

The Determinants of Investment in Africa from a South African Perspective*

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Abstract

The macro evidence shows that investment rates in sub-Saharan Africa are low and these low rates are correlated with Africa's low growth rates. The micro evidence is scarcer but confirms the very low rates of investment. There are at least three explanations for this finding. First, uncertainty has created a high cost environment which deters investment. Secondly, access to finance is limited and this prevents firms investing. Thirdly, investment is low because of limited growth. The paper reviews the evidence for these three explanations for low investment. The question posed in this paper is how investment can generate the growth that South Africa specifically, and Africa more generally, requires. In reviewing possible answers to that question both macro data on investment rates and growth and micro evidence on firm investment and performance is presented for a range of African countries.

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*This paper draws heavily on collaborative work undertaken by economists from Africa, Europe and North America who have worked on firm level data for the manufacturing sector in Africa. While the joint work is referenced in the bibliography I alone am responsible for some of the interpretations

advanced in this paper.

1. Introduction

In the decade from 1985 to 1995 South Africa's per capita income fell steadily. While in many respects the structure of the South African economy is very different to that of other countries in sub-Saharan Africa its poor macroeconomic growth performance closely mirrors that of sub-Saharan Africa generally. In this paper we will seek to set the South African record in growth and investment in both an African and global context. The paper will review three themes in the literature as to the relationship between investment, trade and growth. The first is macro evidence which seeks explanations for low growth in what might broadly be termed macro determinants - investment rates, openness and uncertainty. The second is micro evidence of how firms respond to the incentives they face in terms of investment and decisions to export. The third is the link between exporting and growth.

The questions posed in the paper are those which are important for the design of policies which will reverse Africa's poor economic performance. Do trade policies which open an economy to international competition provide the key to more rapid growth and, if so, how do the mechanisms work? Why have investment rates differed so substantially and how closely linked to growth and differential income levels are differences in investment rates? What types of investment are the key elements in a successful growth strategy? How important is investment in human, relative to physical, capital? What makes investment privately profitable, so firms wish to invest, and socially profitable, so the benefits of growth are widely shared? The general question posed is how investment and trade can generate the growth that South Africa specifically, and Africa more generally, requires.

In the next section the relationships between investment in physical and human capital and growth are reviewed in the context of the comparative performance of the South African economy. Some micro evidence on the determinants of investment is presented in section 3. It is argued that both the macro and micro data are consistent with uncertainty playing a major role in limiting investment in Africa. In section 4 we consider the linkages from trade and exports to growth and investment. The relative efficiency of firms in Africa is assessed in section 5 and the linkages from wages to firm performance examined. A final section summarises the argument and concludes.

2. Macro Investment, Income and Growth

We begin by setting the South African economy in the context of world income and investment levels.

In the last decade there has been a revival in interest within economics in the factors that determine long term growth. In parallel with the formulation of new theories has been the development of data sets which present GDP figures on a comparable basis. We begin by reviewing two correlations which these data sets have thrown up: that between differences in per capita incomes and differences in investment rates in physical and human capital. The Solow growth model predicts that long run differences in the levels of income will depend on differences in investment rates. That in itself is a rather surprising implication. It might be thought that higher investment rates would generate differences in growth rates as well as differences in levels and it is precisely this implication of the Solow model that the endogenous growth models seek to dispute. For the moment the focus will be on how far differences in income depend on differences in investment rates.

In Figure 1 the countries from the PENN World Tables (there are 115 countries with the data required) are used to show how investment rates over the period 1960-90 are related to differences in income in 1990. The solid line shown in the figure is the predicted level of income given the investment rate. The position of South Africa in the scatter is marked. As can be seen the actual level of per capita income in 1990 in South Africa is slightly higher than that which would be predicted from the simple regression line of per capita income on the investment rate. While in an international context South Africa is highly typical, in an African context it is highly atypical. Its average investment rate over the period was 18 per cent and its per capita GDP per worker (in 1985 US\$ PPP) 9,595. The regional average for Africa as a whole is 10 per cent with an average GDP per worker of US\$ (PPP) 3,524.¹

One of the most robust findings from the work relating differences of income to investment is that investment in physical capital is associated with higher levels of income and higher growth rates. The results for investment in human capital are less robust. In Figure 2 the same set of countries is used as for Figure 1 but now real GDP per worker is plotted against the log of the average growth of education. As the solid line in the figure shows there is a negative relationship between the growth of education and the level of per capita GDP in 1990. In this figure South Africa's position is on the line exactly. This

¹ This is the figure for all of Africa, not sub-Saharan Africa, and it is not weighted by population size. The gap between per capita incomes in South Africa and most countries in sub-Saharan Africa is much larger than these figures indicate.

negative correlation reflects, in part, the fact that the growth of education, although from very low levels, has been most rapid in countries which have grown slowly. The negative correlation does not, of course, imply that increasing the rate of growth of the educated labour force will cause a decrease in growth rates. However the finding is entirely consistent with a view that rapid rates of growth of education are not sufficient to generate rises in income. We will review some micro evidence in section 5 below which suggests that, at least in the manufacturing sector in some sub-Saharan African countries, the rate of return on physical capital is far higher than that on human capital.

The data in Figures 1 and 2 shows South Africa in an international comparative context. In Figure 3 data is presented which shows real GDP for South Africa from 1960 to 1995. In the top part of the Figure the data from the PENN World Tables is used while in the bottom half of the Figure we use the constant local price GDP figures. Over the period to 1980 the economy grew steadily, since then there has been a steady decline although the decline has been arrested in the last four years for which there is data. The trend rates of growth implicit in Figure 1 are given in Table 1 both for South Africa and some other sub-Saharan African economies on which we wish to focus. Table 1 also presents data on per capita export growth to provide the link between trade and macro performance that we wish to review below.

The top four countries shown in Table 1 - the Cameroon, Ghana, Kenya and Zimbabwe - are countries for which we have comparative data for investment in the manufacturing sector which will be presented in the next section. South Africa and Mauritius are shown as we have some comparative data for Mauritius and we wish to present the performance of the South African economy in the context of these other countries. Considering first the top four countries it is clear that it is only in Ghana that there has been any sustained rise in per capita incomes over the period 1985-95. The performance of the South African economy has been poorer over that decade than any of the other countries except the Cameroon whose decline was spectacular; between 1986 and 1994 Cameroon's per capita income fell by nearly 50%. Kenya is the only one of the four countries which has seen a long term sustained growth of per capita income. In Zimbabwe per capita GDP has fallen at a trend rate of 0.3 per cent per annum over the period from 1971. Clearly in the context of the countries reviewed in Table 1 it is the performance of the Mauritian economy which stands out. Over the long term from the 1970s onwards

its macroeconomic performance has dramatically outperformed that of other countries in sub-Saharan Africa. This is true both for GDP and export growth. Only Ghana and Kenya have seen rises in export volumes in the period 1985 to 1995 and these have been insufficient to compensate for the rapid declines over the previous fifteen years. Put very directly the question that needs to be answered is: what is Mauritius doing right and other countries in sub-Saharan Africa wrong?

One possible answer to that question is that since the 1980s Mauritius has operated an open trade regime. All the other countries in the Table have adopted some measures of economic reform in the last decade and these measures of reform have much in common. Ghana commenced a series of structural adjustment programmes in 1983. In Zimbabwe a structural adjustment programme was adopted in 1991. Exchange rate liberalisation (in the case of the Cameroon a major devaluation in early 1994 saw the CFA franc devaluated by 50% against the French franc, the first change in the rate since the formation of the monetary union), financial liberalisation of interest rates occurred in the other countries. Policy changes in both Ghana and Zimbabwe initially focused on dismantling the highly restrictive system of import and foreign exchange controls.

Table 2 presents the rates of inflation, the rates of depreciation of the real exchange rate and real interest rates from 1980 to 1995 for the same set of countries as in Table 1. While the largest nominal depreciation was in Ghana and the smallest is Cameroon, the largest real devaluation was in the Cameroon. All four countries have in common high, and highly variable, rates of inflation and exchange rate depreciation. In all four countries real interest rates, measured simply as the difference between nominal rates and the rate of inflation, have moved between substantial positive and negative numbers. The level of nominal interest rates has also been highly variable; in Kenya doubling, then halving, during the period of the surveys. In Zimbabwe the combination of financial liberalisation and a large fiscal deficit led to sharp rises in nominal interest rates so that real interest rates changed from -13 per cent in 1992 to 7 per cent in 1994 and 1995.

It has been widely argued that the uncertainty created by macroeconomic policy management is a major cause of low investment. There is a specific paper considering this question for South Africa using macro data, Fielding (1997), which finds that a measure of uncertainty does reduce private investment.

As Fielding notes “in indicating the significance of measures of political and economic uncertainty, the econometric model is only confirming common sense.” However the effects are important. “Any improvement (or deterioration) in the uncertainty terms ... is likely to have at least as large an impact on investment and growth as changes in fiscal policy” (p.367).

It is clear from the data in Table 2 that the macroeconomic environment in which firms worked, excluding Mauritius, ensured the potential for substantial uncertainty. Uncertainty about the real interest rate they would face, uncertainty about the real exchange rate and uncertainty about the credibility of government policies to maintain incentives to export. Can the effects of such uncertainty be captured at the micro level in terms of firm performance?

3. The Micro Evidence on Investment

Micro evidence is available from a survey of firms in the manufacturing sectors of the Cameroon, Ghana, Kenya and Zimbabwe ranging in size from micro (less than five employees) to those employing over a thousand. For each of the four countries three rounds of interviews were conducted over the period 1992 to 1995. The sample was chosen by sampling from four sectors within manufacturing - textile and clothing, wood and furniture, metal working and machinery and foods - and stratifying by size and location. It is possible to control for sector, ownership and location effects. The average size of firms in the samples is smallest in Ghana, at 36 employees, and largest in Zimbabwe at 303 employees. In Ghana and Zimbabwe the average size of firms increased over the survey period, although for Zimbabwe the rise was very small.

Table 3 shows the averages rates of investment for all three rounds of the survey and across the four countries. Investment refers to purchases of plant and equipment, investment in building and land is excluded. Half the firms carry out no investment in any year. This fact of zero investment was also found for Indonesian firms by Harris, Schiantarelli and Siregar (1994, p.43). It is clear from Table 3 that there is a pattern by which large firms, while more likely to invest, invest less than smaller firms when they do invest. The means of investment to capital of 9 per cent are similar to those reported in studies for the UK. However such averages are misleading as can be seen by considering the distribution of the variables shown in Table 4.

It is well known that rates of investment, in general, in African countries have been low. Table 4 shows just how low has been investment in the manufacturing sector. The median value for investment to value-added, and for investment to the capital stock (I/K), in the four countries is close to zero. The average profit rate (C/K) shown in Table 4 is very high. This is true for all the countries in the sample. It is also the case that this variable too has a highly asymmetric distribution in that the mean is 192 per cent and the median is 38 per cent. The asymmetry of the distribution of the variables implies that the median is a better measure than the mean of central tendency. Table 4 also shows a median value of the value-added to capital ratio (V/K) of 0.72. It is far higher for Ghana than for the other countries. Formal debts to the banking system, measured as formal borrowing to capital (B/K), are negligible for the majority of firms and the data is wholly consistent with a severely financially constrained regime operating in all the countries in the survey. Finally, the growth in value added ($\Delta V/K$) at the median is negative at -3 per cent per annum. Only in Ghana is the median growth rate positive. Using comparative data from European countries and India Bigsten et al (forthcoming (a), Table 5) show that the median values of investment to capital in all the African countries is low while the profit rate is high. In the literature the possibility that own finance is used to fund investment has been linked to the existence of financial constraints and capital market segmentation.

The extent to which capital markets are segmented and how this segmentation can be modelled has been extensively investigated in the literature. Athey and Laumas (1994) use panel data on firms listed on the Indian stock exchange and find that net profits were most important for larger firms where size is defined in terms of capital value. Harris, Schiantarelli and Siregar (1994) have panel data for Indonesian firms, and they find that small firms, defined in terms of employment (<100 workers), appear to rely more on internal funds than larger firms. This is also the finding in Tybout (1983). The specifications used in these papers are very close. A similar result, derived by a different route, can be found in Nabi (1989) who uses an endogenous switching model to show that firms excluded from the formal capital market rely more on profits for investment. The implication of imperfect capital markets is that small firms are more likely to be constrained in their investment decisions by the availability of internal finance than large firms.

To test for the importance of financial constraints on firms two general form of investment equations

have been used in the literature. The first summarised below as equation [1] is the augmented accelerator specification. In this specification investment is modelled as a function of the growth of value added and the profit term enters to capture the possibility that firms are financially constrained. The second specification, summarised below in equation [2], is the Euler specification in which firms are assumed to maximise the expected value of the firm over its lifetime and a more general costs of adjustment function is assumed than for the accelerator specification. For both specifications the key question has been the sign, significance and size of the effect on investment of the profit term, (C/K) .

$$[1] \quad (I/K)_{t-1} = \alpha_0 + \alpha_1 \Delta(V/K)_{t-1} + \alpha_2 (C/K)_{t-1} + \alpha_3 (B/K)_{t-1}$$

$$[2] \quad (I/K)_t = \alpha_0 + \alpha_1 (I/K)_{t-1} - \alpha_2 (I/K)_{t-1}^2 - \alpha_3 (C/K)_{t-1} + \alpha_4 (V/K)_{t-1} + \alpha_6 (B/K)_{t-1}^2$$

The most common reason advanced for low levels of investment, particularly among small firms, is that they are financially constrained. We noted above that most studies have found that smaller firms respond more to profits than do larger firms. It seems useful, as the average size of firms in the sample is so small, to compare the results across various studies. This we do in Table 5, taken from Bigsten et al (forthcoming (a), Table 10). Table 5 shows that the profit effect is much less for the African firms than that found in most comparable studies. The profit coefficient for all firms is below that found by Bond and Meghir (1994) and by Athey and Laumas (1994). Considering small firms, where small is defined as those employing less than 100, the coefficient in this study ranges from 0.06 for the accelerator specification to 0.10 for the most general specification. This compares with 0.429 in Tybout (1983) and 0.65 in Harris, Schiantarelli and Siregar (1994). The paper by Bond, Elston, Mairesse and Mulkey (1997) is particularly relevant as it compares the accelerator and Euler equation approaches on the same data. Their findings are reproduced in the lower part of Table 5. For all four of the European countries in their study the Euler equation approach produced a lower coefficient on the profit term than the accelerator model. For the African data the two specifications produce almost exactly the same result. For the accelerator specification the coefficient is far higher for the European countries than it is for the African countries while for the Euler specification the results are very similar.

The country that has experienced the largest sustained rise in per capita income in the recent past is

Ghana. This may be an important factor in explaining the relative success of Ghana in the sample. Only in Ghana was the median growth in value added positive for the manufacturing sector. In Ghana the average size of firms, measured in terms of employment, increased by 15 per cent over the three rounds of the survey, while it fell in the Cameroon and Kenya. The propensity for firms to invest in Ghana is also significantly higher than in Kenya and Cameroon (see Bigsten et al (forthcoming (a), Table 6)). While the relatively favourable macroeconomic environment in Ghana may have helped smaller firms to carry out some investment the gain was limited. In terms of median rates of investment Zimbabwe is, at 3.3 per cent, far higher than any of the other countries. It is this very poor performance of the best performer which is indicative of the magnitude of the problems faced by firms in Africa's manufacturing sector.

A common factor across all the four African countries in our sample is a poor macroeconomic policy environment. High and variable rates of inflation, rapid and variable rates of exchange rate depreciation in the cases of Kenya, Ghana and Zimbabwe. A large devaluation in Cameroon that was widely anticipated and contentious as a policy option. In cross-section studies there is evidence that the quality of the macroeconomic environment is of importance for growth. The evidence from micro data is indirect, but entirely consistent with this cross-section evidence. The most persuasive factor suggesting that high risk plays a very important part in the problems facing firms in Africa manufacturing sector is the very high profit rates shown across all the countries. It is important to stress these are average rates of return and marginal rates are likely to be much lower.

4. Trade, Investment and Growth

The finding from macro data that uncertainty matters and, from micro data, that profit rates are high but investment is low are both consistent with the notion that high risk plays an important part in explaining low investment in Africa generally and in African manufacturing firms in particular. However is that the end of the story? If risk could be reduced would investment boom? There is compelling evidence from the micro data that while the reduction of risk and the creation of a more stable macroeconomic environment would undoubtedly be of enormous benefit it may well not be sufficient to see a rise in investment. It is also possible that simply raising investment will not in itself be adequate. Both these points are of particular importance for South Africa. As we noted above the investment rate in South

Africa has been well above the African average but this has not prevented per capita incomes falling over the period from 1985 to 1995. Profits rates are much lower for large firms in the sample and as many South African firms are much larger than those in the African sample it is likely that factors other than risk play a major role in explaining both investment and its pattern. The other feature of investment that is of crucial importance for the South African economy is its role in creating jobs. Unemployment in South Africa is very high and in this respect South Africa differs from most other African countries and from OECD ones as well. Rates of unemployment in Ghana are about 3 per cent. In South Africa household data for 1993 gives an average unemployment rate of 30 per cent using a broad measure of unemployment, Kingdon and Knight (1999). There are also high rates elsewhere in Africa, urban Ethiopia had unemployment rates of 39 per cent in 1994 and 30 per cent in 1997, Krishnan, Selassie and Dercon (1998), however these rates are unusual. In the South African context higher rates of investment must be linked to higher rates of job creation if growth is to impact on the poorest in society.

In the review of comparative macro data presented in section 2 we noted that the aggregate growth of the Mauritian economy far exceeded that of the others. It is also the case that the growth of labour demand in that country has since the 1980s been particularly rapid, Milner and Wright (1998). This growth has been, as is well known, associated with the growth of manufactured exports. Table 6 gives comparative data for Mauritius and South Africa as well as the four countries which were the focus of the last section. The first column of Table 6 gives an annual average of the value of manufactured exports between 1980 and 1995, column 2 converts the figures to per capita terms. In the final column of the Table the growth rate of real manufacturing exports per capita over the period from 1980 to 1995 is given. In terms of the volume of exports of manufactures South Africa clearly dominates the countries shown. However on a per capita basis the output of the Mauritian economy is over twice that of the South Africa which is itself four times its nearest competitor in Zimbabwe. It is the growth rate shown in the final column that reveals the extent of the gap between Mauritius and South Africa. While Mauritius's exports of manufactures have grown by nearly 15 per cent per annum those of South Africa have fallen by 4 per cent per annum over the same period. As the earlier Table 1 has already shown this very poor performance in manufactured exports has not been compensated by rapid growth of other exports.

This failure in the growth in manufactured exports is of concern for two reasons. First without such exports substantial growth in labour demand is going to be difficult to achieve. Second, such exports can be labour intensive so if capital (for whatever reason) is expensive activities which use relatively little capital are going to be more profitable. Clearly such exports are not profitable so what might make exporting profitable?

5. The Sources of Profitability in Manufacturing

A key element in the policy debate in South Africa is the relationship between levels of employment (and its corollary the level of unemployment) and real wages. The remarkable finding in Kingdon and Knight (1999), when considering the spatial relationship between wages and unemployment, is that high wage areas have low unemployment. Further the size of the effect of unemployment on wages is identical to that found in OECD countries. South Africa seems, at least in this respect, to have a labour market remarkably similar to that of OECD countries. Now the data on which the Kingdon and Knight study draws is cross-sectional. The data cannot answer the question as to whether over time the changes in real wages in South Africa have been inconsistent with the growth of employment opportunities and there is some time series evidence to suggest that growth in real wages has decreased employment, Fallon and Lucas (1998). Does this imply that the path to more growth, exports and investment is lower wages? The findings that real wages adversely affect employment does not imply that reducing wages is either a necessary or desirable means of increasing jobs. The reason is that the analysis on which that finding draws assumes, at least implicitly, that the level of the capital stock is given. If investment was growing then rises in real wages could be associated with rises in employment.

Such an argument, of course, simply pushes the dispute about the levels of real wages back one stage. Are high wages a factor in low investment? Are high wages a factor in the inability of firms to expand manufacturing exports? The available micro data can throw some light onto these questions. In understanding what determines a firm's decision to export there is substantial evidence that exporting firms are more efficient than those which service the domestic market. High wages will not mitigate against either exporting or investment if the firms are efficient. Efficiency in this context means not how much output per unit of labour the firm produces but whether, given all the inputs it uses, it manages to produce more output than other firms. This is termed technical efficiency. High wages will be associated

with high labour productivity in part because high wages will increase the amount of capital a firm chooses to use. If high wages go with high levels of technical efficiency then firms can pay high wages but be low cost firms. It is this connection between efficiency and wages that needs to be examined before one can argue that high wages limit either the ability to invest or the ability of firms to enter the export market.

Table 7 shows comparative data for labour productivity and the amounts of physical and human capital in firms for six sub-Saharan African countries. Four are the same as those for which investment data was presented above, the Cameroon, Ghana, Kenya and Zimbabwe, to which Zambia and Mauritius have been added. The figures shown in the Table are the median values for the variables not the means. The size of firms measured by employment is lowest in Ghana and Zambia which also have by far the lowest levels of labour productivity measured by value-added per employee. At some US\$ (PPP) 2,400 labour productivity is about one quarter the level of the Cameroon and one eighth the level of productivity achieved in Mauritian firms. What is very striking in the Table is that, with the exception of Ghana, the capital per employee in Mauritius is lower than in any of the other countries for which there is comparable data. The implication of these findings is that Mauritian firms are very substantially more technically efficient. A comparison of Mauritius and Ghana carried out in Teal (1999) suggests, once controls for as many factors as possible are included, that Mauritian firms are four times as efficient as Ghanaian ones. It is possible for Mauritian firms to pay several times the rates of other African countries and still be lower cost producers. While this may not be the only, or indeed main, element in the relative success of Mauritian firms it cannot have harmed them.

The final point which emerges from the comparative data in Table 7 is that while differences in physical capital across countries are very large the amounts of human capital are remarkably similar. It is argued in Bigsten et al (forthcoming (b)) that in explaining differences in labour productivity differences in human capital are of minor importance relative to differences in physical capital. In some, but by no means uniformly across all the countries, differences in technical efficiency also matter although this factor is of less importance than the amounts of physical capital to which the firms have access. Uniformly across all the countries the rate of return on physical capital is higher than that on human capital. This finding is consistent with the macro data suggesting that rates of growth of human capital

have been high relative to investment in physical capital and that it is increases in the latter which are required if growth rates are to accelerate.

6. Summary and Conclusion

The primary purpose in this paper has been to review some recent findings on investment and firm performance in Africa and relate them to the specific problems faced by the South African economy. There seems little doubt that the principal economic problem faced by South Africa is its high level of unemployment. Lowering that level requires not simply more investment but more investment that will generate jobs. How can that be done?

The review of both the macro and micro evidence suggested that uncertainty plays a key role in limiting investment. There is direct macro evidence for South Africa that measures of uncertainty lead to reduced investment and these effects are important. There is evidence from surveys of firms in Africa (which currently do not include South Africa) that profit rates are high and investment rates very low. The median rate of investment in the manufacturing sector of the countries surveyed, the Cameroon, Ghana, Kenya and Zimbabwe, is close to zero. Such low investment rates either generate unemployment or continual pressure for wages to fall. There is little to suggest these firms fail to invest because they lack the funds to do so. The comparative data shows a profit effect on firm investment but this effect is small. Smaller in fact than nearly all comparable studies.

The second piece of macro evidence which was presented was to show that South African export performance, particularly in the area of manufacturing, has been very poor. While South Africa exports a lot of manufactures these exports have not been growing, in fact over the period from 1980 to 1995 they fell at some 4 per cent per annum. Numerous factors may explain this poor performance. The survey data available for other countries was used to assess the relevance of one possible explanation, the relative efficiency with which manufacturing firms perform in Africa. Comparative data is available for six sub-Saharan African countries including Mauritius, a country which has seen a substantial growth in manufacturing exports. While wages in Mauritius are far higher than in other countries this differential was more than compensated by higher levels of technical efficiency. Mauritius is an example of a high wage low cost economy. How important this factor is in explaining its relative success remains

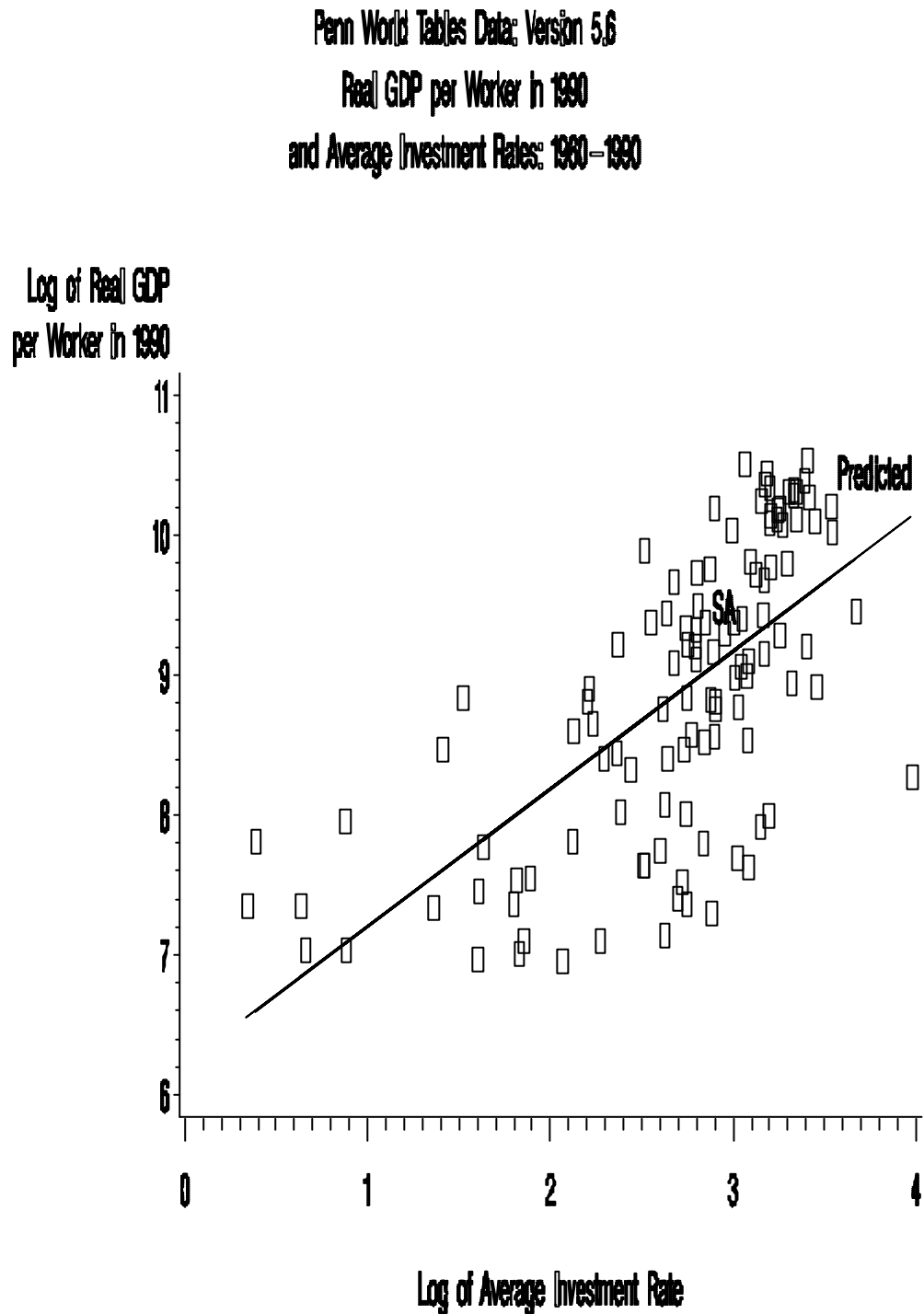
speculative but may suggest that improvements in firm level performance may be of equal, or greater, importance than improved macro economic policy making. Having both may well turn round many of the poorly performing economies in Africa.

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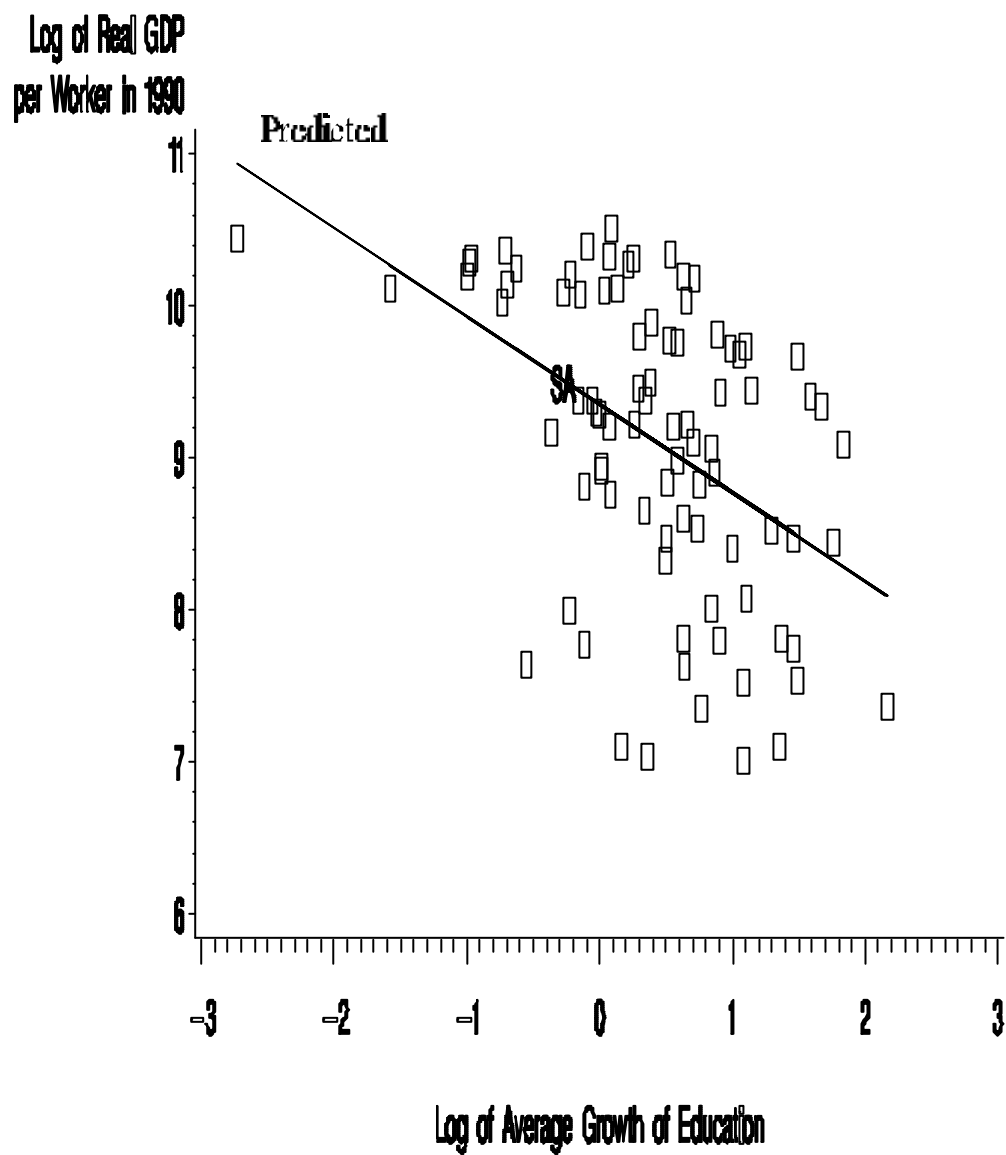
Figure 1



Note: SA is the Actual Value of Real GDP per Worker in 1990 for South Africa

Figure 2

Penn World Tables Data: Version 5.6
 Real GDP per Worker in 1990
 and Average Growth of Education: 1960–1990



Note: SA is the Actual Value of Real GDP per Worker in 1990 for South Africa

Figure 3

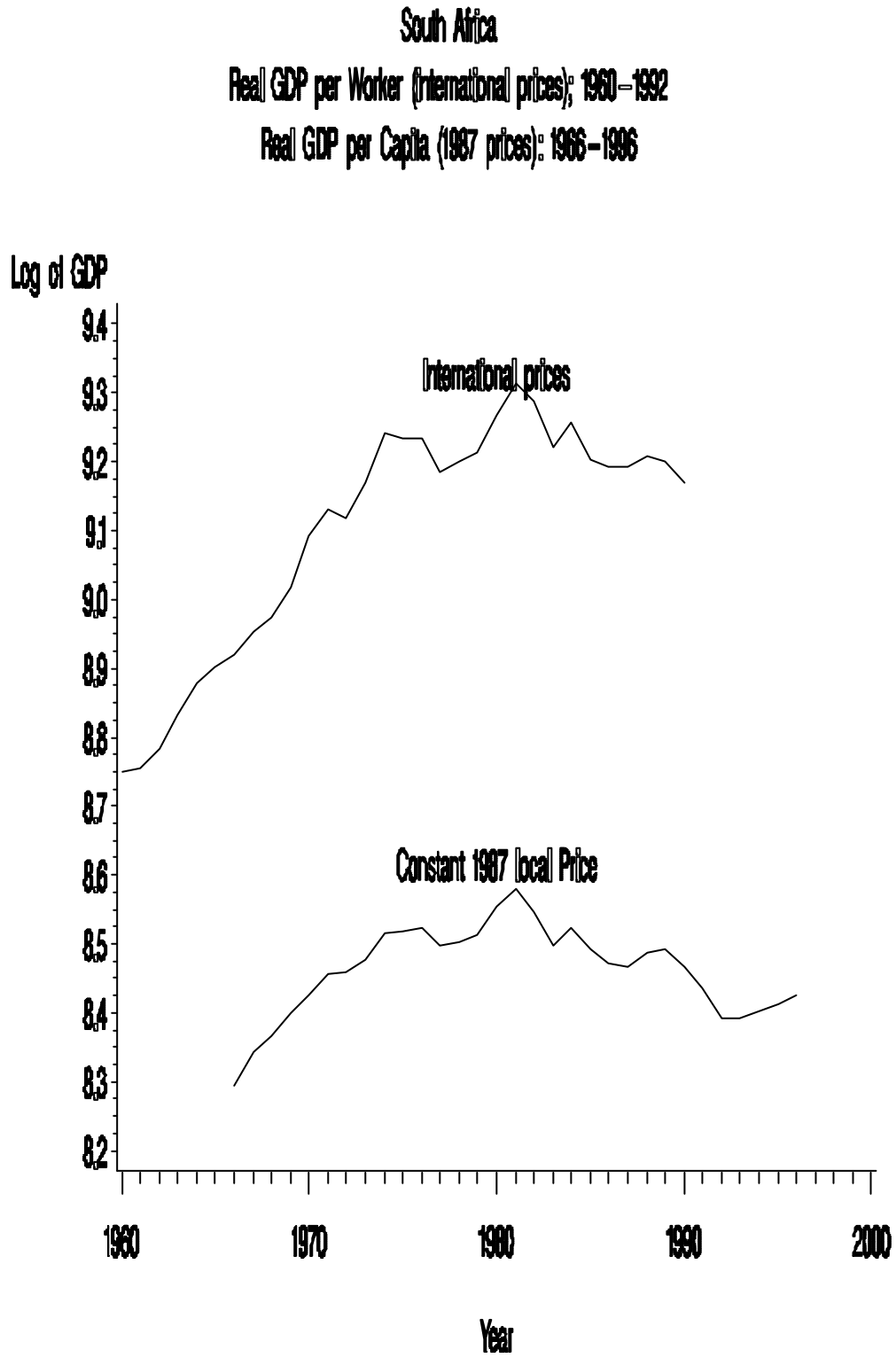


Table 1 Trend Rates of Growth of Real GDP per Capita and Real Exports per Capita:1970-1985 and 1985-1995				
	Real GDP per Capita (%pa)		Real Exports per Capita (%pa)	
	1970-1985	1985-1995	1970-1985	1985-1995
Cameroon	4.2	-6.4	7.5	-1.2
Ghana	-2.7	1.3	-10.2	4.4
Kenya	1.6	0.0	-3.1	3.1
Zimbabwe (a)	-0.3	-0.4	-1.2	0.0
Mauritius	2.9	4.3	1.6	5.1
South Africa	0.2	-1.5	-2.1	0.6

Source: World Bank Data: (a) Zimbabwe is 1980-94

Table 2 Macroeconomic Variables						
	Rate of Inflation (% pa)		Change in Real Exchange Rate (% pa)		Real Rate of Interest (% pa)	
	1980-89	1990-95	1980-89	1990-95	1980-89	1990-95
Cameroon	8.8	6.8	1.1	-2.2	0	3.4
Ghana	36.7	24.8	-3.5	-1.6	-17.6	7.8
Kenya	11.0	20.4	-2.7	3.6	2.3	4.9
Zimbabwe	11.9	22.9	-3.0	-2.1	-3.4	1.6
Mauritius	10.1	7.8	-2.3	4.1	2.9	3.3
South Africa	13.6	11.1	-1.4	4.2	0.2	3.7

Source: World Bank and IMF Data.

Table 3 **The Pattern of Firm Investment in the Manufacturing Sector across Four African Countries and by Firm Size**

Investment by Country	Proportion of firms investing	Investment/ Value-added if firms invest	Investment/ Capital if firms invest	Investment/ Value-added	Investment/ Capital
Cameroon					
1992/93	0.21	0.49	0.45	0.08	0.08
1993/94	0.28	0.27	0.27	0.08	0.07
1994/95	0.33	0.39	0.31	0.11	0.08
Ghana					
1991	0.34	0.21	0.16	0.08	0.05
1992	0.52	0.23	0.25	0.12	0.13
1993	0.54	0.25	0.26	0.13	0.13
Kenya					
1992	0.45	0.23	0.15	0.12	0.09
1993	0.45	0.24	0.14	0.11	0.06
1994	0.45	0.33	0.16	0.13	0.05
Zimbabwe					
1992	0.69	0.18	0.14	0.13	0.09
1993	0.76	0.15	0.12	0.11	0.09
1994	0.71	0.11	0.10	0.08	0.07
Investment by firm size					
Large (>100 employees)	0.72	0.18	0.11	0.13	0.08
Small (<100 employees)	0.41	0.25	0.21	0.11	0.09
All Firms	0.50	0.22	0.18	0.11	0.09

Source: Bigsten et al (forthcoming (a), Table 3)

Table 4 Descriptive Statistics of Investment, Profits and Growth for Manufacturing Firms in Cameroon, Ghana, Kenya and Zimbabwe

		Cameroon	Ghana	Kenya	Zimbabwe	All
Investment/ Capital	M25	0	0	0	0	0
	M50	0	0.003	0	0.03	0.004
	M75	0.02	0.09	0.07	0.13	0.10
	Mean	0.11	0.13	0.11	0.12	0.12
Investment/ Value-added	M25	0	0	0	0	0
	M50	0	0.002	0	0.04	0.007
	M75	0.04	0.07	0.07	0.12	0.09
	Mean	0.10	0.12	0.12	0.09	0.11
Profits/ Capital	M25	0.05	0.19	0.09	0.14	0.12
	M50	0.32	0.83	0.26	0.37	0.38
	M75	1.29	3.45	1.09	0.80	1.34
	Mean	1.36	3.63	1.82	0.85	1.92
Value-added/ Capital	M25	0.23	0.35	0.18	0.36	0.29
	M50	0.52	1.53	0.52	0.68	0.72
	M75	1.58	5.33	1.76	1.42	2.17
	Mean	1.80	5.05	2.49	1.49	2.74
Borrowing/ Capital	M25	0	0	0	0	0
	M50	0.01	0	0	0	0
	M75	0.22	0	0.02	0.08	0.03
	Mean	0.21	0.02	0.06	0.15	0.10
) Value-added/ Capital	M25	-0.59	-0.40	-0.37	-0.27	-0.36
	M50	-0.13	0.03	-0.02	-0.02	-0.03
	M75	0.06	0.78	0.27	0.17	0.25
	Mean	-0.35	0.28	-0.25	-0.26	-0.12

M_i is the ith percentile.

Source: Bigsten et al (forthcoming (a), Table 4)

Table 5 Profits and Investment: an international comparison

The coefficient reported in this Table shows the effect on investment of a US\$ 1 increase in profits.

Study	All firms	Large Firms	Small Firms
Bond and Meghir (1994, Table 2, column (ii))	0.18	Na	Na
Athey and Laumas (1994, Table 3)	0.12	Na	Na
Tybout (1983, Table 1)	Na	Na	0.429
Harris, Schiantarelli and Siregar (1994, Table 9, Column (2))	Na	0.056	0.65
Bond, Elston, mairresse and Mulkay (1997)			
<i>Accelerator Model</i>			
Belgian	0.13		
France	0.14		
Germany	0.38		
UK	0.61		
<i>Euler Equation</i>			
Belgian	0.01		
France	0.07		
Germany	0.04		
UK	0.29		
African Countries (Cameroon, Ghana, Kenya and Zimbabwe)			
Accelerator	0.06	0.04	0.06
Euler Equation	0.07	-0.02	0.07

Source: Bigsten et al (forthcoming (a), Table 10).

Table 6 Manufactured Exports: 1980-1995			
Country (Means)	Manufactured Exports (Millions of US \$)	Manufactured Exports per Capita (US\$)	Trend Growth of Real Manufacturing Exports per Capita (% pa)
Cameroon	169	15	4.7
Ghana	83	6	17
Kenya	174	8	0
Zimbabwe (a)	492	56	-2.6
Mauritius	53	493	14.7
South Africa	7169	207	-4

Source: World Bank Data:
(a) Zimbabwe is 1980 to 1994.

Table 7 Employment, Value-added/Employee (US PPP\$), Capital/Employee (US PPP\$), Education (years), Tenure (years) and Monthly Earnings.

Medians	Cameroon	Ghana	Kenya	Zambia	Zimbabwe	Mauritius
N	170	230	199	98	261	36
Employment	25	17	30	19	110	45
Value-added/ Employee	8,214	2,203	7,796	2,465	7,764	16,535
Capital/ Employee	8,758	629	7,242	5,426	9,299	5,834
Education/ Employee	9.5	9.6	7.9	8.5	8.3	11.2
Tenure/ Employee	5.0	3.3	7.0	4.9	9.3	NA
N	116	191	182	83	88	36
Monthly Earnings in US\$	176	47	68	97	138	255
Monthly Earnings in US PPP\$	284	130	274	117	311	857
N is the number of observations. Note that all the figures given in the Table are medians, not means of the variables.						
Source: All countries except Mauritius from Bigsten et al (forthcoming (b)), Mauritius from Teal (1999). In Bigsten et al the figures for wages are only given in PPP terms. Here we report wages using both PPP and official exchange rates.						