SMEs, Growth, and Poverty:

Cross-Country Evidence

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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 62 countries, we find a strong association between the importance of SMEs and GDP per capita growth. This relationship, however, is not robust to controlling for simultaneity bias. Thus, while a large SME sector is a characteristic of successful economies, the data do not 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. Finally, we find qualified evidence that the overall business environment facing both large and small firms– as measured by the ease of firm entry and exit, sound property rights, and contract enforcement – influences economic growth.

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 last period 1998 - 2002.[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, proponents of SME support frequently claim that SMEs are generally 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 and growing 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

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[1] These statistics are from World Bank (2002). 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 do not only hurt 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, Rajan, and Zingales, 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, from this perspective, 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. From this perspective, low entry and exit barriers, well-defined property rights, effective contract enforcement, and firm access to finance 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.

In terms of empirical assessments, the microeconomic evidence from a few 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 review in greater detail in the next section, firm-level and industry-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. We construct two measures of SME size. The first measures the share of the SME labor force in the total labor

3

force in manufacturing, where SMEs are defined as firms with 250 or fewer employees. The second measure of SME size is the share of the SME labor force in the total labor force in manufacturing, where we use each country's official definition of an SME. 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 below the national poverty line, 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.

The cross-country regressions yield the following 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, there is a significant, positive relationship between growth and SME size. Second, the SME-growth relationship is not robust to controlling for simultaneity bias. 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 below the poverty line, 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 support the view that SMEs exert a causal impact on growth and poverty. The regressions do not necessarily lead to the conclusion that SMEs do not foster growth and poverty alleviation. Rather, our interpretation is more cautious. We 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 SMEs are a characteristic of successful economies, not an exogenous, causal factor.

While the focus of this paper is on SMEs, we also examine the overall business environment since (1) many policies that promote overall business competitiveness and private commercial contracting may also foster SME growth and (2) we seek to distinguish between the impact of SMEs in particular from policies that foster a competitive environment and private property rights protection in general. We examine an aggregate index of the business environment that incorporates information on entry and exit barriers, effective property rights protection, and sound contract enforcement.

We find some evidence that a business environment that promotes competition, private property rights, and sound contract enforcement boosts economic growth. The overall business environment index remains linked with economic growth even when controlling for the endogeneity of the business environment index. However, we find that the business environment does not influence the poor any more or less than the rest of a country's population. These results are consistent with the view that a competitive, contractually sound business environment lowers poverty by increasing the overall level of GDP per capita, but the business environment does not influence poverty beyond its impact on overall economic development. While

suggestive, these results on the business environment must be confirmed by panel studies and microeconomic evidence.

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. While attempting to control for non-steady-state growth influences, we recognize this aggregation problem as endemic to cross-country growth regressions.

Fourth, while this paper uses new, comparable cross-country data on the size of the SME sector, some readers may object to classifying SMEs as firms with less than 250 employees or using official categorizations of firms. Further, following conventional definitions, we define SMEs as formal enterprises and exclude informal enterprises. However, in our regressions, we control for the size of the informal economy. While fully recognizing these methodological limitations, cross-country comparisons are one, useful input into analyzing the relationships

6

between SMEs and economic growth, development, and poverty. Thus, we do not conclude that SMEs do not foster growth, development, and poverty reductions. Rather, this initial cross-country analysis fails to reject the null hypothesis that the relative size of the SME sector per se does not exert a causal impact on growth or poverty alleviation. We do, however, find that policies and institutions that foster a business environment conducive to competition and private commercial transactions promote economic growth, and through overall growth, lower poverty.

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. Nevertheless, this paper is a necessary first step in using cross-country analyses to help assess the links between SMEs and growth, development, and poverty.

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. [2]

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

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).

Consistent with theoretical arguments outlined in the Introduction,[3] emerging empirical

evidence supports the view that firm size responds to national characteristics. Beck, Demirguc-

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[3] 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

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.[4,5]

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.[6] 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

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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.

[4] 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-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.

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

[6] 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.

robust to controlling for simultaneity bias. Third, we examine whether a competitive, contractually sound business environment exerts a causal impact on economic growth. Finally, we evaluate whether SMEs and the overall business environment influence the rate of poverty reduction beyond any links with economic growth.

III.   Data and Methodology

A. Measures of SME Development

To measure the role of SMEs in the economy, we use a newly constructed database on the share of manufacturing employment accounted for by SMEs and construct two measures of SME size (Ayyagari, Beck and Demirguc-Kunt, 2003). While these are the most comprehensive indicators of SME size available 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, such as agriculture and services.[7] Another potential problem is that these measures of SME size only include formal enterprises and exclude informal enterprises. To assess the importance of this limitation, however, we 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.

SMEOFF is the share of the SME sector in total formal labor force in manufacturing when the official country definition of SME is used, with the official country definition varying

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

between 100 and 500 employees. This variable takes into account that economic and

institutional country characteristics might determine characterization of a firm as small, medium-

size or large.

While data on SME250 and SMEOFF are available for 54 and 76 countries, respectively;

we lose some observations due to data restrictions on control variables, so that our regression

sample comprises up to 62 countries. Table I lists GDP per capita, SME250, and SMEOFF.

There is a large variation in economic development and the relative importance of SMEs. GDP

per capita ranges from Burundi (US$ 170) to Luxembourg (US$ 45,185). The importance of

SMEs varies between Zimbabwe with 15% of total formal employment in SMEs to Thailand

with 87%, as indicated by SME250.

B. Measure of the Business Environment

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

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.

C. Measures of economic growth and poverty

As dependent variables in our analyses, we use measures of economic growth, changes in

income inequality and change in poverty.

GDP per capita growth equals the average annual growth rate in real GDP per capita

averaged over the period 1990-2000. [8]

Income growth of the poor equals the 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,

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[8] We also considered the per capita growth of value added in manufacturing. Apart from substantially reducing our
sample, we did not find any significant and robust relationship with either of the two SME indicators.

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. [9]

Headcount is the share of the population living below the national poverty line. 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 and the Business Environment 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. Thus, this measures the breadth and depth of poverty (Chen and Ravallion, 2001). We use the annualized growth rate of Poverty gap.

D. Methodology

1. Growth regressions

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

$$(y_{i,2000} - y_{i,1990})/10 = \alpha y_{i,1990} + \beta SME_i \text{ or } BE_i + \gamma X_i + \varepsilon_i , \tag{1}$$

where y is the log real GPD per capita, SME is one of our two indicators of the size of the SME sector, BE is Business Environment, 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

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[9] 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).

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.

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) growth rate in Headcount and Poverty Gap. 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 an indicator of SME development <u>or</u> business environment.[10]

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

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 or business environment 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 and the Business Environment.

Similarly, we regress the annualized log difference of the Gini coefficient on the log of its initial value, GDP per capita growth, and an indicator of either SME development <u>or</u> the business environment.

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

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

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

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

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

where P is the log of either *Headcount,* or *Poverty gap*. Unlike in the case of GDP per capita and Gini, we do not have data for time periods as long as ten years. The median time period over which the change in poverty is calculated is two years with a maximum value of eight years for some countries. Thus, we examine whether the relative size of the SME sector has particularly large impact on poverty alleviation.

3. Simultaneity bias

The analyses are prone to simultaneity problems. To assess the robustness of the results, we use IV regressions to extract the exogenous component of SME development as well as the business environment. In selecting instrumental variables for the SME size, we 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 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% and 48% of cross-country variation in SME250 and SMEOFF, respectively, while other historical variables, discussed below, do not add any explanatory power to these regressions.

We provide two tests to assess the appropriateness of the instruments. First, we provide the F-Test of all of the instruments. That is we test the null hypothesis that the instruments do not explain cross-country differences in SME size 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 ability to explain cross-country variation in the SME share. We refer to this test as "Overid" in the tables. Under the joint null hypothesis is 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.

To test the robustness of our IV results, we experiment with alternative sets of instrumental variables. Specifically, we use legal origin since cross-country analyses differences in legal systems influence the contracting environment with implications on corporate finance and hence firm formation and growth (Beck and Levine, 2002). We also use the absolute value

of a country's latitude, as measured for the capital, since Acemoglu, Johnson, and Robinson (2001), Engerman and Sokoloff (1997), Easterly and Levine (2003), and Beck, Demirguc-Kunt, and Levine (2003) show that endowments influence government policies and institutions that shape the competitiveness environment. We use two statistics to assess the explanatory power and validity of the additional instruments. First, we use the "C-statistic" to test the exogeneity of the additional instruments (Hayashi, 2000).[11] Second, as we add new instrumental variables, we use an F-statistic to test whether the extra instruments provide significant additional explanatory power of SME size. The consequence for including instruments with little explanatory power is bias of the instrumental variable estimator (Hahn and Hausman, 2002; Staiger and Stock, 1997).

E. 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 –3% in Burundi to 7% in Ireland. There is also substantial variation across countries in government policies and legal and religious 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 SME size 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

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[11] Specifically, the C-statistic is defined as the difference of the Hansen statistics of the unrestricted equation (with the smaller set of instruments) and restricted equation (with the larger set of instruments). Under the null hypothesis

18

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 transition economies and countries in Sub-Saharan Africa. Latin American and Sub-Saharan African countries and countries with higher ethnic fractionalization have a business environment that is less conducive to private sector transactions.

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that both the restricted and unrestricted equations are well specified, the C-statistic is distributed as χ^2 in the number of instruments tested.

IV. Empirical results

A. SMEs, the Business Environment and Economic Growth

The ordinary least squares (OLS) results in Table III indicate that the share of SME employment in total employment is associated with higher rates of GDP growth, while the Instrumental Variable (IV) regressions suggest that this relationship is not a causal one. Table III reports regression results based on equation (1). Besides the SME indicators, regressions (1) and (2) 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 same as regressions (1) and (2) except that they also include a measure of the size of the informal sector, which we define below. Regressions (5) and (6) 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. For the sake of brevity, we only report coefficients on the SME indicators and the size of the informal sector in the Tables.

SME250 and SMEOFF enter significantly and positively in the Table III regressions at the five-percent significance level. These results are robust to controlling for a large number of other potential determinants of economic growth. In unreported robustness checks, we found that both SME indicators continue to enter significantly in the growth regressions even when controlling for the business environment. Furthermore, we found that the relationship between SMEs and economic growth is robust to leaving out transition economies and countries in Sub-Saharan Africa.

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 25th and 75th 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%.

The relationship between SMEs and economic growth is robust to controlling for the size of the informal economy (columns 3 and 4). Specifically, we use estimates of the size of the informal sector relative to national GDP from Schneider and Enste (1998), Friedman, Johnson, Kaufmann and Zoido-Lobaton (2000) and Schneider (2000), based on the currency demand and DYMIMIC approaches. These authors estimate the market value of output produced by the informal sector as a share of measured GDP. We use measures of informal activity rather than informal labor force because very few countries have data on the size of the labor force employed by the informal sector (Ayyagari, Beck and Demirguc-Kunt, 2003). When we control for the importance of informal economy, both SME measures still enter significantly and positively, while the measure of the informal economy does not enter significantly.

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

The instrumental variable results in columns (5) and (6) indicate that the positive relationship between the size of the SME sector and economic growth is not uniformly robust to controlling for simultaneity bias. SME250 and SMEOFF do not enter significantly at the 5% level in the growth regressions when using these instruments. Furthermore, these instruments do

not reject the test of the overidentifying restrictions (Overid) and these instruments strongly

reject the null hypothesis that they do not explain SME size. In unreported regressions, we have

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, except when we add the legal origin dummies in the regression using SMEOFF

but this does not change the results on SMEOFF. Thus, when adding additional instrumental

variables, the data continue to confirm the conclusions from Table III. In sum, 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 confidently.

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 that control for simultaneity bias

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 indicate a generally positive association between economic

growth and our indicator of business environment. The table presents both OLS and IV

regressions. The business environment indicator enters positively and significantly at the 5%

level in both regressions. The Overid test is not rejected, suggesting that the instruments do not

explain growth except through their impact on business environment and the other explanatory

variables. Further, the F-test for the first stage regression indicates that ethnic fractionalization

and the dummy variables for transition, African and Latin American countries explain jointly

business environment. As in the case of the SME IV regressions, we experimented with

alternative IV sets, adding, separately, legal origin and latitude to the core IV set. Unlike in the

case of the SME regressions, each of the IV sets adds explanatory power to the first stage. When

we add legal origin or latitude to the IV sets, Business Environment continues to enter significantly at the 5%, and the OIR test and the C-statistics are not rejected.

The results also suggest an economically meaningful impact. A one standard deviation in the Business Environment indicator explains cross-country growth differences of 0.7 percentage points. In sum, cross-country regressions indicate a strong, positive and economically meaningful relationship between economic growth and the business environment even when using instrumental variables to control for simultaneity bias.

B. SMEs, the Business Environment, Inequality and Poverty Alleviation

Next, we examine the relationship between SMEs, the business environment, and poverty. We examine four different dimensions. First, we assess whether SMEs and the business environment influence the growth rate of the income of the poorest quintile of the country. Second, we examine the relationships between SMEs, the business environment 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 both the size of the SME sector and the business environment. Finally, we investigate the connection between changes in the severity and depth of poverty in a country and the role SMEs in the economy and the business climate.

The results in Table V suggest that SMEs and the business environment do not influence the poorest segment of society differently from the average person and that they have no relationship with the evolution of the income distribution in an economy. In Panel A, 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, plus measures of

(i) SME size, and (ii) the Business Environment. While GDP per capita growth enters

significantly in all regressions, neither of our two measures of SME size nor our business

environment indicator enter significantly. This implies that SMEs do not influence the poorest

quintile of economies differently from their link with the overall growth rate of the economy.

Further, Business Environment does not have any differential effect on the growth rate of the

income of the lowest quintile.   These results match findings by Dollar and Kraay (2002) who

find that most policies do not have any differential effect on the poorest income quintile beyond

their effect on overall economic development and growth.

In Panel B we regress the annual growth in the Gini coefficient on the log of the initial

Gini coefficient, GDP per capita growth and measures of (i) SME size, and (ii) the Business

Environment.   Neither the two SME measures, nor our indicator of the Business Environment

enter significantly, suggesting that neither the importance of SMEs nor the Business

Environment has any direct impact on how an economy's income distribution evolves. There is

weak evidence of a negative link between GDP per capita growth and faster reductions in

income inequality.

Since earlier findings found that the business environment positively influenced overall

economic growth, the results on poverty suggest a positive link between the business

environment and poverty through growth. The findings in Table V suggest that improvements in

the business environment affect the lowest income quintile as much as the rest of the country and

that any impact that the business environment might have, works through GDP per capita

growth.

The results in Table VI do not reject the view that there is no relation between the

importance of SMEs in an economy, its business environment, and poverty alleviation as

measured by changes in Headcount and Poverty Gap. Here we regress the annualized growth

24

rates of Headcount and Poverty gap on the log of the respective initial value, GDP per capita growth, plus (i) one of our two SME measures or (ii) our indicator of the Business Environment. Neither of the two SME measures enters significantly. Furthermore, we also do not find any significant relationship between Business Environment and either of the two poverty measures when controlling for GDP per capita growth.

The results in Tables V and 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. Similarly, we cannot reject the hypothesis that Business Environment has no effect on changes in income distribution and poverty. Note, however, that the sample period of these regressions is very short.

V.   Conclusions

This paper first explored the relationship between the size of the SME sector – as measured by their share of employment – and economic growth and poverty. We use a new database that, for the first time, assembles consistent data on SME size for over 70 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. Moreover, 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 relation between SMEs and measures of the depth and breadth of poverty. Thus, the results do not support the pro-SME prescription of directly subsidizing SME development to accelerate growth and reduce poverty. In sum,

although a prosperous SME sector is a characteristic of flourishing economies, this paper's cross-country regressions do not support the contention that SMEs foster economic success.

Second, we find qualified evidence that advertises the importance of creating a business environment that fosters competition and facilitates commercial transactions for all firms, large, medium, and small. An index of the overall business environment – which incorporates information on entry and exit barriers, sound property rights, and efficient contract enforcement – is associated with the growth rate of GDP per capita. These results do not support the direct subsidization of SMEs but do advertise the potential benefits of policies that strengthen the overall business environment. Finally, while a sound business environment tends to help the poor by accelerating aggregate growth, the results do not suggest that the business environment influences poverty beyond its influence on the overall economy.

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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. . SMEOFF is the SME sector's share of employment according to the official definition of the SME sector. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy.

Country	GDP per capita	SME250	SMEOFF	Business Environment
Argentina	7,484	70.18	70.18	0.00
Australia	20,930		50.6	1.30
Austria	29,619	66.1	66.1	1.08
Belgium	27,572	69.25	69.25	0.96
Brazil	4,327	59.8	59.8	-0.34
Bulgaria	1,487	50.01	50.01	-0.12
Burundi	171		20.51	
Cameroon	653	20.27	20.27	-1.98
Canada	19,947		58.58	2.21
Chile	4,476	86	86.5	-0.21
Colombia	2,290	67.2	67.2	0.18
Costa Rica	3,405		54.3	-0.70
Cote d'Ivoire	746	18.7	18.7	-1.76
Croatia	4,454	62	62	-0.59
Czech Republic	5,015	64.25	64.25	-0.28
Denmark	34,576	68.7	78.4	
Ecuador	1,521	55	55	
El Salvador	1,609		52	
Finland	26,814	59.15	59.15	1.60
France	27,236	67.3	62.67	0.51
Germany	30,240	59.5	70.36	0.82
Ghana	377	51.61	51.61	-1.06
Greece	11,594	86.5	74	-0.38
Guatemala	1,460	32.3	32.3	-1.01
Honduras	706		27.6	-0.66
Hong Kong, China	21,842		61.5	0.99
Hungary	4,608	45.9	45.9	-0.65
Iceland	27,497		49.6	
Indonesia	963		79.2	-1.37
Ireland	19,528	67.2	72.1	1.04
Italy	19,218	79.7	73	0.04
Japan	42,520	71.7	74.13	1.09
Kenya	341	33.31	33.31	-1.00
Korea, Rep.	10,508	76.25	78.88	1.03
Luxembourg	45,185	70.9	70.9	
Mexico	3,390	48.48	48.48	-0.25
Netherlands	27,395	61.22	58.5	1.60
New Zealand	16,084		59.28	
Nicaragua	432		33.9	-1.42
Nigeria	257	16.72	16.72	-0.76
Norway	33,657		61.5	1.35
Panama	2,999	72	72	-0.86
Peru	2,162	67.9	67.9	-0.43
Philippines	1,099	66	66	-0.70
Poland	3,391	63	61.81	0.15
Portugal	11,121	79.9	81.55	0.29
Romania	1,501	37.17	37.17	-1.09

Country	GDP per capita	SME250	SMEOFF	Business Environment
Singapore	22,874		44	1.17
Slovak Republic	3,651	56.88	32.07	
Slovenia	9,758		20.26	1.38
South Africa	3,923		81.53	-0.21
Spain	15,362	80	74.95	0.22
Sweden	27,736	61.3	56.5	1.23
Switzerland	44,717		75.25	0.61
Taiwan, China	12,474	68.6	68.6	
Tanzania	183	32.1	32.1	-0.58
Thailand	2,590	86.7	86.7	0.44
Turkey	2,865	61.05	61.05	-0.12
United Kingdom	19,361	56.42	56.42	2.18
United States	28,232		52.54	2.26
Zambia	419	36.63	36.63	-0.62
Zimbabwe	643	15.2	15.2	-0.78

Table II
Summary Statistics and Correlations

SME250 (SMEOFF) is the SME sector's share of employment when 250 employees (official definition) is taken as cutoff for the definition of SME. Informal is the unofficial economy as a percentage of GDP. GDP per capita growth is measured over the period 1990-2000. 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. 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. 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. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy. Growth in headcount is the growth rate of headcount where headcount is defined as the percentage of population living below the national poverty line. Growth in poverty gap 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, that, if available to the poor would lift them out of extreme poverty. Detailed variable definitions and sources are given in the appendix.

Panel A: Summary Statistics

	Observations	Mean	Std Dev	Minimum	Maximum
SME250	45	58.357	18.784	15.200	86.700
SMEOFF	62	56.104	18.902	15.200	86.700
Business Environment	53	0.087	1.025	-1.977	2.257
Informal	47	24.699	16.446	8.600	76.000
GDP per capita growth	62	1.531	1.871	-3.267	6.531
Income growth of the poor	41	0.008	0.055	-0.163	0.133
Growth in Gini	41	0.006	0.031	-0.048	0.152
Growth in headcount	24	0.051	0.317	-0.446	1.404
Growth in poverty gap	24	0.033	0.409	-0.817	1.690
Education	62	76.383	33.022	5.425	133.188
Government consumption	62	15.917	5.000	5.852	27.177
Inflation	62	34.987	88.141	0.835	549.210
Black market premium	62	12.562	29.060	-0.027	170.126
Trade	62	102.528	34.045	74.140	360.627
Private credit	62	59.424	48.490	4.839	205.482
Transition	62	0.129	0.338	0.000	1.000
Ethnic fractionalization	62	0.269	0.270	0.000	0.890
Africa	62	0.161	0.371	0.000	1.000
Latin	62	0.210	0.410	0.000	1.000

Panel B: Correlations

	SME250	SMEOFF	Business Environment	Informal	GDP per capita growth	Income growth of the poor	Growth in Gini	Growth in headcount	Growth in poverty gap	Education	Government consumption	Inflation	Black market premium	Trade
SMEOFF	0.9643***													
Business Environment	0.5405***	0.3968***												
Informal	-0.2502	-0.2148	-0.6074***											
GDP per capita growth	0.6524***	0.578***	0.4559***	-0.0615										
Income growth of the poor	0.1121	0.1209	0.0316	0.1293	0.188									
Growth in Gini	-0.1909	-0.14	-0.072	0.1584	-0.2697*	-0.5016***								
Growth in headcount	0.1378	0.1091	0.2295	-0.3666	0.1599	-0.0808	0.5294**							
Growth in poverty gap	0.1434	0.1024	0.1873	-0.3156	0.168	-0.1181	0.5088***	0.9848***						
Education	0.4152**	0.3853***	0.6667***	-0.6309***	0.3516**	-0.086	-0.1759	0.5618**	0.598***					
Government consumption	0.1816	0.1004	0.4154***	-0.5516***	-0.0961	-0.0449	-0.0502	0.4173***	0.3817*	0.5072***				
Inflation	-0.0886	-0.1151	-0.2707**	0.1337	-0.2703**	-0.0996	0.3728**	0.1091	0.0451	-0.3768***	0.1232			
Black market premium	-0.46***	-0.408***	-0.3359**	0.2918**	-0.4191***	-0.0632	0.118	-0.038	-0.0563	-0.2714**	-0.094	0.2489***		
Trade	-0.0593	-0.0499	0.1763	-0.0737	0.2658**	0.0347	0.0208	-0.0471	-0.0553	0.4839***	-0.1314	-0.0616	-0.0114	
Private credit	0.4862***	0.4768***	0.717***	-0.4303***	0.3914***	0.0453	-0.2775*	-0.2517	-0.2371	0.533***	0.1837	-0.288***	-0.3668***	0.1378

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

Panel C: Correlations

	SME250	SMEOFF	Business Environment	Transition	Ethnic fractionalization	Africa
SMEOFF	0.9643***					
Business Environment	0.5405***	0.3968***				
Transition	-0.0967	-0.1934	-0.1664			
Ethnic fractionalization	-0.6931***	-0.3857***	-0.5069***	-0.1297		
Africa	-0.7583***	-0.5484***	-0.4712***	-0.1688	0.7493***	
Latin	0.1006	-0.0046	-0.3037**	-0.1983	-0.1858	-0.2259*

***, ** 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)-(4) is: GDP per capita growth = α + β_1 Initial income + β_2 SME + β_3 Education + β_4 Govt. consumption + β_5 Inflation + β_6 Black market premium + β_7 Trade + β_8 Private credit + β_9 Informal. 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. SME is the SME sector's share of employment. 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. INFORMAL is the unofficial economy as a percentage of GDP. Log values of all right hand side variables were used. Specifications (1) and (3) use SME-250 and (2) and (4) use SME-Official as the definitions of the SME employment respectively.

Two stage instrumental variable regressions are carried out in specifications (5) and (6). The first stage regression equation is:
SME250 (or SMEOFF) = α_0 + β_1 Transition + β_2 Africa + β_3 Latin + β_4 Ethnic + β_5 Initial Income + β_6 Education + β_7 Govt. consumption + β_8 Inflation + β_9 Black 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 (5) and (6) also report the p-values of the F-test for the instruments, the p-values for the test of overidentifying restrictions and the adjusted R-square from the first stage. Values are 1990-99 averages where available. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix. Adjusted R-squares from the first stage are reported for the IV Regressions.

	OLS				IV	
	(1)	(2)	(3)	(4)	(5)	(6)
SME250	2.197***		1.738***		1.863*	
	(0.687)		(1.070)		(1.047)	
SMEOFF		1.542**		2.324***		4.481
		(0.617)		(0.723)		(3.124)
Informal			0.618	0.577		
			(1.012)	(0.645)		
F-Test					0.000	0.000
Overid					0.1180	0.7011
Observations	45	62	37	52	45	62
Adjusted R-squared	0.443	0.434	0.294	0.346		
Adjusted R-squared(First Stage)					0.716	0.467

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively.

Table IV
Business Environment and Growth

Specification (1) is an OLS regression and Specification (2) is an IV regression. In Specification (1), the regression is: GDP per capita growth = $\alpha + \beta_1$ Initial income + β_2 Business environment + β_3 Education + β_4 Govt. consumption + β_5 Inflation + β_6 Black market premium + β_7 Trade + β_8 Private credit. In Specification (2), the first stage regression equation is: BE = $\alpha_0 + \beta_1$ Transition + β_2 Africa + β_3 Latin + β_4 Ethnic + β_5 Initial Income + β_6 Education + β_7 Govt. consumption + β_8 Inflation + β_9 Black market premium + β_{10} Trade + β_{11} Private credit. The second stage regression is GDP per capita growth = $\alpha + \beta_1$ Initial income + β_2 Predicted value of business environment + β_3 Education + β_4 Govt. consumption + β_5 Inflation + β_6 Black market premium + β_7 Trade + β_8 Private credit. GDP per capita growth is the real growth rate of GDP over the period 1990-2000. Initial Income is the log value of GDP per capita measured in 1990. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy. Education is secondary school enrollment (% net). 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. The instrumental variables are: Transition is a dummy variable that takes on value one for transition economies 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 which takes the value one for Latin American countries and zero otherwise. Specification (2) also reports the p-values of the F-test for the instruments, the p-values for the test of overidentifying restrictions and the adjusted R-square from the first stage regression. Detailed variable definitions and sources are given in the appendix.

	OLS	IV
	(1)	(2)
Business Environment	0.726**	2.722**
	(0.374)	(1.115)
F-Test		0.000
Overid		0.388
Observations	53	53
Adj R-squared	0.383	
Adj R-squared (First Stage)		0.660

 *, ** and *** indicate significance levels of 10, 5 and 1 percent respectively

Table V
SMEs, Business Environment and Income Inequality

The regression equation estimated is Income growth of the poor/Growth in Gini=α + β_1Initial value + β_2GDP per capita growth + β_2SME or Business environment. The dependent variable in panel A is the growth rate of the lowest income quintile group for the largest period between 1985 and 1999. The dependent variable in panel B is the growth rate in Gini for the largest period between 1985 and 1999. Initial value is the log of initial income of the poor or log of initial Gini. GDP per capita growth is the real growth rate of GDP over the same time period. SME250 is the log of SME sector's share of employment when 250 employees is taken as cutoff for the definition of SME and SMEOFF is the SME sector's share of employment when the country's official definition of SME is used. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

Panel A: Income Growth of the Poor

	(1)	(2)	(3)
Constant	-0.099	-0.057	-0.047
	(0.082)	(0.071)	(0.069)
Initial Value	0.008	0.003	0.004
	(0.008)	(0.007)	(0.010)
GDP per capita growth	1.169***	1.168***	1.421***
	(0.336)	(0.326)	(0.323)
SME250	0.006		
	(0.023)		
SMEOFF		0.006	
		(0.019)	
Business Environment			0
			(0.009)
Observations	31	41	35
Adjusted R-squared	0.483	0.409	0.438

Panel B: Growth in Gini

	(1)	(2)	(3)
Constant	0.114	0.098	0.128
	(0.121)	(0.108)	(0.139)
Initial Value	-0.027	-0.024	-0.032
	(0.031)	(0.173)	(0.037)
GDP per capita growth	-0.236	-0.239	-0.284
	(0.183)	(0.173)	(0.186)
SME250	-0.002		
	(0.012)		
SMEOFF		-0.000	
		(0.010)	
Business Environment			-0.003
			(0.006)
Observations	31	41	35
Adjusted R-squared	0.062	0.063	0.090

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively

Table VI
SME Employment, Business Environment and Poverty Alleviation

The regression equation estimated is the Growth in headcount/Growth in poverty gap=α + β_1GDP per capita growth+ β_2Initial value + β_3SME or Business environment. Growth in headcount is the growth rate of headcount where headcount is defined as the percentage of population living below the national poverty line. Growth in poverty gap is the growth rate of the poverty gap where poverty gap is defined as the amount of additional income per capita, expressed as a proportion of the poverty line, that, if available to the poor would lift them out of extreme poverty. GDP per capita growth is the real growth rate of GDP over the period 1990-2000. Initial value is the log of Headcount/Poverty Gap in the first year of the relevant time period. SME250 is the log of SME sector's share of employment when 250 employees is taken as cutoff for the definition of SME and SMEOFF is the SME sector's share of employment when the country's official definition of SME is used. Business environment is a principal component indicator of Property Rights, Contract enforcement, Entry and Bankruptcy. Robust standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	Growth in Headcount	Growth in Headcount	Growth in Headcount	Growth in Poverty Gap	Growth in Poverty Gap	Growth in Poverty Gap
Constant	0.833	0.935	0.436**	0.718	0.955	0.69
	(0.597)	(0.592)	(0.199)	(0.833)	(0.792)	(0.186)
GDP per capita growth	0.020	0.019	-0.006	0.023	0.027	-0.008
	(0.045)	(0.041)	(0.028)	(0.061)	(0.052)	(0.037)
Initial Value	-0.163**	-0.157**	-0.151**	-0.182**	-0.168**	-0.162*
	(0.059)	(0.059)	(0.059)	(0.071)	(0.070)	(0.069)
SME250	-0.109			-0.129		
	(0.137)			(0.209)		
SMEOFF		-0.135			-0.189	
		(0.131)			(0.191)	
Business Environment			0.016			0.019
			(0.072)			(0.118)
Observations	19	24	22	19	24	22
Adjusted R-squared	0.563	0.547	0.518	0.476	0.435	0.403

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively

Appendix 1: Official Country Definition of SME

Country	Official Definition of SME	Time Period of Data	Source
Argentina	200*	1993	Inter-American Development Bank-SME Observatory
Australia	100	1991	APEC, 1994: *The APEC Survey on Small and Medium Enterprises.*
Austria	250	1996	Eurostat
Belgium	250*	1996-97	Eurostat
Brazil	250	1994	IBGE-Census 1994
Bulgaria	250*	1995-97, 1999	Center for International Private Enterprise, Main characteristics of SME: Bulgaria Country Report, Institute for Market Economics
Burundi	100	90s	Regional Program on Enterprise Development Paper # 30
Cameroon	200	90s	Regional Program on Enterprise Development Paper # 106
Canada	500*	1990-93, 1996, 1998	Presentation to the Standing Committee on Industry, Science and Technology, APEC Survey, Globalization and SME 1997(OECD)
Chile	200*	1996	Inter-American Development Bank-SME Observatory
Colombia	200	1990	Inter-American Development Bank-SME Observatory
Costa Rica	100	1990, 92-95	Inter-American Development Bank-SME Observatory
Cote D'Ivoire	200	90s	Regional Program on Enterprise Development Paper # 106, #109
Croatia	250	1998	United Nations Economics Commission for Europe, Center for International Private Enterprise
Czech Republic	250*	1996	United Nations Economics Commission for Europe
Denmark	500	1991-92	Globalization and SME 1997(OECD), International Labor Organization
Ecuador	200	1994	Inter-American Development Bank-SME Observatory
El Salvador	150*	1993	Inter-American Development Bank-SME Observatory
Estonia	250*	1996-97	United Nations Economics Commission for Europe
Finland	250*	1996-97	Eurostat Database
France	500	1991, 1996	International Labor Organization, OECD SME Outlook
Germany	500	1991, 1993-98	Globalization and SME 1997 (OECD), Fourth European Conference paper
Ghana	200	90s	Regional Program on Enterprise Development Paper # 106, #109
Greece	500	1988	OECD
Guatemala	200*	1990	Inter-American Development Bank-SME Observatory
Honduras	150	1990	Inter-American Development Bank-SME Observatory
Hong Kong, China	100	1993, 2000	APEC Survey, Legislative Council 17 Jan 2005
Hungary	250	1997	United Nation Economic Commission for Europe
Iceland	100	1996	Eurostat Database
Indonesia	100	1993	OECD Paper, Speech of State Minister of Cooperatives and SME in Indonesia

Country	Official Definition of SME	Time Period of Data	Source
Ireland	500	1997	Globalization and SME 1997 (OECD)
Italy	200	1995	Russian SME Resource Center, Eurostat Database
Japan	300	1991, 1994, 1996,1998, 1999	Globalization and SME 1997 (OECD), SME Agency in Japan
Kazakhstan	500*	1994	United Nation Economic Commission for Europe
Kenya	200	90s	Regional Program on Enterprise Development Paper # 106, #109
Korea, Rep.	300	1992-93, 1997,1999	APEC Survey, OECD, Paper titled "Bank Loans to Micro-enterprises, SMEs and Poor Households in Korea"
Latvia	500*	1994-95	United Nation Economic Commission for Europe
Luxembourg	250*	1996	Eurostat Database
Mexico	250	1990-97	Inter.-American Development Bank-SME Observatory, APEC Survey
Netherlands	100	1991-98	G8 Global Marketplace for SME, Globalization and SME 1997(OECD)
New Zealand	100*	1991,1998-00	SMEs in New Zealand, Structure and Dynamics, APEC Survey
Nicaragua	100	1992	Inter -American Development Bank-SME Observatory
Nigeria	200	2000	Regional Program on Enterprise Development Paper # 118
Norway	100	1994, 1990	European Industrial Relations Observatory
Panama	200	1992	Inter -American Development Bank-SME Observatory
Peru	200	1994	Inter -American Development Bank-SME Observatory
Philippines	200	1993-95	APEC Survey, Situation Analysis of SME in Laguna
Poland	250	1996-97,1999	United Nation Economic Commission for Europe
Portugal	500	1991, 1995	OECD
Romania	250	1996-1999	United Nation Economic Commission for Europe, Center for International Private Enterprise
Russian Federation	250*	1996-97	United Nation Economic Commission for Europe
Singapore	100	1991,1993	APEC Survey
Slovak Republic	500	1994-95	United Nations Economic Commission for Europe
Slovenia	500*	1994-95	United Nations Economic Commission for Europe, SME in Central and Eastern Europe, Barriers and Solution by F. Welter
South Africa	100	1988	World Bank Report
Spain	500	1991,1995	OECD
Sweden	200	1991, 1996	OECD
Switzerland	500*	1991, 1995, 1996	OECD
Taiwan	200	1993	APEC Survey
Tanzania	200	90s	Regional Program on Enterprise Development Paper # 106, #109
Thailand	200	1991, 1993	APEC Survey
Turkey	200*	1992, 1997	SME in Turkey

Country	Official Definition of SME	Time Period of Data	Source
Ukraine	250*	1996	United Nations Economic Commission for Europe
United Kingdom	250*	1994, 1996-00	Department of Trade and Industry, UK
United States	500	1990-1998	Statistics of US Businesses: Microdata and Tables
Zambia	200	90s	Regional Program on Enterprise Development Paper # 106, #109
Zimbabwe	200	90s	Regional Program on Enterprise Development Paper # 106, #109

* indicates either the country has no official definition of SME or we don't have data for the country's official cut-off

Appendix 2: Variable Definitions

Variable	Variable Definition	Source
Dependent variables		
Growth	GDP per capita growth(annual %)	WDI
Growth for poor	GDP per capita growth of the lowest income quintile group	WDI, Dollar and Kraay (2001)
Growth in Gini	The 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 (2001)
Change of Headcount	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.	WDI
Poverty Gap	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.	WDI
SME variables		
SMEOFF	SME sector employment as a percentage share of total employment in the country (Official Country Definition of SME used)	see Table A1
SME250	SME sector employment as a percentage share of total employment in the country (Definition of SME: <=250 employees)	see Table A1
INFORMAL	Unofficial economy (% of GDP)	Johnson, Kaufman, and Zoido-Lobaton
Policy control variables		
Education	Secondary school enrollment (%, gross)	WDI
Government consumption	General Government final consumption expenditure (% of GDP)	WDI
Inflation	Inflation calculated from CPI	IFS
Trade	Share of imports plus exports in GDP	WDI
Black market premium	Overvaluation of the official relative to the black market exchange rate	?????
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;	Easterly and Levine (1997)

42

Variable	Description	Source
Latitude	Roberts, 1962; Gunnemark, 1991 – probability that two randomly selected individuals in a country will not speak the same language. The absolute value of the latitude of the country, scaled to take values between 0 and 1	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Religion Variables		
Catholic	Catholics as a percentage of population in 1980	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Muslim	Muslims as a percentage of population in 19805	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Protest	Protestants as a percentage of population in 1980	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Orelig	Other Religions as a percentage of population in 1980	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
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) http://rru.worldbank.org/doingbusiness/
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.	
Business Environment	Principal component indicator of the above four measures.	Authors' calculations.