.735* (0.391)	-0.708* (0.394)	-0.459 (0.376)	-0.425 (0.326)
GDP per capita (logs)		0.563*** (0.095)	0.547*** (0.090)	0.555*** (0.090)	0.517*** (0.118)		0.398*** (0.108)	0.393*** (0.113)	0.381*** (0.109)	0.307** (0.125)
Age of firm (logs)			0.162** (0.064)	0.175*** (0.064)	0.175*** (0.063)			0.255*** (0.072)	0.275*** (0.072)	0.294*** (0.074)
Manager experience (years, logs)			0.017 (0.066)	-0.005 (0.066)	-0.008 (0.064)			0.099 (0.074)	0.085 (0.076)	0.060 (0.069)
Exports (proportion of sales)			0.405** (0.171)	0.345** (0.161)	0.351** (0.156)			0.209* (0.107)	0.221** (0.102)	0.250** (0.108)
Foreign Ownership Y:1 N:0			0.261** (0.122)	0.271** (0.121)	0.263** (0.116)			0.167 (0.172)	0.125 (0.167)	0.156 (0.169)
Firm is Financially Constrained Y:1 N:0			-0.321*** (0.085)	-0.287*** (0.085)	-0.275*** (0.077)			-0.062 (0.162)	-0.005 (0.156)	-0.027 (0.145)
Female Top Manager Y:1 N:0				-0.259*** (0.082)	-0.248*** (0.080)				-0.351** (0.152)	-0.294* (0.152)
Firm Provides Training Y:1 N:0				0.001 (0.001)	0.001 (0.001)				0.001 (0.001)	0.001 (0.001)
Courts Obstacle Y:1 N:0				0.008 (0.066)	0.014 (0.058)				-0.137 (0.094)	-0.082 (0.082)
Total hours of power outages				-0.001 (0.001)	-0.001 (0.001)				-0.002*** (0.001)	-0.002*** (0.001)
Firm Purchased Fixed Assets Y:1 N:0				0.179*** (0.068)	0.196*** (0.070)				0.069 (0.086)	0.051 (0.083)
Time Tax				0.000 (0.002)	0.000 (0.002)				0.000 (0.003)	0.001 (0.003)
Population (logs)					0.038 (0.059)					0.075 (0.054)
Primary Education					-0.005					-0.016**

					(0.005)					(0.007)
Freedom from Business Regulations					0.100					-0.066
					(0.099)					(0.095)
Merchandize Trade to GDP ratio					-0.001					-0.004
					(0.003)					(0.003)
Growth rate of GDP per capita (% , annual)					0.024					0.045
					(0.021)					(0.027)
Inflation (GDP deflator)					0.009					0.020
					(0.014)					(0.013)
Rule of Law					-0.103					0.138
					(0.273)					(0.233)
Control of Corruption					0.047					0.241
					(0.278)					(0.242)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	11.903***	5.874***	5.340***	5.197***	4.969**	11.497***	8.042***	6.393***	6.302***	8.198***
	(0.478)	(1.089)	(1.055)	(1.030)	(2.183)	(0.431)	(1.044)	(1.086)	(1.066)	(2.255)
Number of observations	16,734	16,734	16,734	16,734	16,734	8,354	8,354	8,354	8,354	8,354
R-squared	0.247	0.299	0.314	0.322	0.329	0.167	0.187	0.204	0.221	0.246

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A16: Interaction term results for the growth rate of labor productivity and quality certification**

Dependent variable: Growth Rate of Labor Productivity	(1)	(2)	(3)	(4)	(5)
Ethnic Fractionalization* Quality Certification Y:1 N:0	11.398*** (3.970)	11.251*** (4.134)	10.779*** (4.045)	11.127*** (4.089)	11.871*** (4.200)
Initial Labor Productivity (logs)	-5.777*** (0.549)	-6.009*** (0.539)	-6.115*** (0.524)	-6.156*** (0.543)	-6.101*** (0.558)
Ethnic Fractionalization	-20.866*** (4.848)	-17.221*** (5.087)	-16.759*** (5.111)	-16.502*** (5.152)	-15.684*** (4.712)
Quality Certification Y:1 N:0	0.537 (1.786)	0.216 (1.820)	-0.593 (1.803)	-1.013 (1.770)	-1.086 (1.841)
GDP per capita (logs)		2.691** (1.182)	2.704** (1.218)	2.667** (1.190)	3.478** (1.394)
Age of firm (logs)			0.454 (0.970)	0.560 (0.978)	0.644 (0.975)
Manager experience (years, logs)			0.913 (1.041)	0.792 (0.996)	0.989 (0.975)
Exports (proportion of sales)			4.455** (1.735)	4.249** (1.704)	4.159** (1.698)
Foreign Ownership Y:1 N:0			2.915** (1.419)	2.775* (1.453)	2.916* (1.484)
Firm is Financially Constrained Y:1 N:0			-0.164 (1.850)	-0.162 (1.782)	-0.046 (1.744)
Female Top Manager Y:1 N:0				0.042 (1.200)	-0.119 (1.261)
Firm Provides Training Y:1 N:0				0.006 (0.013)	0.003 (0.012)
Courts Obstacle Y:1 N:0				-0.905 (1.215)	-0.998 (1.226)
Total hours of power outages				-0.004 (0.009)	-0.002 (0.008)
Firm Purchased Fixed Assets Y:1 N:0				1.326 (1.087)	1.265 (1.096)
Time Tax				-0.050 (0.059)	-0.052 (0.059)
Population (logs)					-0.003 (0.865)
Primary Education					0.062 (0.088)
Freedom from Business Regulations					0.287 (0.901)
Merchandize Trade to GDP ratio					0.012 (0.028)
Growth rate of GDP per capita (% , annual)					-0.151

					(0.210)
Inflation (GDP deflator)					-0.292**
					(0.114)
Rule of Law					-6.791
					(4.261)
Control of Corruption					4.809
					(3.812)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	70.198***	47.221**	43.469**	43.968**	27.929
	(13.378)	(18.419)	(18.069)	(18.053)	(35.201)
Number of observations	23,445	23,445	23,445	23,445	23,445
R-squared	0.155	0.159	0.163	0.165	0.170

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Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A17: Split sample results for the growth rate of labor productivity and quality certification**

Dependent variable:	Firm has Quality Certification: No					Firm has Quality Certification: Yes				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Growth Rate of Labor Productivity										
Ethnic Fractionalization	-20.715*** (4.821)	-16.691*** (5.073)	-16.065*** (5.067)	-15.813*** (5.144)	-14.968*** (4.611)	-8.339** (3.560)	-7.608** (3.711)	-7.858** (3.664)	-6.806* (3.627)	-5.972 (3.633)
Initial Labor Productivity (logs)	-5.801*** (0.653)	-6.086*** (0.644)	-6.181*** (0.622)	-6.211*** (0.640)	-6.135*** (0.663)	-5.815*** (0.489)	-5.846*** (0.498)	-5.948*** (0.516)	-6.032*** (0.550)	-6.167*** (0.540)
GDP per capita (logs)		3.040** (1.353)	2.986** (1.392)	2.992** (1.391)	4.291*** (1.536)		0.561 (1.233)	0.725 (1.253)	0.528 (1.160)	-0.499 (1.338)
Age of firm (logs)			0.634 (1.113)	0.749 (1.115)	0.907 (1.102)			0.070 (1.001)	0.282 (1.050)	0.505 (1.028)
Manager experience (years, logs)			1.167 (1.235)	1.026 (1.180)	1.315 (1.172)			-0.016 (0.966)	-0.093 (0.981)	-0.167 (0.960)
Exports (proportion of sales)			6.050** (2.756)	5.815** (2.767)	5.564** (2.742)			1.330 (1.457)	1.465 (1.439)	1.308 (1.560)
Foreign Ownership Y:1 N:0			2.327 (1.939)	2.261 (1.996)	2.531 (2.040)			3.425** (1.403)	3.074** (1.400)	3.210** (1.466)
Firm is Financially Constrained Y:1 N:0			0.071 (2.078)	-0.010 (2.007)	0.099 (1.959)			-1.482 (1.811)	-1.229 (1.822)	-0.937 (1.727)
Female Top Manager Y:1 N:0				0.270 (1.416)	-0.035 (1.509)				-1.503 (2.011)	-1.255 (2.059)
Firm Provides Training Y:1 N:0				-0.001 (0.016)	-0.004 (0.015)				0.026* (0.014)	0.028* (0.015)
Courts Obstacle Y:1 N:0				-0.399 (1.410)	-0.416 (1.427)				-2.335* (1.327)	-1.726 (1.236)
Total hours of power outages				-0.004 (0.009)	-0.001 (0.008)				-0.004 (0.014)	0.000 (0.015)
Firm Purchased Fixed Assets Y:1 N:0				1.672 (1.293)	1.427 (1.298)				0.074 (1.617)	-0.165 (1.636)
Time Tax				-0.063 (0.067)	-0.065 (0.067)				0.040 (0.054)	0.048 (0.054)
Population (logs)					-0.253					0.741

					(0.947)					(0.788)
Primary Education					0.086					-0.086
					(0.094)					(0.070)
Freedom from Business Regulations					0.503					-0.590
					(1.042)					(1.005)
Merchandize Trade to GDP ratio					0.025					-0.044
					(0.033)					(0.029)
Growth rate of GDP per capita (% , annual)					-0.236					0.573*
					(0.218)					(0.316)
Inflation (GDP deflator)					-0.335***					-0.130
					(0.123)					(0.134)
Rule of Law					-9.322*					1.973
					(4.963)					(3.247)
Control of Corruption					6.070					1.314
					(4.216)					(3.452)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	56.570***	28.715**	23.316*	22.592*	9.695	72.084***	67.274***	65.603***	66.874***	76.241**
	(7.489)	(12.953)	(12.919)	(12.974)	(33.088)	(16.113)	(18.739)	(19.437)	(18.937)	(31.387)
Number of observations	15,663	15,663	15,663	15,663	15,663	7,782	7,782	7,782	7,782	7,782
R-squared	0.151	0.157	0.160	0.163	0.172	0.217	0.217	0.222	0.228	0.237

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)



**Table A18: Interaction term results for power outages**

Dependent variable: Total hours of power outages in a month	Without interaction term					With interaction term				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization*SME Y:1 N:0						28.105**	25.315**	27.326**	27.938**	27.711**
						(10.934)	(10.795)	(11.486)	(11.683)	(11.427)
Ethnic Fractionalization	58.002***	45.417***	46.337***	45.970***	43.980***	32.943*	22.926	22.321	21.450	20.074
	(21.596)	(17.168)	(16.956)	(16.527)	(16.481)	(19.093)	(14.653)	(14.272)	(13.770)	(12.507)
Log of Number of workers (lagged)		0.133	-0.573	-1.212	-1.571*					
		(0.880)	(0.981)	(0.910)	(0.846)					
SME Y:1 N:0						-9.743**	-8.297*	-6.343	-4.892	-4.395
						(4.615)	(4.526)	(4.823)	(5.052)	(4.838)
GDP per capita (logs)		-7.891*	-7.392*	-7.172*	-7.513		-7.801*	-7.333*	-7.108*	-7.467
		(4.273)	(3.955)	(3.793)	(5.683)		(4.273)	(3.964)	(3.792)	(5.659)
Age of firm (logs)			0.158	0.391	-0.017			0.518	0.563	0.016
			(1.565)	(1.544)	(1.721)			(1.196)	(1.179)	(1.362)
Manager experience (years, logs)			2.323	2.020	1.563			2.354	2.063	1.629
			(2.035)	(1.968)	(1.847)			(2.012)	(1.933)	(1.815)
Exports (proportion of sales)			-8.351	-9.117	-7.537			-7.878	-8.985	-7.626
			(6.316)	(6.551)	(6.753)			(5.404)	(5.763)	(6.043)
Foreign Ownership Y:1 N:0			15.172	15.153	14.938			15.946	15.747	15.341
			(9.247)	(9.307)	(9.117)			(9.812)	(9.791)	(9.539)
Firm is Financially Constrained Y:1 N:0			-2.194	-0.911	-1.244			-2.538	-1.132	-1.393
			(2.474)	(2.577)	(2.402)			(2.462)	(2.550)	(2.391)
Female Top Manager Y:1 N:0				-6.378*	-5.676*				-6.427*	-5.670*
				(3.215)	(3.022)				(3.299)	(3.097)
Firm Provides Training Y:1 N:0				0.007	0.019				0.006	0.017
				(0.027)	(0.024)				(0.025)	(0.022)
Courts Obstacle Y:1 N:0				3.047	1.542				3.250	1.726
				(2.769)	(2.857)				(2.869)	(2.930)
Firm Purchased Fixed Assets Y:1 N:0				4.425	5.304*				4.491	5.324*
				(2.790)	(2.747)				(2.966)	(2.924)
Time Tax				0.120	0.142*				0.120	0.141*
				(0.076)	(0.078)				(0.076)	(0.078)
Population (logs)					4.654*					4.725*
					(2.508)					(2.531)
Primary Education					-0.016					-0.013
					(0.293)					(0.292)
Freedom from Business Regulations					-1.177					-1.247

Merchandise Trade to GDP ratio					(2.200)					(2.209)
					-0.055					-0.052
					(0.059)					(0.059)
Growth rate of GDP per capita (% annual)					-0.689					-0.651
					(0.426)					(0.415)
Inflation (GDP deflator)					0.049					0.062
					(0.338)					(0.336)
Rule of Law					25.019**					24.443**
					(11.404)					(11.338)
Control of Corruption					-19.903**					-19.192**
					(9.125)					(9.084)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-29.154**	49.339	40.309	38.493	-28.457	-20.612	55.985	42.300	37.902	-31.202
	(13.023)	(34.359)	(32.453)	(31.230)	(89.347)	(12.403)	(34.824)	(32.074)	(30.478)	(87.681)
Number of observations	18,781	18,781	18,781	18,781	18,781	18,781	18,781	18,781	18,781	18,781
R-squared	0.079	0.088	0.095	0.100	0.120	0.080	0.089	0.097	0.103	0.122

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A19: Split sample results for power outages**

Dependent variable: Total hours of power outages in a month	SMEs (<100 workers)					Large firms (>=100 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	62.582** (24.010)	48.840** (18.740)	50.714*** (18.822)	50.517*** (18.394)	48.718*** (18.450)	30.398** (12.687)	24.911** (11.055)	24.790** (10.867)	24.015** (10.781)	26.611** (11.738)
GDP per capita (logs)		-8.525* (4.662)	-7.936* (4.257)	-7.641* (4.043)	-7.808 (6.013)		-3.505 (3.399)	-3.035 (3.444)	-3.297 (3.324)	-4.254 (4.396)
Age of firm (logs)			0.351 (1.447)	0.546 (1.417)	-0.043 (1.670)			1.017 (1.508)	0.846 (1.533)	0.624 (1.329)
Manager experience (years, logs)			2.971 (2.371)	2.572 (2.287)	2.115 (2.161)			-1.741 (3.063)	-1.525 (2.959)	-2.380 (2.792)
Exports (proportion of sales)			-9.693 (7.304)	-11.211 (7.789)	-10.549 (8.222)			-4.425 (3.156)	-3.925 (3.150)	1.905 (2.628)
Foreign Ownership Y:1 N:0			21.545 (13.327)	21.410 (13.330)	21.310 (12.972)			1.432 (2.810)	1.174 (2.920)	0.044 (3.034)
Firm is Financially Constrained Y:1 N:0			-2.783 (2.584)	-1.142 (2.681)	-1.385 (2.512)			-0.884 (3.816)	-0.319 (4.166)	-1.043 (3.958)
Female Top Manager Y:1 N:0				-6.855** (3.358)	-6.188* (3.158)				-0.339 (4.655)	1.192 (4.668)
Firm Provides Training Y:1 N:0				0.006 (0.028)	0.018 (0.025)				0.035 (0.036)	0.042 (0.033)
Courts Obstacle Y:1 N:0				3.013 (3.073)	1.231 (3.149)				5.286* (2.765)	5.480* (2.778)
Firm Purchased Fixed Assets Y:1 N:0				5.409 (3.355)	6.298* (3.327)				-1.217 (3.001)	0.423 (3.035)
Time Tax				0.139 (0.087)	0.160* (0.090)				0.023 (0.094)	0.058 (0.091)
Population (logs)					4.858* (2.734)					5.836** (2.541)
Primary Education					-0.000 (0.311)					0.081 (0.206)
Freedom from Business Regulations					-1.487 (2.390)					-1.116 (1.879)
Merchandize Trade to GDP ratio					-0.053 (0.063)					-0.052 (0.059)

Growth rate of GDP per capita (%, annual)					-0.723					0.244
					(0.463)					(0.399)
Inflation (GDP deflator)					0.086					-0.009
					(0.373)					(0.317)
Rule of Law					25.389**					17.773**
					(12.089)					(8.515)
Control of Corruption					-19.759**					-13.657
					(9.525)					(8.630)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-39.368**	41.896	23.286	14.938	-56.800	-23.556**	14.361	11.845	7.139	-106.662
	(17.186)	(36.574)	(35.613)	(32.948)	(100.466)	(9.112)	(33.034)	(34.584)	(33.306)	(82.585)
Number of observations	14,148	14,148	14,148	14,148	14,148	4,633	4,633	4,633	4,633	4,633
R-squared	0.080	0.090	0.101	0.107	0.127	0.098	0.102	0.104	0.109	0.146

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A20: Interaction term results the bribery rate**

Dependent variable: Bribery rate (proportion of sales)	Without interaction term					With interaction term				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization*SME Y:1 N:0						0.019*	0.017	0.017	0.019*	0.017
						(0.012)	(0.011)	(0.011)	(0.011)	(0.011)
Ethnic Fractionalization	0.028***	0.022***	0.022***	0.018***	0.024***	0.011	0.006	0.007	0.001	0.010
	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.010)	(0.011)	(0.012)	(0.011)	(0.013)
Log of Number of workers (lagged)		0.000	-0.000	-0.001	-0.001					
		(0.001)	(0.001)	(0.002)	(0.002)					
SME Y:1 N:0						-0.009**	-0.008**	-0.005	-0.004	-0.003
						(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
GDP per capita (logs)		-0.004	-0.004	-0.004	-0.002		-0.004	-0.004	-0.003	-0.002
		(0.003)	(0.003)	(0.003)	(0.003)		(0.003)	(0.003)	(0.003)	(0.003)
Age of firm (logs)			0.002	0.002	0.001			0.002	0.001	0.001
			(0.002)	(0.002)	(0.002)			(0.002)	(0.002)	(0.002)
Manager experience (years, logs)			-0.004	-0.004	-0.004			-0.004	-0.004	-0.004
			(0.003)	(0.003)	(0.003)			(0.003)	(0.003)	(0.003)
Exports (proportion of sales)			0.000	0.001	0.002			0.000	0.000	0.002
			(0.004)	(0.004)	(0.004)			(0.004)	(0.003)	(0.003)
Foreign Ownership Y:1 N:0			0.007	0.007	0.008			0.007	0.007	0.008
			(0.006)	(0.005)	(0.005)			(0.006)	(0.006)	(0.006)
Firm is Financially Constrained Y:1 N:0			-0.008**	-0.006*	-0.007*			-0.008**	-0.006*	-0.007*
			(0.004)	(0.003)	(0.004)			(0.003)	(0.003)	(0.004)
Female Top Manager Y:1 N:0				-0.003	-0.003				-0.003	-0.003
				(0.003)	(0.003)				(0.003)	(0.003)
Firm Provides Training Y:1 N:0				0.000	0.000				0.000	0.000
				(0.000)	(0.000)				(0.000)	(0.000)
Courts Obstacle Y:1 N:0				0.009***	0.008***				0.009***	0.008***
				(0.003)	(0.003)				(0.003)	(0.003)
Total hours of power outages				0.000	0.000				0.000	0.000
				(0.000)	(0.000)				(0.000)	(0.000)
Firm Purchased Fixed Assets Y:1 N:0				-0.001	-0.001				-0.001	-0.001
				(0.003)	(0.003)				(0.003)	(0.003)
Time Tax				0.001***	0.001***				0.001***	0.001***
				(0.000)	(0.000)				(0.000)	(0.000)
Population (logs)					0.004**					0.004**
					(0.002)					(0.002)
Primary Education					0.000					0.000

Freedom from Business Regulations					(0.000)					(0.000)
					-0.001					-0.001
					(0.002)					(0.002)
Merchandize Trade to GDP ratio					0.000					0.000
					(0.000)					(0.000)
Growth rate of GDP per capita (% , annual)					-0.002**					-0.002**
					(0.001)					(0.001)
Inflation (GDP deflator)					-0.000					-0.000
					(0.000)					(0.000)
Rule of Law					0.002					0.002
					(0.003)					(0.003)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.015***	0.028	0.034	0.022	-0.074	-0.007	0.035	0.036	0.022	-0.075
	(0.005)	(0.032)	(0.034)	(0.031)	(0.054)	(0.006)	(0.031)	(0.035)	(0.032)	(0.054)
Number of observations	22,230	22,230	22,230	22,230	22,230	22,230	22,230	22,230	22,230	22,230
R-squared	0.038	0.040	0.045	0.078	0.089	0.038	0.041	0.046	0.079	0.089

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)

**Table A21: Split sample results for bribery rate and ethnic fractionalization relationship**

Dependent variable: Bribery rate (proportion of sales)	SMEs (<100 workers)					Large firms (>=100 workers)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ethnic Fractionalization	0.030*** (0.007)	0.022*** (0.006)	0.023*** (0.007)	0.020*** (0.006)	0.026*** (0.009)	0.011* (0.006)	0.010* (0.006)	0.010* (0.006)	0.005 (0.007)	0.012 (0.008)
GDP per capita (logs)		-0.005 (0.003)	-0.004 (0.003)	-0.004 (0.003)	-0.002 (0.003)		-0.001 (0.004)	-0.000 (0.004)	0.001 (0.004)	0.000 (0.004)
Age of firm (logs)			0.003 (0.002)	0.002 (0.002)	0.002 (0.002)			-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)
Manager experience (years, logs)			-0.005 (0.004)	-0.004 (0.003)	-0.004 (0.003)			-0.003 (0.003)	-0.003 (0.002)	-0.002 (0.002)
Exports (proportion of sales)			0.000 (0.004)	-0.000 (0.004)	0.001 (0.004)			-0.004 (0.004)	-0.003 (0.004)	-0.001 (0.004)
Foreign Ownership Y:1 N:0			0.007 (0.006)	0.007 (0.006)	0.008 (0.006)			0.004 (0.006)	0.004 (0.006)	0.003 (0.005)
Firm is Financially Constrained Y:1 N:0			-0.008** (0.004)	-0.005* (0.003)	-0.007* (0.004)			-0.011** (0.005)	-0.010** (0.004)	-0.009** (0.004)
Female Top Manager Y:1 N:0				-0.004 (0.003)	-0.004 (0.003)				-0.005 (0.004)	-0.006* (0.003)
Firm Provides Training Y:1 N:0				0.000 (0.000)	0.000 (0.000)				0.000 (0.000)	0.000 (0.000)
Courts Obstacle Y:1 N:0				0.009*** (0.003)	0.007*** (0.002)				0.009** (0.004)	0.009** (0.004)
Total hours of power outages				0.000 (0.000)	0.000 (0.000)				0.000 (0.000)	0.000 (0.000)
Firm Purchased Fixed Assets Y:1 N:0				-0.001 (0.003)	-0.000 (0.003)				-0.004 (0.004)	-0.003 (0.004)
Time Tax				0.001*** (0.000)	0.001*** (0.000)				0.000 (0.000)	0.000 (0.000)
Population (logs)					0.004** (0.002)					0.004* (0.002)
Primary Education					0.000 (0.000)					0.000 (0.000)
Freedom from Business Regulations					-0.001 (0.002)					0.001 (0.003)
Merchandize Trade to GDP ratio					0.000 (0.000)					0.000 (0.000)

Growth rate of GDP per capita (%, annual)					-0.002**					-0.001*
					(0.001)					(0.000)
Inflation (GDP deflator)					-0.000					-0.000
					(0.000)					(0.000)
Rule of Law					0.001					0.002
					(0.003)					(0.005)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.019***	0.028	0.028	0.014	-0.066	0.018***	0.017	0.028	0.014	-0.123
	(0.006)	(0.029)	(0.032)	(0.028)	(0.049)	(0.003)	(0.035)	(0.038)	(0.037)	(0.081)
Number of observations	17,037	17,037	17,037	17,037	17,037	5,193	5,193	5,193	5,193	5,193
R-squared	0.039	0.042	0.047	0.084	0.095	0.058	0.058	0.064	0.087	0.099

Huber-White robust standard errors clustered on country in brackets. Significance is denoted by \*\*\* (1%), \*\* (5%), \* (10%)