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SMEs, GROWTH, AND POVERTY

Thorsten Beck
Asli Demirgüç-Kunt
Ross Levine

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ABSTRACT

This paper explores the relationship between the relative size of the Small and Medium Enterprise (SME) sector, economic growth, and poverty alleviation using a new database on the share of SME labor in the total manufacturing labor force. Using a sample of 45 countries, we find a strong, positive association between the importance of SMEs and GDP per capita growth. The data do not, however, confidently support the conclusions that SMEs exert a causal impact on growth. Furthermore, we find no evidence that SMEs alleviate poverty or decrease income inequality.

Thorsten Beck
World Bank
tbeck@worldbank.org

Asli Demirgüç-Kunt
World Bank
ademirguckunt@worldbank.org

Ross Levine
Finance Department, Room 3-257
Carlson School of Management
University of Minnesota
321 19th Avenue South
Minneapolis, MN 55455
and NBER
rlevine@csom.umn.edu

I. Introduction

To accelerate growth and reduce poverty, the World Bank Group and other international aid agencies provide targeted assistance to small and medium size enterprises (SMEs) in developing economies. For example, the World Bank Group approved more than $10 billion in SME support programs over the period 1998 – 2002 and $1.3 billion in 2003.[1]

This ***pro-SME*** policy is based on three core arguments (World Bank, 1994, 2002, 2004). First, SME advocates argue that SMEs enhance competition and entrepreneurship and hence have external benefits on economy-wide efficiency, innovation, and aggregate productivity growth. From this perspective, direct government support of SMEs will help countries exploit the social benefits from greater competition and entrepreneurship. Second, SME proponents frequently claim that SMEs are more productive than large firms but financial market and other institutional failures impede SME development. Thus, pending financial and institutional improvements, direct government financial support to SMEs can boost economic growth and development. Finally, some argue that SME expansion boosts employment more than large firm growth because SMEs are more labor intensive. From this perspective, subsidizing SMEs may represent a poverty alleviation tool.

While the international community channels a large amount of aid into subsidizing SMEs, four ***skeptical views*** question the efficacy of this policy. First, some authors stress the advantages of large firms and challenge the assumptions underlying the pro-SME view. Specifically, large enterprises may exploit economies of scale and more easily undertake the fixed costs associated with research and development (R&D) with positive productivity effects

[1] These statistics are from World Bank (2002, 2004). The World Bank provides direct and indirect support to SMEs. In terms of World Bank activities, 80 percent of World Bank programs involve direct financial assistance to SMEs, while 20 percent of World Bank programs involve indirect support such as technical assistance for SMEs and for institutions that support SME development.

(Pagano and Schivardi, 2001; Pack and Westphal, 1986). Also, some hold that large firms provide more stable and therefore higher quality jobs than small firms with positive ramifications for poverty alleviation (Rosenzweig, 1988; Brown et al., 1990).

A second set of skeptical views directly challenges the assumptions underlying pro-SME arguments. In particular, some research finds that SMEs are neither more labor intensive, nor better at job creation than large firms (Little, et al., 1987). Furthermore, recent work finds that under-developed financial and legal institutions hurt many types of firms besides SMEs. Indeed, research finds that under-developed institutions constrain firms from growing to their efficient sizes (Beck, et al., 2003; and Kumar, et al., 2001).

A third set of skeptical views question the validity of considering firm size as an exogenous determinant of economic growth. From the industrial organization literature, natural resource endowments, technology, policies, and institutions help determine a nation's industrial composition and optimal firm size (Kumar, et al., 2001). For instance, some countries may have endowments that give the country a comparative advantage in the production of goods that are produced efficiently in large firms while other countries will have a comparative advantage in goods produced most economically in small firms (You, 1995). Similarly, countries that are open to international trade may have a larger optimal firm size than countries that are less integrated internationally (Caves et al., 1980). As a final example, institutional theories suggest that firm size will reflect the margin between intra-firm transactions costs and market transactions costs, such that as market transaction costs fall relative to intra-firm transactions costs the optimal firm size falls (Coase, 1937). This margin will vary across industries and countries for various institutional and technological reasons. Thus, pro-SME subsidization policies could actually distort firm size and potentially hurt economic efficiency.

A fourth skeptical view regarding the efficacy of pro-SME policies, which we term the business environment view, doubts the crucial role of SMEs, but instead stresses the importance of the business environment facing all firms, big and small. Low entry and exit barriers, well-defined property rights, and effective contract enforcement characterize a business environment that is conducive to competition and private commercial transactions. While these factors may encourage SMEs, the focus of the business environment view is not on SMEs per se; it is on the environment facing all businesses. Thus, consistent with the other skeptical views, the business environment view questions the pro-SME policy prescription of subsidizing SME development.

The microeconomic evidence from individual countries does not provide much support for the pro-SME view. The bulk of the firm-level evidence does not support the contention that SMEs are particularly effective job creators. Furthermore, microeconomic research does not universally support the claim that SMEs foster innovation. Finally, while some firm-level studies find that SMEs intensify competition, the direct evidence on productivity growth fails to confirm the pro-SME view. Thus, as we discuss further in the next section, firm-level studies do not provide an empirical foundation for subsidizing SMEs.

These microeconomic studies, however, are country-specific and only involve a small number of countries. Thus, it is natural to ask whether cross-country evidence provides an empirical basis for pro-SME policies. However, the absence of comparable international data on SMEs has hampered cross-country analyses of SMEs, growth, and poverty.

This paper provides the first cross-country evidence on the links between SMEs and economic growth and poverty alleviation using a newly built database on SMEs. Our SME measure is the share of the manufacturing labor force in firms with 250 or fewer employees in total manufacturing labor force. We then assess the relationship between the size of SME sector and economic growth as measured by per capita Gross Domestic Product (GDP) growth

averaged over the 1990s. Next, we examine the relationship between SMEs, income inequality and poverty, using four measures: (1) the growth rate of the income of the poorest quintile of the population during the 1990s, (2) the growth rate in the Gini coefficient, (3) the growth rate in the percentage of the population living on less than a dollar a day, and (4) the growth rate in the "poverty gap," which is a weighted average of the fraction of the population living on less than a dollar a day and how far below one dollar day incomes fall. In conducting these analyses, we control for an array of country-specific factors. Further, besides examining the relationship between the size of the SME sector and economic development, we offer an initial assessment of whether SMEs exert a causal impact on economic growth and poverty alleviation.

The cross-country regressions yield three results. First, in the sense of Levine and Renelt (1992), there is a robust, positive relationship between the relative size of the SME sector and economic growth. Thus, even when controlling for many other growth determinants - including an aggregate index of the overall business environment that incorporates information on entry and exit barriers, effective property rights protection, and sound contract enforcement, we find a statistically significant and economically large relationship between growth and the size of the SME sector. This relationship is also robust to controlling for the effects of outliers and to using an indicator of the SME sector limited to the first available observation in the 1990s. Second, we find that the SME-growth relationship is not robust to using instrumental variables to control for endogeneity. While SMEs are a characteristic of fast-growing economies, cross-country analyses do not necessarily support the conclusion that SMEs exert a causal impact on long-run growth. Third, we do not find a significant relationship between SMEs and poverty alleviation. Specifically, the size of the SME sector is not significantly associated with the growth rates of (i) the income of the poorest quintile of society, (ii) the Gini coefficient, (iii) the percentage of the population living on less than one dollar a day, or (iv) the poverty gap when controlling for the

growth of GDP per capita. Thus, we do not find that SMEs exert a differential impact on the poor.

Consistent with industrial organization theories described above, this paper finds that although fast growing economies tend to have large SME sectors, cross-country analyses do not provide strong support for the view that SMEs exert a causal impact on growth and poverty alleviation. As discussed in more detail below, the causality results should be interpreted cautiously. The regressions do not necessarily lead to the conclusion that SMEs do not foster growth and poverty alleviation. Rather, we generally fail to reject the hypothesis that SMEs do not exert a causal impact on growth and poverty. In sum, the cross-country results are consistent with the view that a large SME sector in manufacturing is a characteristic of successful economies, not necessarily an exogenous, causal factor.

A number of qualifications must be emphasized. First, this paper examines cross-country regressions and therefore does not trace the experience of any single country in depth. Thus, individual countries may have experiences that differ from the aggregate results presented here.

Second, as discussed in Levine and Zervos (1993), some observers hold that countries are so different that they cannot be viewed as being drawn from the same population and therefore reject the validity of cross-country regressions. Our own assessment is that we control for sufficient country characteristics such that we garner useful –albeit not definitive -- information from the cross-country comparisons. Furthermore, our skeptical results regarding pro-SME policies are consistent with the bulk of the microeconomic evidence.

Third, when computing the average rate of per capita GDP growth over the 1990s, the data may reflect steady-state growth factors, transitional dynamics, business cycle phenomena, and crises. Given that our SME data are limited to the 1990s, we cannot assess the long-term SME-growth relationship over 20- or 30-year periods as would be preferable. This confounds

one's ability to interpret the growth regressions as relating solely to long-run growth. We control for non-steady-state growth influences using standard methods, but recognize that aggregation problems are endemic to cross-country growth regressions.

Finally, this paper examines SME employment, not the subsidization of SMEs. Thus, even if the cross-country regressions were to indicate that SMEs exogenously increase growth and development and reduce poverty, this does not necessarily imply that government subsidization of SMEs will have these positive effects.[2] Nevertheless, this paper is a necessary first step in using cross-country analyses to help assess the links between SMEs and both growth and poverty alleviation.

The reminder of this paper is organized as follows. Section 2 reviews the relevant literature and the questions we address. Section 3 describes the data and methodology. Section 4 presents our main results. Section 5 concludes with policy implications.

II. Existing Literature

This section reviews the existing microeconomic evidence on whether SMEs boost growth and reduce poverty. [3]

As noted in the introduction, a growing body of work suggests that SMEs do not boost the quantity and quality of employment. Initially, Birch (1979) argued that small firms are particularly important in job creation. He reports that over the 1970s, firms with fewer than 100 employees generated eight out of ten new jobs in America. However, a wide array of evidence rejects the view that small firms are the engines of job formation (Dunne, Roberts, and

[2] Further, all pro-SME policies are not the same. Some pro-SME policies might stimulate overall employment growth, while others simply induce a substitution out of large firms and into small ones. Our work will not identify these differences. Rather, we assess the impact of SME size on economic development. Future research can

Samuelson, 1989; Leonard, 1986; Brown, Hamilton, and Medoff, 1990). For instance, Davis, Haltiwanger and Schuh (1993) show that while gross rates of job creation and destruction are higher in small firms, there is no systematic relationship between *net* job creation and firm size. In Sub-Saharan Africa, Biggs and Shah (1998) find that large firms were the dominant source of net job creation in the manufacturing sector.

Furthermore, empirical evidence suggests that firm size is not a good predictor of labor intensity, and that labor intensity varies more across industries than across firm-size groups within industries. Many small firms are more capital intensive than large firms in the same industry (Little, Mazumdar, Page, 1987; Snodgrass and Biggs, 1996). This suggests that SMEs are not necessarily more suitable to the labor abundance and capital shortage characteristics of developing countries.

In terms of job quality, microeconomic evidence does not support the pro-SME view that small firms create better quality jobs than large firms. Empirical evidence shows that large firms offer more stable employment, higher wages and more non-wage benefits than small firms in developed and developing countries, even after controlling for differences in education, experience and industry (Brown, Medoff and Hamilton, 1990; Rosenzweig, 1988). Many small firms are created as last resort rather than as first choice and have therefore limited growth potential (Compare Liedholm and Mead (1987) for Africa and de Soto (1987) for Latin America.).

Although the Pro-SME view argues that small firms are more innovative than large firms, the microeconomic evidence is at best inconclusive. Examining U.S. firms, Acs and Audretsch (1987) find that small firms have higher innovation rates in “high technology” skill-intensive

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usefully assemble cross-country data on different SME policies to draw inferences on the relationship between growth and SME policies per se.

industries and larger firms have the innovative edge in "lower technology," capital –intensive industries. For a sample of European industries, however, Pagano and Schivardi (2001) show that a larger average firm size is associated with faster innovation rates. In developing countries, there is little R&D activity, so that technology transfers from abroad and imitation drive productivity improvement (Rosenberg, 1976; Baumol, 1994). In developing countries, researchers find that large exporting firms are typically the primary mechanism through which technologies are adapted from abroad to local circumstances (See Biggs, Shah, and Srivastava, 1996 for Sub-Saharan Africa; Pack, 1992, and Pack and Westphal, 1986 for Asia). Thus, from a developing country perspective, the firm level evidence does not favor SME subsidization as a mechanism for boosting innovation and productivity growth.

Although Pro-SME proponents hold that SMEs intensify competition and hence exert external effects on national productivity, the firm-level evidence does not generally support this conclusion. As reviewed above, the direct evidence on innovation rates does not support a pro-SME approach. Moreover, productivity studies show that total factor productivity is actually highest for medium-sized firms and that the smallest firms are the least efficient (Little, Mazumdar and Page, 1987).

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[3] This review draws heavily on Hallberg (2001) and Biggs (2002).

Consistent with theoretical arguments outlined in the Introduction,[4] emerging empirical evidence supports the view that firm size responds to national characteristics. Beck, Demirguc-Kunt, and Maksimovic (2003) find that financially more developed countries tend to have larger firms. This suggests that financial development eases financial constraints on successful firms and allows them to grow. Kumar, Rajan and Zingales (2001) show that countries with better institutions, as measured by judicial system efficiency, tend to have larger firms. Sleuwaegen and Goedhuys (2002) show that restrained access to inputs, especially credit, results in a bi-modal firm size distribution in Côte d'Ivoire – the "missing middle" – with small firms growing slower and large firms growing faster than in developed economies. Thus, institutional development is associated with countries having larger firms. Furthermore, Kumar, Rajan, and Zingales (2001) find that improvements in patent protection increase the size of firms in R&D intensive industries. These results emphasize the institutional sources of cross-country differences in firm size. Moreover, these findings do not support the pro-SME presumption that financial and institutional development will boost SMEs relative to large firms and hence lead to economic growth.[5,6]

[4] A large theoretical literature holds that firm size distribution is a function of national endowments, technologies, national policies and institutions (Kumar et al., 2001; Hallberg, 2001; Snodgrass and Biggs, 1996; You, 1995; Caves, Porter, and Spence, 1980). Also, Piore and Sabel (1984) explain the importance of SME in Italy's textile industry around Florence and Pitoia with the emergence of industry federations and networks, the role of middlemen and political support. Rasiah (2002) shows the importance of government-business coordination for the development of a vibrant SME sector in Malaysia; variation in the quality of government-business relations, mostly explainable by socio-ethnic characteristics can explain differential performance of small machine tool firms in two different regions. Yamawaki (2002) reports that the existence of leading large firms, the existence of a pooled labor market, and the presence of public research and testing facilities can explain the emergence of SME clusters in Japan. Kawai and Urata (2002) show that subcontracting opportunities promote entry of new firms in Japan while subsidized credit programs discourages it. Levy (1991) shows that the greater role of small manufacturers and export traders in the footwear industry in Taiwan relative to Korea can be explained by higher costs for market transactions in Korea than Taiwan. He explains the lower costs of market transactions in Taiwan with higher GDP per capita, higher levels of education, longer commercial experience and less homogeneous society. Biggs, Raturi, and Srivastava (2002) show the importance of ethnic networks for access to informal sources of finance in Kenya.

[5] Note, however, that recent evidence provides support for the view that SMEs face greater obstacles. Using a firm-level survey of small, medium-sized and large enterprises in 80 developing, developed and transition economies, Schiffer and Weder (2001) show that small firms face significantly higher growth obstacles in several areas, such as financing, taxation and regulation, exchange rate management, corruption, street crime, organized crime, and anti-

To complement these firm and industry level studies, this paper undertakes the first broad cross-country examination of the impact of SMEs on growth and poverty using a new database on SMEs.[7] Specifically, we first examine the empirical connections between the size of the SME sector and economic growth and poverty. Second, we assess whether these relationships are robust to controlling for simultaneity bias. Finally, we evaluate whether SMEs influence the rate of poverty reduction beyond any links with economic growth.

III. Data and Methodology

A. Measures of SMEs and Business Environment

To measure the role of SMEs in the economy, we use a newly constructed database on the share of total manufacturing employment accounted for by SMEs (Ayyagari, Beck and Demirguc-Kunt, 2003). While these are the most comprehensive data on SMEs for a broad cross-section of countries, they are not without their shortcomings. For instance, it would be useful to have information on SME employment beyond manufacturing, but cross-country data are unavailable for the share of SMEs in other sectors.[8] Further, our SME measure is static in the sense that it does not account for the entry of new firms, graduation of successful SMEs into large enterprises, and the exit of failing enterprises. In our empirical analysis, therefore, we control for the degree to which laws, regulations, and fees impede the entry and exit of firms. Another potential problem is that these measures of the SME sector only include formal

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competitive practices by other enterprises or the government. Using the same dataset, Beck, Demirguc-Kunt and Maksimovic (2005) show that the relationship between financial, legal and corruption obstacles and firm growth is stronger for small firms and in countries with lower levels of financial and institutional development. These papers do not, however, show that countries with larger SME sectors enjoy greater economic success.

[6] There is a separate, very extensive literature on the turnover and mobility of firms, see Caves (1998).

[7] Shaffer (2002) assesses the impact of firm size distribution in manufacturing and retail on growth rates of real household income across 700 U.S. cities.

[8] Many SME advocates, however, would not see the benefits of small enterprises in manufacturing as limited to the manufacturing sector.

enterprises and exclude informal enterprises. To assess the importance of this limitation, we therefore incorporate estimates of the size of the informal sector relative to the formal sector in each economy.

SME250 is the share of the SME sector in the total formal labor force in manufacturing when a level of 250 employees is taken as the cutoff for the definition of an SME. This variable provides us with a consistent measure of firm size distribution across countries.[9] This variable is averaged over all available observations for the 1990s.

Initial SME250 is the first observation of SME250 for the 1990s. For some countries, we only have one observation for SME250 during the 1990s. More specifically, 18 countries have more than one observation on the SME sector in the 1990s, so we take the first available value in creating Initial SME250. For the remaining 27 countries, we simply use the observation that we have for SME250.

While data on SME250 are available for 54 countries, we lose some observations due to data restrictions on control variables, so that our regression sample comprises up to 45 countries. Table I lists GDP per capita and SME250. There is a large variation in economic development and the relative importance of SMEs. GDP per capita ranges from Tanzania (US$ 183) to Luxembourg (US$ 45,185). The importance of SMEs varies between Zimbabwe with 15% of total formal manufacturing employment in SMEs to Thailand with 87%.

SME250 is correlated with GDP per capita, as shown in Figure 1, with a correlation coefficient of 40%, significant at the 1% level (Table II Panel B).

We use an aggregate index of the business environment. The values are listed in Table 1. **Business Environment** is an aggregate indicator of the business climate in which firms operate

[9] We also tried an indicator SMEOFF that uses the official country definition of SME, with the official country definition varying between 100 and 500 employees. Our results are confirmed when using this alternative indicator.

that includes information on the degree of private property rights protection, the cost of contract enforcement, the cost of entering the market, and the efficiency of the bankruptcy system. Specifically, we use the first principal component of four measures. *Property Rights* indicates the degree to which property rights are protected in an economy. Entrepreneurs will only be willing to invest their personal wealth and to reinvest profits if their property rights on capital and future returns are protected. Data are from the Heritage Foundation. *Cost of contract enforcement* measures the attorney fees and court costs incurred when enforcing a debt contract through courts relative to Gross Net Income (GNI) per capita. Better contract enforceability induces lower transaction costs in both product and credit markets. Given the character of finance as intertemporal contract, contract enforcement is especially important for access to finance for firms of all sizes. Data are from Djankov et al. (2003). *Cost of entry* measures the cost in terms of legal fees to formally register a new firm relative to GNI per capita. Higher entry costs might impede new entry of formal enterprises and prevent informal entrepreneurs to enter the formal sector. Data are from Djankov et al. (2002). *Efficiency of Bankruptcy* measures the cost, duration, observance of priority of claims and efficiency of an insolvency process, with higher values indicating a less expensive and faster process, which observes priority of claims and reaches the most efficient outcome. Efficient exit mechanisms are the counterpart to low entry barriers, guaranteeing an efficient reallocation of resources. Data are from the World Bank's web-page on Doing Business. Including an indicator of the business environment is not only important to assess the robustness of the SME-economic growth relationship, but interesting in itself, as one of the SME-skeptic views focuses on the business environment faced by all firms, independent of their size.

B. Measures of economic growth and poverty

As dependent variables in our analyses, we use measures of economic growth, changes in income inequality and changes in poverty.

GDP per capita growth equals the average annual growth rate in real GDP per capita averaged over the period 1990-2000.

Income growth of the poor equals the average annual growth rate of GDP per capita of the lowest income quintile. We thus evaluate whether there is a differential effect of the size of the SME sector on the lowest income quintile beyond its impact on the growth rate and level of overall GDP per capita.

Growth of Gini is the annualized log difference of the Gini coefficient, and thus a measure of the evolution of income distribution. The Gini coefficient is defined as the ratio of area between the Lorenz curve, which plots population shares against income shares received, and the diagonal to the area below the diagonal. Higher values indicate more income inequality, so that larger negative growth rates indicate a faster movement towards income equity.[10]

Headcount is the share of the population living on less than one dollar a day. The national estimates are based on population-weighted sub-group estimates from household surveys (Chen and Ravallion, 2001). We use the annualized growth rate of Headcount to assess the impact of SME development on poverty alleviation.

Poverty gap is a weighted measure of (i) the fraction of the population living on less than one dollar per day and (ii) how far below one dollar per day incomes fall. Specifically, it is the mean shortfall from the poverty line, expressed as a percentage of the poverty line. This

[10] While the Gini coefficient is a broader indicator of income inequality than the income share of the lowest income quintile, empirically, the latter is an almost linear function of the former (Dollar and Kraay, 2002).

measures the breadth and depth of poverty (Chen and Ravallion, 2001). We use the annualized growth rate of the poverty gap.

C. Methodology

1. Growth regressions

To evaluate the relationship between SMEs and economic growth over the period 1990-2000, we use the following regression:

$$(y_{i,2000}-y_{i,1990})/10= \alpha y_{i,1990}+\beta SME250_i +\gamma X_i +\varepsilon_i \ , \qquad (1)$$

where y is the log real GPD per capita, X is a set of conditioning information, i is the country index, and ε is the white-noise error term. Except for y, all data are averaged over the 1990s. Following Beck, Levine and Loayza (2000), we include initial income to control for convergence effects and secondary school enrolment to capture human capital accumulation. Further, we include several policy variables, such as government expenditures as a share of GDP, the share of exports and imports in GDP, the inflation rate, the black market premium and the share of credit to the private sector by financial institutions in GDP. Finally, we also include Business Environment.

2. Inequality and poverty regressions

We also examine the relationship between the SME sector and (i) the growth rate of the lowest income quintile, (ii) the growth rate of the Gini coefficient, and (iii) headcount and poverty gap growth rates. Specifically, following Dollar and Kraay (2002), we regress the growth rate of GDP per capita for the lowest income quintile ($y_{i,l,2000} - y_{i,l,1990}$) on real GDP per capita growth for the whole population ($y_{i,2000} - y_{i,1990}$) and our indicator of the importance of SMEs in manufacturing.[11]

$$(y_{i,l,2000}-y_{i,l,1990})/10= \alpha\, y_{i,l,1990} + \beta(y_{i,2000}- y_{i,1990})/10 + \gamma SME250_i + \varepsilon_i \,, \qquad (2)$$

The coefficient β indicates whether income of the lowest income quintile grows proportionally with overall income growth in the economy, while γ indicates whether there is any differential effect of SME development on income growth of the lowest income quintile beyond any impact on overall income growth. A positive (negative) γ indicates the lowest income quintile benefits more (less) than proportionally from SME development.

Similarly, we regress the annualized log difference of the Gini coefficient on the log of its initial value, GDP per capita growth, and SME250.

$$(G_{i,\,2000}-G_{i,\,1990})/10= \alpha G_{i,\,1990} + \beta(y_{i,2000}- y_{i,1990})/10 + \gamma SME250_i + \varepsilon_i \,, \qquad (3)$$

where G is the log of the Gini coefficient. The sign and significance of the coefficient γ indicate whether SME development has any relationship with the evolution of income distribution in the economy. A positive γ would suggest an adverse effect, while a negative γ a favorable relationship between SME development and the evolution of income distribution.

To evaluate the relation between the size of the SME sector and changes in the depth and breadth of poverty, we use the following regression

$$(P_{i,t}-P_{i,t-1})/t= \alpha P_{i,t-1} + \beta(y_{i,2000}- y_{i,1990})/10 + \gamma SME_i + \varepsilon_i \ , \quad (4)$$

where P is the log of either headcount, or poverty gap. Thus, we examine whether the relative size of the SME sector has a particularly large impact on poverty alleviation.

3. Endogeneity and Measurement Error

The analyses are prone to biases resulting from endogeneity and measurement error. Faster GDP per capita growth might foster the entry of more small firms. Furthermore, the SME indicator might be subject to substantial measurement error.

To address concerns of reverse causation, we first present results using **Initial SME250**, which is SME250 in the first year in the 1990s for which data are available. Using initial values, however, has several shortcomings. Theory stresses the potential connection between growth and the contemporaneous share of SMEs. Further, the use of initial values instead of values measured over the entire estimation period implies an informational loss. Thus, to control for simultaneity bias, it is also appropriate to use instrumental variables (IV) to extract the exogenous component of SME250.

Second, we present IV regressions. The lack of theory and empirical cross-country work on the determinants of the size of the SME sector in manufacturing is a significant hurdle in selecting appropriate instrumental variables. We therefore focus on exogenous national characteristics that theory and past empirical findings suggest influence the business environment. In our core instrument set, we use an indicator of ethnic diversity and dummy variables for transition, African and Latin American countries. Easterly and Levine (1997) show that ethnic diversity tends to reduce the provision of public goods, including the institutions that support business transactions and the contracting environment. Countries with a recent socialist

[11] Since income share and Gini data are not available for all countries on an annual basis, we take the earliest year between 1985 and 1990 as the beginning year.

legal heritage had legal institutions that were not encouraging of entrepreneurship and new firm formation. Finally, countries in Sub-Saharan Africa and Latin America might show geographic and cultural characteristics that influence SME development and the Business Environment. Empirically, ethnic fractionalization and the three dummies explain 69% of the variation in SME250, while other historical variables, such as latitude or religious composition, do not add any explanatory power to these regressions.

Although it is appropriate to question this identification strategy because no specific theory links the share of SMEs in manufacturing to these particular exogenous variables, we use these instruments for three reasons. First, past work shows that these instruments help explain current institutions associated with economic success and the overall business environment (e.g., Easterly and Levine, 1997, 2003). Thus, there are reasons for believing that these instruments will extract that part of SME250 associated with economic growth, which may bias the results toward finding a positive relationship between SME250 and growth. Thus, we also present IV regressions while simultaneously controlling for the overall business environment as a robustness check. Second, given potential concerns about endogeneity, we believe it is crucial to use an assortment of procedures -- including the use of Initial SME250 and different instrument sets - to assess the relationship between the size of the SME sector and economic growth and poverty alleviation. Third, these instruments pass the standard econometric tests of whether the instruments are valid.

We provide two tests to assess the appropriateness of the instruments. First, we provide the F-Test of the excluded exogenous variables in the first stage regression. That is we test the null hypothesis that the instruments do not explain cross-country differences in the SME sector and provide the p-value in the tables. Second, we use the Hansen test of the overidentifying restrictions, which assesses whether the instrumental variables are associated with the dependent

variable beyond their effect through SME250 or the other explanatory variables. The Hansen test thus assesses whether Ethnic Fractionalization and the African and Latin American continent dummies are correlated with the component of GDP per capita growth that is not explained by SME250, the Business Environment or any of the other explanatory variables. We refer to this test as "Overid" in the tables. Under the joint null hypothesis that the excluded instruments (i.e., the instruments not included in the second stage regression) are valid instruments, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation, the Hansen test is distributed χ^2 in the number of overidentifying restrictions. Failure to reject the null hypothesis implies a failure to reject the validity of the instruments and thus a failure to reject the view that the coefficient estimate on SMEs and the business environment captures the impact of SME importance on economic growth. In the tables we provide the p-value of the test of the overidentifying restrictions.

In some regressions, we will also control for the endogeneity of both SME250 and Business Environment. In these regressions, we add dummy variables for French, British and German legal origin to our set of excluded exogenous variables. Cross-country analyses show that differences in legal systems influence the contracting environment with implications on corporate finance and hence firm formation and growth (Beck and Levine, 2002). A first-stage regression of Business Environment on the legal origin dummies, ethnic fractionalization, a dummy for transition economies and continent dummies for Africa and Latin America yields an adjusted R-square of 84%. As in the case of SME250, we present the F-test for the excluded exogenous variables from the first stage regression.

D. Descriptive Statistics and Correlations

Table II lists summary statistics and correlations. There is a wide variation in economic growth across the countries in our sample over the period 1990-2000, ranging from –2% in Zambia to 7% in Ireland. There is also substantial variation across countries in government policies and legal traditions.

Panel B shows the correlations between the level of SME development, the dependent variables and the variables in the conditioning information set. Simple correlations indicate that the size of the SME sector and the business environment are positively correlated with GDP per capita growth. Our measures of changes in income inequality and poverty alleviation, on the other hand, are not significantly correlated with the importance of SMEs or the business environment. SMEs' share of employment is also higher in countries with higher education and a more developed financial sector, while it is lower in countries with more exchange rate distortions. The business environment indicators are positively and significantly correlated with education, monetary stability, financial development and lack of exchange rate distortions. Finally, countries with a business environment that is conducive to competition and commercial contracting have a larger SME sector.

Panel C shows that historic determinants help explain the importance of SMEs in the economy and the overall business environment. SMEs are more important in countries with less ethnic fractionalization, while they are less important in countries in Sub-Saharan Africa and countries with British legal origin. Sub-Saharan African countries and countries with higher ethnic fractionalization have a business environment that is less conducive to private sector transactions.

IV. Empirical results

A. SMEs and Economic Growth

The ordinary least squares (OLS) results in Table III indicate that the share of SME employment in total manufacturing employment is associated with higher rates of GDP per capita growth, while the IV regression results shed doubt on whether we should interpret this relationship as causal. Table III reports regression results based on equation (1). Besides the SME indicators, the regressions include initial GDP per capita, the initial level of educational attainment, government consumption expenditures, the rate of inflation, the black market exchange rate premium, the level of international trade to GDP, and the degree of financial development as measured by financial intermediary credit to the private sector as a share of GDP. Regressions (3) and (4) are the IV version of regressions (1) and (2), where we use ethnic fractionalization and dummy variables for transition, African and Latin American economies to extract the exogenous component of the respective SME indicator. As discussed below, regressions (1) and (3) use the whole sample, while regressions (2) and (4) drop outliers.

SME250 enters significantly and positively in column (1) of Table III at the one-percent significance level. These results are robust to controlling for a large number of other potential determinants of economic growth. Specifically, the findings hold when controlling for initial income, educational attainment, government consumption, inflation, the black market exchange rate premium, trade openness, and financial development. Furthermore, we confirm the results when controlling for the size of each country's informal sector, which is an estimate of the size of the unofficial economy as a percentage of GDP.[12] In unreported sensitivity analyses, we also

[12] See the Appendix table for data sources on the informal sector. Incorporating information on the size of each country's informal sector dramatically reduces the size of the sample.

found that the relationship between SMEs and economic growth is robust to leaving out transition economies and countries in Sub-Saharan Africa.

Figure 2 displays the positive relationship between SME250 and GDP per capita, but also illustrates the potential importance of controlling for outliers. Figure 2 presents a partial scatter plot of GDP per capita growth against SME250, the two-dimensional representation of the regression plane in GDP per capita growth – SME250 space. To obtain this figure, we regress GDP per capita growth on all control variables, collect the residuals, and call them e(GDP per capita growth | X). Next, we regress SME250 against all control variables, collect the residuals, and call them e(SME250 | X). Figure 2 plots e(GDP per capita growth | X) against e(SME250 | X). Figure 2 suggests that outliers may exert an excessively large influence on the relationship between the SME share in manufacturing and economic development.

To assess more formally the impact of outliers, we follow the procedure outlined in Besley, Kuh, and Welsch (1980) and confirm that the results hold when omitting influential observations. We (i) computed the change in the coefficient on SME250 when the ith observation is omitted from the regression, (ii) scale the change by the estimated standard error of the coefficient, (iii) take the absolute value, and (iv) call the result $\Delta\beta_i$. Then, we use a critical value of three and identify those observations where abs ($\Delta\beta_i$) > 2/sqrt (n), where abs(x) yields the absolute value of x, sqrt(x) yields the square root of x, and n represents the number of observations in the regression. This analysis identifies Cameroon and Zimbabwe as influential observations. When omitting these two "outliers", SME250 continues to enter positively and significantly at the five-percent level, as shown in column (2) of Table III.

The coefficient size suggests not only a statistically significant but also economically meaningful relationship between the importance of SMEs in an economy and its GDP per capita. If we compare the countries at the 25^{th} and 75^{th} percentiles of SME250, the results suggest that

Romania (SME250= 37%) would have grown 1.4% faster if it had had the same SME share as Denmark (69%). This is large, considering that the sample mean annual growth rate for the 1990s was 1.5%.

So far the results indicate a robust and significant relationship between the relative size of the SME sector and the rate of economic growth. Countries with large SME sectors in manufacturing tend to grow faster. Given that we have used a simple OLS framework, however, the results are subject to concerns that a large manufacturing SME sector is a characteristic of successful economies, but not a causal force.

The instrumental variable results in columns (3) and (4) indicate that the positive relationship between the size of the SME sector in manufacturing and economic growth is not very robust to controlling for endogeneity. SME250 does not enter significantly at the 5% level in the growth regressions when using these instruments. While SME250 still enters significantly at the 10% level when using the whole sample (column 3), it does not enter significantly at any conventional significance level once outliers are removed following Besley, Kuh and Welch (1980) as described above (column 4).[13] Figure 3 confirms the lack of a significant relationship between the exogenous component of SME250 and GDP per capita growth. While there is still a positive relationship, it is not significant. Specification tests confirm the validity of the instrumental variables. We cannot reject the test of the overidentifying restrictions (Overid), while we strongly reject the null hypothesis that the excluded exogenous variables do not explain the size of the SME sector in the first stage. In unreported regressions, we tried different instrumental variable sets, adding, separately, legal origin dummies and latitude to the core set of instruments. However, neither of the two instrument sets adds explanatory power to the first stage. Further, these alternative instrumental variable specifications confirm the core findings

from Table III. If one begins with the null hypothesis that SMEs do not exert a causal impact on economic growth, the instrumental variable estimation fails to reject this view.

The twin findings that (i) SMEs are associated with growth in OLS regressions but (ii) SMEs are not robustly linked with growth in 2SLS regressions are consistent with the view that a large SME sector is a characteristic of fast growing economies, but not necessarily a determinant of this rapid growth.

The results in Table IV confirm our findings with Initial SME250, which takes the first available observation for SME250 during the 1990s. Initial SME250 enters significantly at the 5% level in the OLS regressions GDP (columns 1). This result is robust to eliminating outliers (column 2).[14] Further, this result is robust to controlling for the importance of the informal economy, though as noted above, we do not report these confirmatory results in the tables because the sample size drops considerably when adding the proxy for the size of the informal economy in each country. When extracting the exogenous component of Initial SME250 with Ethnic Fractionalization and dummy variables for African, Latin American and transition economies, Initial SME250 still enters significantly at the 5% level. Once we follow the Besley, Kuh, and Welch (1980) procedure and remove outliers, the relationship between Initial SME250 and GDP per capita growth turns insignificant in the IV regression (Table IV, column 4).[15]

When controlling for the overall business environment, we obtain the same results: There is a significant positive relationship between SME250 and economic growth, but the statistical significance of this relationship vanishes when controlling for endogeneity. Table V presents both OLS and IV regressions that control for the business environment as well as the other control variables. While regressions (1) and (3) use the whole sample, we run regressions (2)

[13] Here we drop Cameroon, Ghana, Philippines, Tanzania.
[14] Ireland and Zimbabwe are identified as outliers and dropped from regression 2.

and (4) without the outliers identified through the procedure proposed by Besley, Kuh, and Welch (1980) with a critical value of three.[16]

As before, SME250 enters significantly and positively in the OLS regression and turns insignificant once we instrument for it. To extract the exogenous component of both SME250 and Business Environment, we add dummy variables for French, German and British legal origin to the original instrumental variable set of Ethnic Fractionalization and dummy variables for Africa, Latin America and transition economies. As shown, the instruments are quite powerful and past standard validity assessments. They explain more than 65 percent of the cross-sectional variation in the importance of SMEs and about 80 percent of the variation in Business Environment. The F-test of joint significance of the excluded exogenous variables is rejected at the 1% level. The test of overidentifying restrictions suggests that the excluded exogenous variables do not impact GDP per capita growth beyond their influence through SME250, Business Environment or any of the policy control variables. While the Overidentifying restrictions tests are weak form tests because they are based on a failure to reject the null hypothesis that the instruments are valid, the econometric methodology satisfies the traditional specifications tests. In sum, even when controlling for the overall business environment, we continue to find that SMEs are closely associated with growth, but we cannot reject the view that SMEs do not cause growth.

We conducted additional, unreported robustness tests. First, we controlled for the share of manufacturing in GDP and its interaction with SME250 since SME250 is limited to the manufacturing sector. Neither of the two interaction terms entered significantly. Second, instead using GDP per capita growth as the dependent variable, we also used per worker growth of value

[15] Cameroon and, Ghana are identified as influential observations and excluded.

added in manufacturing. This did not change the results. We did not find a significant relationship between the SME sector and per worker growth of value added in manufacturing. Third, we ran regressions that included an interaction term between SME250 and Business Environment to test whether more SMEs are particularly conducive to growth in countries with more competitive business conditions. The interaction term did not enter significantly.

B. SMEs, Inequality and Poverty Alleviation

Next, we examine the relationship between the importance of SMEs in manufacturing and changes in income distribution and in poverty. We examine four different dimensions. First, we assess whether SMEs influence the growth rate of the income of the poorest quintile of the country. Second, we examine the relationships between SMEs and changes in income distribution, as measured by the growth rate in the Gini coefficient. Third, we study the link between the change in the percentage of people living in poverty and the size of the SME sector in manufacturing. Finally, we investigate the connection between changes in the severity and depth of poverty in a country and the role SMEs play in manufacturing. In all cases we control for GDP per capita growth to be able to focus on distributional effects of the SME sector in manufacturing.[17]

The results in Table VI suggest that SMEs do not influence the poorest segment of society differently from the average person. In column 1, we regress the growth rate of GDP per capita of the lowest income quintile on the initial income per capita of the lowest income quintile, the growth rate of GDP per capita respectively and SME250. While GDP per capita

[16] In column (2), Zimbabwe is dropped. In column (4), Nigeria, Philippines and Poland are identified as outliers and dropped.
[17] We also ran regressions controlling for Business Environment and using Initial SME250 instead of SME250. Our findings are confirmed.

growth enters positively and significantly, SME250 does not. This implies that SMEs do not influence the poorest quintile of economies differently from their link with the overall growth rate of the economy.

Furthermore, the findings indicate that larger SME sectors do not make income distribution more equal. In column 2, we regress the annual growth in the Gini coefficient on the log of the initial Gini coefficient, GDP per capita growth and SME250. SME250 does not enter significantly, suggesting that the importance of SMEs in manufacturing has no direct impact on how an economy's income distribution evolves. Neither GDP per capita growth nor the log of the initial value of Gini enters significantly.

Finally, the Table VI regressions do not identify a significant relationship between SMEs and poverty alleviation. In columns 3 and 4, we regress the annualized growth rates of Headcount and Poverty gap on the log of the respective initial value, GDP per capita growth and SME250. We do not find any evidence for a role of SMEs in alleviating poverty; SME250 does not enter significantly at any conventional significance levels. While GDP per capita growth does not enter significantly in either regression, the negative sign on the initial value suggests a convergence effect in the development of poverty.

The results in Tables VI do not provide any evidence for a poverty alleviating effect of a larger SME sector. These results certainly do not prove that SMEs do not alleviate poverty. Rather, they simply represent a failure to reject the null hypothesis that SMEs do not reduce poverty. In unreported robustness tests, we found that our findings are robust to (i) eliminating outliers according to the same procedure as in Tables II, IV and V, (ii) controlling for the importance of the informal economy, and (iii) controlling for the business environment.

V. Conclusions

This paper explored the relationship between the size of the SME sector and both economic growth and measures of poverty alleviation. We use a new database that assembles consistent data on the share of SME labor in the total manufacturing labor force for 45 developing and developed countries.

Although there is a strong positive association between SME development and economic growth, this relationship is not robust to controlling for simultaneity bias. In particular, OLS regressions indicate a positive, statistically significant relationship between the size of the SME sector and economic growth that is robust to conditioning on many country characteristics. However, the relationship between SMEs and economic growth becomes statistically insignificant when controlling for endogeneity. Thus, although a prosperous SME sector is a characteristic of flourishing economies, we cannot reject the view that SMEs do not cause growth. Furthermore, cross-country comparisons do not indicate that SMEs exert a particularly beneficial impact on the incomes of the poor and we do not find a significant relationship between SMEs and measures of the depth and breadth of poverty. Thus, the results do not provide empirical support for the pro-SME prescription of directly subsidizing SME development to accelerate growth and reduce poverty.

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Table I
SMEs and Business Environment Across the World

GDP per capita is the log of real GDP per capita averaged over the period 1990-2000. SME250 is the SME sector's share of employment when 250 employees is taken as the cutoff for the definition of an SME. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy.

Country	GDP per capita	SME250	Business Environment
Argentina	7,484	70.18	0.00
Austria	29,619	66.1	1.08
Belgium	27,572	69.25	0.96
Brazil	4,327	59.8	-0.34
Bulgaria	1,487	50.01	-0.12
Cameroon	653	20.27	-1.98
Chile	4,476	86	-0.21
Colombia	2,290	67.2	0.18
Cote d'Ivoire	746	18.7	-1.76
Croatia	4,454	62	-0.59
Czech Republic	5,015	64.25	-0.28
Denmark	34,576	68.7	
Ecuador	1,521	55	
Finland	26,814	59.15	1.60
France	27,236	67.3	0.51
Germany	30,240	59.5	0.82
Ghana	377	51.61	-1.06
Greece	11,594	86.5	-0.38
Guatemala	1,460	32.3	-1.01
Hungary	4,608	45.9	-0.65
Ireland	19,528	67.2	1.04
Italy	19,218	79.7	0.04
Japan	42,520	71.7	1.09
Kenya	341	33.31	-1.00
Korea, Rep.	10,508	76.25	1.03
Luxembourg	45,185	70.9	
Mexico	3,390	48.48	-0.25
Netherlands	27,395	61.22	1.60
Nigeria	257	16.72	-0.76
Panama	2,999	72	-0.86
Peru	2,162	67.9	-0.43
Philippines	1,099	66	-0.70
Poland	3,391	63	0.15
Portugal	11,121	79.9	0.29
Romania	1,501	37.17	-1.09
Slovak Republic	3,651	56.88	
Spain	15,362	80	0.22
Sweden	27,736	61.3	1.23
Taiwan, China	12,474	68.6	
Tanzania	183	32.1	-0.58
Thailand	2,590	86.7	0.44
Turkey	2,865	61.05	-0.12
United Kingdom	19,361	56.42	2.18
Zambia	419	36.63	-0.62
Zimbabwe	643	15.2	-0.78

Table II
Summary Statistics and Correlations

SME250 is the SME sector's share of employment when 250 employees is taken as cutoff for the definition of SME, averaged over the period. Initial SME250 is the SME sector's share of employment when 250 employees is taken as cutoff for the definition of SME, for the first available year in the 1990s. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy. GDP per capita growth is measured over the period 1990-2000. Initial GDP per capita is for 1990. Income growth of the poor is the income growth per capita of the lowest income quintile. Growth in Gini is the growth rate in the Gini coefficient. Headcount growth is the growth rate of headcount where headcount is defined as the percentage of population living on less than a dollar a day. Poverty gap growth is the growth rate of poverty gap where poverty gap is defined as the amount of additional income per capita, expressed as a proportion of the poverty line (one dollar a day), that, if available to the poor would lift them out of extreme poverty. Education is secondary school enrollment (% gross). Government consumption is the general govt. final expenditure as a % of GDP. Inflation is measured by the annual growth rate of the GDP deflator. Black market premium is the overvaluation of the official relative to the black market exchange rate in percentages. Trade is share of exports and imports in GDP. Private credit is claims of financial institutions on the private sector, as a share of GDP. Transition is a dummy variable that takes on value one for transition economies and zero otherwise. German, British and French legal origin are dummy variables that take on value one if the country has the respective legal origin and zero otherwise. Ethnic fractionalization is the probability that two inhabitants of a country do not speak the same language. Africa is a dummy variable that takes on value one for countries in Sub-Saharan Africa and zero otherwise. Latin is a dummy variable that takes on value one for countries in Latin America and zero otherwise. Detailed variable definitions and sources are given in the appendix.

Panel A: Summary Statistics

	Observations	Mean	Std Dev	Minimum	Maximum
SME250	45	58.36	18.78	15.2	86.7
Initial SME250	45	58.21	19.33	15.20	99.50
Business Environment	40	-0.03	0.93	-1.98	2.18
GDP per capita growth	45	1.54	1.92	-1.99	6.53
Initial GDP per capita	45	10221.26	11591.84	188.77	39955.40
Income growth of the poor	32	0.00	0.06	-0.16	0.13
Growth in Gini	32	0.01	0.03	-0.05	0.15
Headcount growth	21	0.04	0.15	-0.14	0.39
Poverty gap growth	21	0.03	0.18	-0.25	0.57
Education	45	4.20	0.62	1.69	4.89
Government consumption	45	2.73	0.33	1.77	3.30
Inflation	45	0.23	0.37	0.01	1.87
Black market premium	45	0.11	0.21	0	0.99
Trade	45	4.59	0.07	4.31	4.82
Private credit	45	3.59	0.96	1.58	5.26
Transition	45	0.16	0.37	0	1
German Legal Origin	45	0.11	0.32	0	1
British Legal Origin	45	0.20	0.40	0	1
French Legal Origin	45	0.47	0.50	0	1
Ethnic fractionalization	45	0.28	0.29	0	0.89
Africa	45	0.18	0.39	0	1
Latin	45	0.20	0.40	0	1

Panel B: Correlations

	SME250	Initial SME250	Business Environment	Informal	GDP per capita growth	Initial GDP/cap	Income growth of the poor	Growth in Gini	Headcount growth	Poverty gap growth	Education	Govt Consump-tion	Inflation	Black market premium	Trade
Initial SME250	0.949***	1.000													
Business Environment	0.541***	0.583***	1.000												
Informal	-0.202	-0.292*	-0.652***	1.000											
GDP per capita growth	0.652***	0.721***	0.521***	-0.027	1.000										
Initial GDP/cap	0.403***	0.432***	0.774***	-0.692***	0.293*	1.000									
Income growth of the poor	0.529***	0.508***	0.352*	-0.240	0.669***	0.412**	1.000								
Growth in Gini	-0.191	-0.171	-0.092	0.220	-0.287	-0.371**	-0.762***	1.000							
Headcount growth	-0.022	0.020	0.158	-0.570**	-0.203	0.140	-0.482*	0.475*	1.000						
Poverty gap growth	-0.016	0.030	0.147	-0.502*	-0.015	0.091	-0.320	0.271	0.921***	1.000					
Education	0.651***	0.657***	0.663***	-0.573***	0.392***	0.594***	0.288	-0.103	0.504**	0.409*	1.000				
Govt consumption	0.184	0.197	0.486***	-0.711***	-0.054	0.561***	-0.035	0.038	0.285	0.157	0.473***	1.000			
Inflation	-0.174	-0.168	-0.272*	0.234	-0.393***	-0.3615**	-0.711***	0.515***	0.250	0.076	-0.164	0.027	1.000		
Black market premium	-0.492***	-0.491***	-0.374**	0.266	-0.466***	-0.363**	-0.357**	0.137	0.153	-0.010	-0.327**	-0.086	0.447***	1.000	
Trade	-0.025	-0.018	0.074	0.220	0.059	0.078	-0.113	0.192	0.186	0.079	0.211	0.122	0.043	0.177	1.000
Private credit	0.566***	0.559***	0.704***	-0.453***	0.534***	0.694***	0.608***	-0.415**	-0.431*	-0.434**	0.604***	0.377**	-0.457***	-0.531***	0.085

***, ** and * stand for significance levels at 1, 5 and 10 percent, respectively.

Panel C: Correlations

	SME250	Initial SME250	Business Environment	Transition	French Legal Origin	German Legal Origin	British Legal Origin	Ethnic fractional-ization	Africa
Initial SME250	0.949***	1.000							
Business Environment	0.541***	0.583***	1.000						
Transition	-0.097	-0.106	-0.182	1.000					
French Legal Origin	0.226	0.172	-0.202	-0.402***	1.000				
German Legal Origin	0.192	0.202	0.373**	-0.152	-0.331**	1.000			
British Legal Origin	-0.387***	-0.303**	-0.058	-0.215	-0.468***	-0.177	1.000		
Ethnic fractionalization	-0.693***	-0.722***	-0.646***	-0.178	-0.031	-0.267*	0.536***	1.000	
Africa	-0.758***	-0.733***	-0.564***	-0.200	-0.202	-0.164	0.639***	0.856***	1.000
Latin	0.101	0.109	-0.182	-0.215	0.535***	-0.177	-0.250*	-0.117	-0.233

***, ** and * stand for significance levels at 1, 5 and 10 percent, respectively.

Table III
SME Employment and Growth

The regression equation estimated in specifications (1) and (2) is: GDP per capita growth = α + β_1 Initial income + β_2 SME250 +β_3 Education+ β_4Govt. consumption + β_5Inflation + β_6Black market premium + β_7Trade + β_8 Private credit. GDP per capita growth is the real growth rate of GDP over the period 1990-2000. Initial GDP per capita is the log value measured in 1990. SME250 is the share of employment in firms with less than 250 employees in manufacturing. Education is secondary school enrollment (% gross). Government consumption is the general govt. final expenditure as a % of GDP. Inflation is measured by the annual growth rate of the GDP deflator. Black market premium is the overvaluation of the official relative to the black market exchange rate in percentages. Trade is share of exports and imports in GDP. Private credit is claims of financial institutions on the private sector, as a share of GDP. Log values of all right hand side variables were used. Two stage instrumental variable regressions are carried out in specifications (3) and (4). The first stage regression equation is: SME250 = α_0 + β_1 Transition + β_2 Africa + β_3 Latin + β_4 Ethnic fractionalization +β_5 Initial Income+β_6 Education+ β_7Govt. consumption + β_8Inflation + β_9Black market premium + β_{10}Trade + β_{11}Private credit. The second stage regression equation estimated is the same as the OLS regression in specification (1) and (2) with the predicted value of SME being used from the first-stage. The instrument variables are defined as follows: Transition is a dummy variable that takes on value one for transition economies and zero otherwise. Africa is a dummy variable that takes on value one for countries in Sub-Saharan Africa and zero otherwise. Latin is a dummy variable which takes the value one for Latin American countries and zero otherwise. Ethnic fractionalization is the probability that two inhabitants of a country do not speak the same language. Specifications (3) and (4) also report the p-values of the F-test for the excluded exogenous variables, the p-values for the test of overidentifying restrictions and the adjusted R-square from the first stage. Regressions in columns 1 and 3 are run with the complete sample, while regressions in columns 2 and 4 are without outliers identified following the procedure suggested by Besley, Kuh, and Welch (1980) on identifying influential observations. Values are 1990-99 averages where available. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	(1)	(2)	(3)	(4)
Outliers		Removed		Removed
Estimation technique	OLS	OLS	IV	IV
SME250	2.197***	2.600***	1.863*	1.386
	[0.687]	[0.546]	[1.047]	[1.122]
Observations	45	43	45	41
Adj. R-squared	0.444	0.435		
F-Test			0.000***	0.000***
Adj. R-squared (1st stage)			0.716	0.782
OIR Test			0.118	0.274

Table IV
Initial SME Employment and Growth

The regression equation estimated in specifications (1) and (2) is: GDP per capita growth = α + β_1 Initial income + β_2 Initial SME250 +β_3 Education+ β_4Govt. consumption + β_5Inflation + β_6Black market premium + β_7Trade + β_8 Private credit. GDP per capita growth is the real growth rate of GDP over the period 1990-2000. Initial GDP per capita is the log value measured in 1990. Initial SME250 is the share of employment in firms with less than 250 employees in manufacturing for the first available year in the 1990s. Education is secondary school enrollment (% gross). Government consumption is the general govt. final expenditure as a % of GDP. Inflation is measured by the annual growth rate of the GDP deflator. Black market premium is the overvaluation of the official relative to the black market exchange rate in percentages. Trade is share of exports and imports in GDP. Private credit is claims of financial institutions on the private sector, as a share of GDP. Log values of all right hand side variables were used. Two stage instrumental variable regressions are carried out in specifications (3) and (4). The first stage regression equation is: Initial SME250 = α_0 + β_1 Transition + β_2 Africa + β_3 Latin + β_4 Ethnic fractionalization +β_5 Initial Income+β_6 Education+ β_7Govt. consumption + β_8Inflation + β_9Black market premium + β_{10}Trade + β_{11}Private credit. The second stage regression equation estimated is the same as the OLS regression in specification (1) with the predicted value of SME being used from the first-stage. The instrument variables are defined as follows: Transition is a dummy variable that takes on value one for transition economies and zero otherwise. Africa is a dummy variable that takes on value one for countries in Sub-Saharan Africa and zero otherwise. Latin is a dummy variable which takes the value one for Latin American countries and zero otherwise. Ethnic fractionalization is the probability that two inhabitants of a country do not speak the same language. Specifications (3) and (4) also report the p-values of the F-test for the excluded exogenous variables, the p-values for the test of overidentifying restrictions and the adjusted R-square from the first stage. Regressions in columns 1 and 3 are run with the complete sample, while regressions in columns 2 and 4 is without outliers identified following the procedure suggested by Besley, Kuh, and Welch (1980) on identifying influential observations. Values are 1990-99 averages where available. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	(1)	(2)	(3)	(4)
Outliers		Removed		Removed
Estimation technique	OLS	OLS	IV	IV
Initial SME250	2.754***	3.167***	2.369**	1.625
	[0.790]	[0.541]	[1.105]	[1.054]
Observations	45	43	45	43
Adj. R-squared	0.508	0.534		
F-Test			0.003***	0.001***
Adj. R-squared (1st stage)			0.680	0.727
OIR Test			0.131	0.205

Table V
SME Employment, Business Environment, and Growth

The regression equation estimated in specifications (1) and (2) is: GDP per capita growth = α + β_1 Initial income + β_2 SME250 +β_3 Education+ β_4Govt. consumption + β_5Inflation + β_6Black market premium + β_7Trade + β_8 Private credit + β_9 Business Environment. GDP per capita growth is the real growth rate of GDP over the period 1990-2000. Initial GDP per capita is the log value measured in 1990. SME250 is the share of employment in firms with less than 250 employees in manufacturing. Education is secondary school enrollment (% gross). Government consumption is the general govt. final expenditure as a % of GDP. Inflation is measured by the annual growth rate of the GDP deflator. Black market premium is the overvaluation of the official relative to the black market exchange rate in percentages. Trade is share of exports and imports in GDP. Private credit is claims of financial institutions on the private sector, as a share of GDP. Business Environment is a principal component indicator of Property Rights, Contract Enforcement, Entry and Bankruptcy. Except for Business Environment, log values of all right hand side variables were used. Two stage instrumental variable regressions are carried out in specifications (3) - (4). The first-stage regressions in columns (3) and (4) are: SME250 = α_0 + β_1 Transition + β_2 Africa + β_3 Latin + β_4 Ethnic fractionalization + β_5 French legal origin + β_6 German legal origin + β_7 British legal origin + β_8 Initial Income+ β_9 Education+ β_{10} Govt. consumption + β_{11} Inflation + β_{12} Black market premium + β_{13} Trade + β_{14} Private credit and Business Environment = α_0 + β_1 Transition + β_2 Africa + β_3 Latin + β_4 Ethnic fractionalization + β_5 French legal origin + β_6 German legal origin + β_7 British legal origin + β_8 Initial Income+ β_9 Education+ β_{10} Govt. consumption + β_{11} Inflation + β_{12} Black market premium + β_{13} Trade + β_{14} Private credit. The instrument variables are defined as follows: Transition is a dummy variable that takes on value one for transition economies and zero otherwise. Africa is a dummy variable that takes on value one for countries in Sub-Saharan Africa and zero otherwise. Latin is a dummy variable which takes the value one for Latin American countries and zero otherwise. Ethnic fractionalization is the probability that two inhabitants of a country do not speak the same language. French, German and British legal origin are dummy variables that take on value one if the country has the respective legal origin and zero if not. Specifications (3) and (4) also report the p-values of the F-test for the excluded exogenous variables in the fist stage regression, the p-values for the test of overidentifying restrictions and the adjusted R-square from the first stage regression(s). Regressions in columns 1 and 3 are run with the complete sample, while regressions in columns 2 and 4 are without outliers identified following the procedure suggested by Besley, Kuh, and Welch (1980) on identifying influential observations. Values are 1990-99 averages where available. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	(1)	(2)	(3)	(4)
Outliers		Removed		Removed
Estimation Technique	OLS	OLS	IV	IV
SME250	1.812***	2.402***	1.22	1.279
	[0.642]	[0.643]	[1.092]	[1.166]
BE	0.859**	0.815**	1.366*	1.25
	[0.406]	[0.397]	[0.772]	[0.848]
Observations	40	39	40	37
Adj. R-squared	0.494	0.512	0.586	0.54
F-Test for SME (1st stage)			0.000***	0.000***
F-Test for Business Environment (1st stage)			0.000***	0.000***
Adj. R-squared for SME (1st stage)			0.721	0.652
Adj. R-squared for Business Environment (1st stage)			0.843	0.780
OIR Test			0.302	0.393

Table VI
SME Employment, Income Distribution, and Poverty Alleviation

The regression equation estimated is the Growth in Income of the Poor/Growth in Gini/ Headcount growth /Poverty gap growth=$\alpha + \beta_1$GDP per capita growth+ β_2Initial value + β_3SME250. Growth in Income of the Poor is the annual growth rate in income of the lowest income quintile over the period 1990-2000. Growth in Gini is the annual growth in the Gini coefficient over the period 1990-2000. Headcount growth is the annual growth rate of Headcount over the period 1990-2000, where Headcount is defined as the percentage of population living on less than one dollar a day. Poverty gap growth is the annual growth rate of the Poverty Gap over the period 1990-2000, where poverty gap is defined as the amount of additional income per capita, expressed as a proportion of the poverty line (one dollar a day), that, if available to the poor would lift their incomes over one dollar a day. GDP per capita growth is the real growth rate of GDP over the period 1990-2000. Initial value is the log of Income of the lowest income quintile, Gini coefficient, Headcount or Poverty Gap in the 1990. SME250 is the log of SME sector's share of employment in manufacturing firms with less than 250 employees. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	(1)	(2)	(3)	(4)
Dependent variable	Growth in Income of the Poor	Growth in Gini	Headcount growth	Poverty gap growth
Initial Value	0.008	-0.027	-0.050***	-0.063***
	[0.008]	[0.031]	[0.013]	[0.021]
GDP per capita Growth	1.169***	-0.236	-0.015	-0.001
	[0.336]	[0.183]	[0.016]	[0.023]
SME250	0.006	-0.002	-0.022	-0.089
	[0.023]	[0.012]	[0.052]	[0.076]
Constant	-0.099	0.114	0.214	0.397
	[0.083]	[0.121]	[0.202]	[0.284]
Observations	31	31	21	21
Adjusted R-squared	0.483	0.062	0.566	0.402

Figure 1: Plot of SME250 against log of GDP per capita in 1990

This graph shows the correlation of SM250 against log of GDP per capita in 1990 and the corresponding regression line.

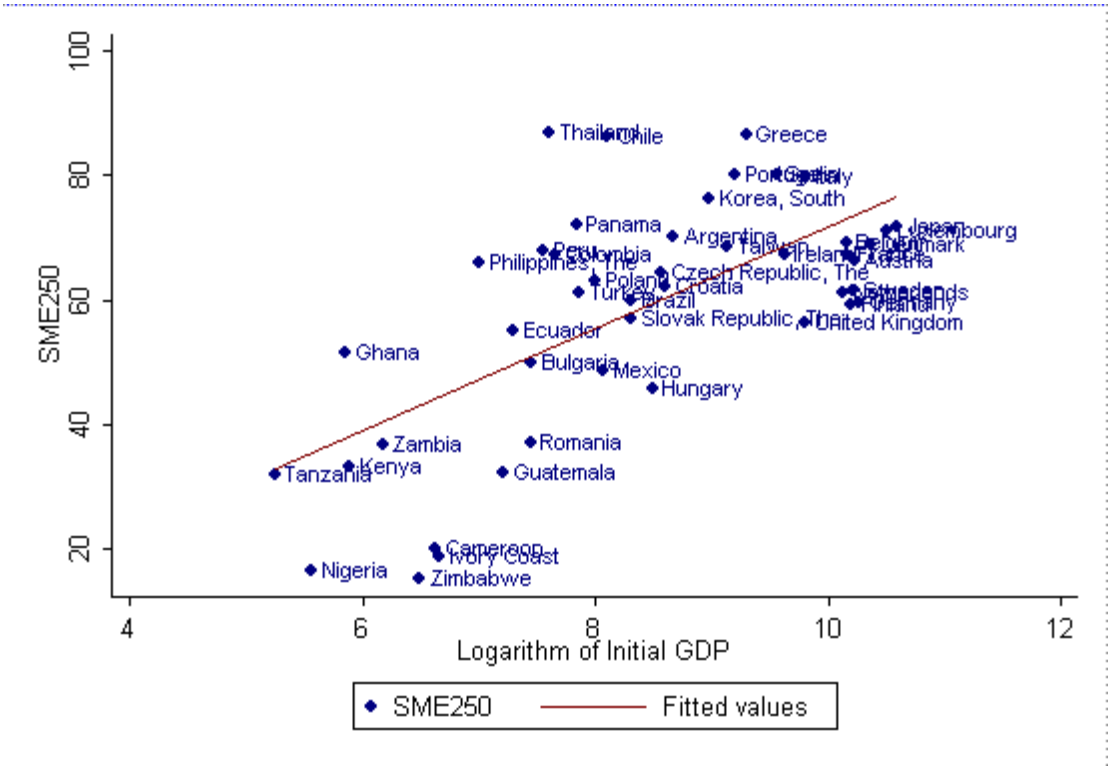


Figure 2: Partial Scatter Plot of GDP per capita growth against SME250

Using regression 1 of Table 3, which regresses GDP per capita Growth against SME250 and several control variables X, this figure represents the two-dimensional representation of the regression plane in GDP per capita growth – SME250 space. To obtain this figure, we regress GDP per capita growth on X, collect the residuals, and call them e(GDP per capita growth | X). Next, we regress SME250 on X, collect the residuals, and call them e(SME250 | X). Then, we plot e(GDP per capita growth | X) against e(SME250 | X).

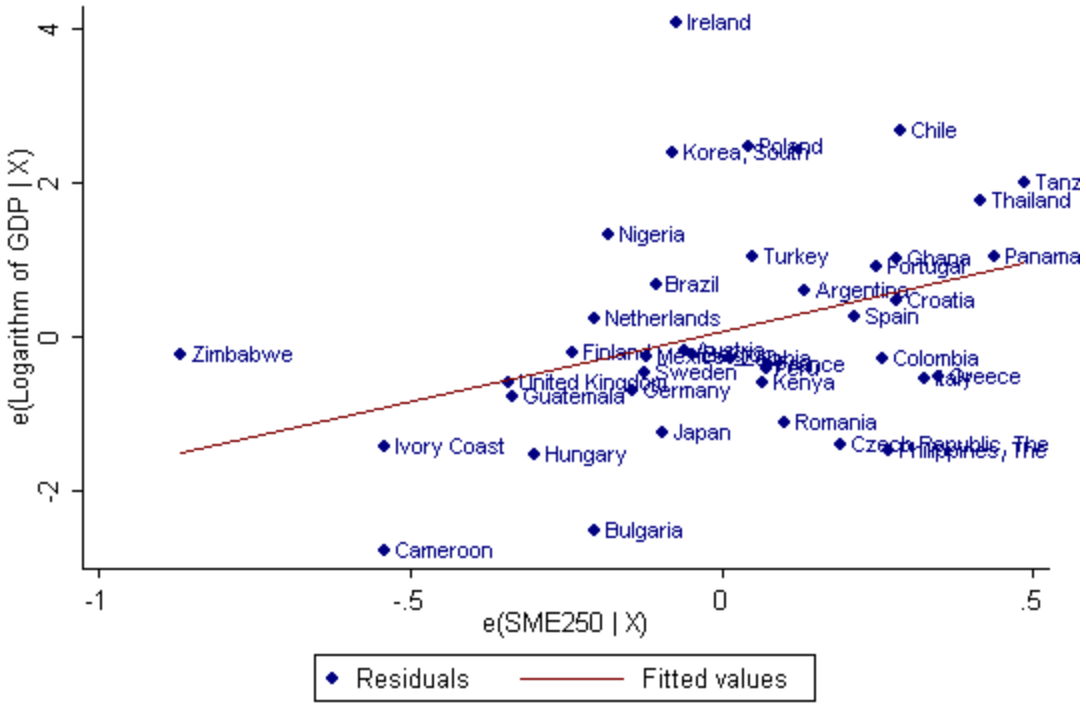
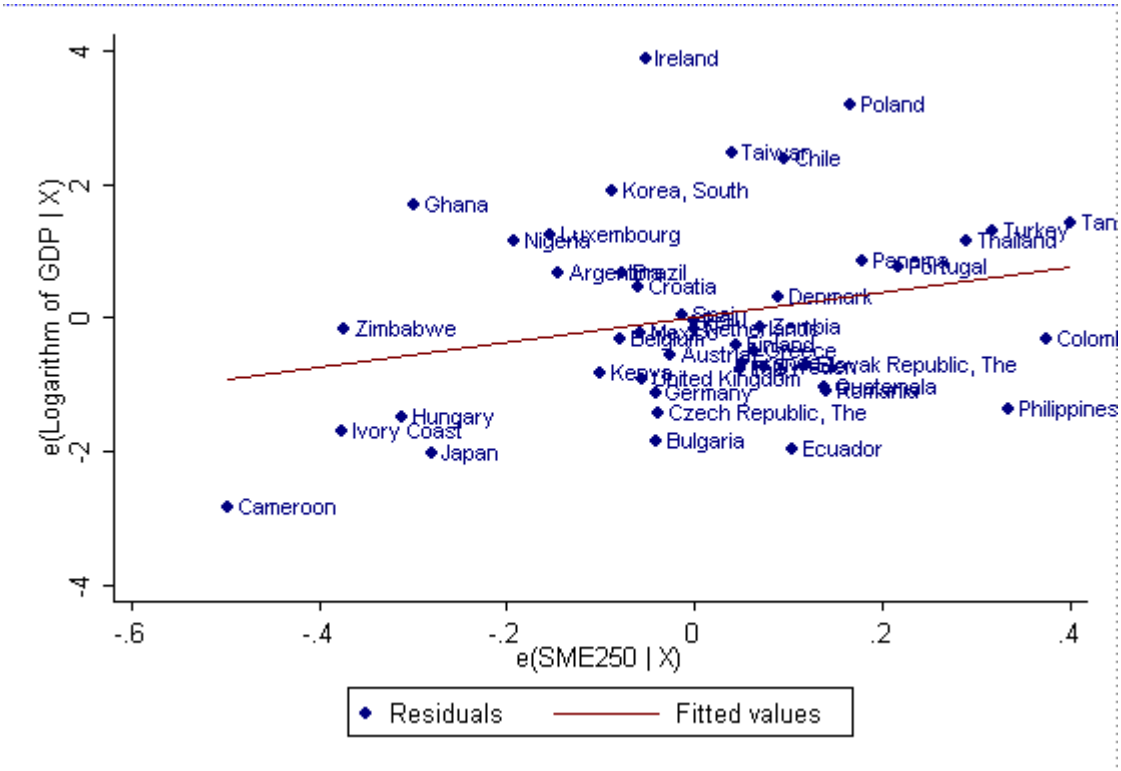


Figure 3: Partial Scatter Plot of GDP per capita growth against SME250, IV regression

Using regression 3 of Table 3, which regresses GDP per capita Growth against the predicted value of SME250 and several control variables X, this figure represents the two-dimensional representation of the regression plane in GDP per capita growth – predicted SME250 space. To obtain this figure, we regress GDP per capita growth on X, collect the residuals, and call them e(GDP per capita growth | X). Next, we regress the predicted SME250 from the first stage on X, collect the residuals, and call them e(SME250 | X). Then, we plot e(GDP per capita growth | X) against e(SME250 | X).



Appendix Table 1: Variable Definitions

Variable	Variable Definition	Source
Dependent variables		
GDP per capital growth	Annual real GDP per capita growth	World Development Indicators (WDI)
Initial GDP per capita	Log value of real GDP per capita in 1990	WDI
Growth for poor	GDP per capita growth of the lowest income quintile group	WDI, Dollar and Kraay (2002)
Growth in Gini	The annual growth rate in the Gini coefficient where the Gini coefficient is defined as ratio of the area below the Lorenz Curve, which plots share of population against income share received, to the area below the diagonal. It lies between 0 and 1 and is a measure of income inequality.	WDI, Dollar and Kraay (2002)
Headcount Growth	Annual log change of headcount where headcount is the percentage of the population living below the national poverty line. National estimates are based on population-weighted sub-group estimates from household surveys.	Povcal Net, World Bank
Poverty Gap growth	Annual growth rate of pverty gap, which is the amount of additional income per capita, expressed as a proportion of the poverty line (defined as $1 a day), , that, if available to the poor would lift them out of extreme poverty.	Povcal Net, World Bank
SME variables		
SME250	SME sector employment as a percentage share of total employment in the country (Definition of SME: <=250 employees)	Country-specific sources; see Ayyagari, Beck and Demirguc-Kunt (2003)
Initial SME250	Share of employment in firms with less than 250 employees in manufacturing for the first available year in 1990s	Country-specific sources; see Ayyagari, Beck and Demirguc-Kunt (2003)
INFORMAL	Unofficial economy (% of GDP)	Friedman, Johnson, Kaufman, and Zoido-Lobaton (2000)
Policy control variables		
Education	Secondary school enrollment (%, gross)	WDI
Government consumption	General government final consumption expenditure (% of GDP)	WDI
Inflation	Annual growth rate of the of the GDP deflator	International Financial Statistics (IFS)
Trade	Share of imports plus exports in GDP	WDI
Black market premium	Overvaluation of the official relative to the black market exchange rate	WDI
Private Credit	Claims on private sector by deposit money banks and other financial institutions as share of GDP	IFS, own calculations

Endowment variables		
Ethnic fractionalization	Average value of five indices of ethnolinguistic fractionalization, with values ranging from 0 to 1, where higher values denote higher levels of fractionalization. Sources: Atlas Narodov Mira, 1964; Muller, 1964; Roberts, 1962; Gunnemark, 1991 – probability that two randomly selected individuals in a country will not speak the same language	Easterly and Levine (1997)
Legal Origin Variables		
British	Legal Origin-British	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
French	Legal origin – French	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
German	Legal origin – German	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Scandinavian	Legal origin – Scandinavian	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Transition	Legal origin – Socialist	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Business Environment Variables		
Property Rights	The degree to which property rights are protected in an economy	Heritage Foundation
Cost of Contract Enforcement	Attorney fees and court costs incurred when enforcing a debt contract through courts Relative to Gross Net Income per capita.	Djankov et al. (2003)
Cost of entry	Cost in terms of legal fees to formally register a new firm Relative to GNI per capita	Djankov et al. (2002)
Efficiency of Bankruptcy	Cost, duration , observance of priority claims and efficiency of an insolvency Process with higher values indicating a less expensive and faster process.	http://rru.worldbank.org/doingbusiness/
Business Environment	Principal component indicator of the above four measures.	Authors' calculations.