

**The Search for the Key:
Aid, Investment, and Policies in Africa¹**

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¹ Preliminary version. Views expressed here are not to be taken as those of the World Bank or its member governments. Comments welcome.

Development economists have made many attempts to find the key to growth in Africa. Paging through a bibliography on Africa, it is evident that economists have not yet found that key. One finds titles in a bibliography like *Economic Crisis in Africa*, *The Destruction of a Continent*, *The Crisis and Challenge of African Development*, *Africa in Economic Crisis*, *Africa: Dimensions of the Economic Crisis*, *Africa's Growth Tragedy*, *The Vampire State in Africa*, *The Open Sore of a Continent*, *Africa in Chaos*, and *Africa: What Can Be Done?*¹ Since we development economists continue writing these articles and books, it is obvious that past keys have not yet unlocked Africa's potential for growth.

In this paper, we review some of the keys that have not worked and offer pointers towards more effective strategy. We do not think that there is one key to growth, but we think there is evidence that some strategies work better than others. We want to review the past intellectual history of "keys to growth" because it induces humility about current "keys to growth", because it clarifies what mistakes donors and government should not repeat, and because old ideas keep resurfacing.

We see two main phases of the search for the key to growth. The first stressed aid-financed investment as the key to unlock Africa's development potential. The second stressed aid-induced policy reform as the key. Neither key worked, as we will see in this paper, because aid neither increased investment nor induced policy reform. The first key also failed because investment did not have a tight link to growth in the short run, and not even much of a link in the long run in Africa. Policy, in contrast, did have a large effect on growth, but aid did not systematically lead to policy reform. In the third section of the paper we present evidence that the combination of good policy and foreign aid has been

effective at promoting efficient investment and growth. Thus, donors should target foreign aid to good policy environments if aid is to be effective in promoting development in Africa.

I. Aid-financed Investment

The initial attempt to induce development in Africa (and elsewhere) followed a very simple formula. Economists suggested that growth was proportional to investment, by a constant that was the reciprocal of what economists called the Incremental Capital Output Ratio (ICOR). Investment was low because of low domestic savings in Africa, but aid donors could finance additional investment. Increasing aid financing would increase investment, which would increase growth. Donors added conditionality that additional domestic saving would match aid increases, making possible an even more than one for one increase in investment when aid increased.

Vestiges of old “keys to growth”

Seeing whether these predictions came true is not only of historical interest. Vestiges of this approach, which development economists variously called the Harrod-Domar model, the Two-Gap model, and the financing requirements model, remain in current development practice in Africa and elsewhere. We will call it the aid-financed investment approach to development. While this approach is nowhere near as influential as it was in the 1960s, the same aid-to-investment-to-growth language continues to crop up today. It is quite possible that these expressions of the aid-to-investment-to-growth dogma are *pro forma* and not taken seriously in practice. Yet, in any event report-writers continue to use this language. This suggests that applied development economists have not yet found a fully satisfactory replacement for the aid-financed investment paradigm.

For example, a 1993 report on Zambia stated “it is often thought to require investment of at least 20 percent of GDP to achieve output growth of 5 percent (an ICOR of 4)...”.² The 1996 report on Zambia reiterated that “a useful (if simplistic) tool for comparing growth and investment scenarios across countries is an ICOR,” since the ICOR reflects the “dependence of continued growth on new investment.”³ The report sets the non-mining ICOR at 4 in Zambia. In Zimbabwe, the ICOR of 4 pops up again: “With improved efficiency, which would reduce the incremental capital-to-output ratio to about 4, growth could exceed 5% p.a. without a further rise in investment as a share of GDP.”⁴ (By the way, Easterly 1997 demonstrates theoretically that the ICOR is a measure of physical capital intensity, not efficiency of investment.)

Going further afield from Africa, a report in 1995 told Latin Americans that “enhancing savings and investment by 8 percentage points of GDP would raise the annual growth figure by around 2 percentage points”⁵ (again an ICOR of 4). Another report warned the ex-Communist countries that “investment finance of the order of 20 percent or more of GDP will be required” to reach “growth rates of 5 percent” (yet another ICOR of 4). This report on the ex-Communist economies noted that “conditional official assistance ... contributes to cover the gap between domestic savings and investment.”⁶

The expressions of confidence in a short-run to medium-run relationship between aid, investment, and growth are still surprisingly widespread, especially in work on Africa. “Africa’s economic performance is expected to improve in 1992-93,” but the improvement in these two years hinges on -- among other things -- “the increase in investment that is needed to promote economic growth.”⁷ As another source puts it, “The adjustment experience of sub-Saharan Africa has demonstrated that to achieve gains in real per capita

GDP an expansion in private saving and investment is key.”⁸ For Africa, “official financing on concessional terms will be necessary,” even if not sufficient, “to improve growth prospects.”⁹

Getting down to individual countries, a 1996 report on Uganda argued any aid reduction “could be harmful for medium-term growth in Uganda, which requires external inflows...”¹⁰ A 1997 report called “Accelerating Malawi’s Growth” said that “Different growth rates have different implications”. The optimistic scenario required investment of “24% of GDP by the end of the period.” A less optimistic growth scenario would imply “an investment rate of around 20%.”¹¹ In a 1995 report on Madagascar, concessional “external debt would increase significantly ... to modernize and expand Madagascar’s aging plant and equipment and weak infrastructure.”¹²

The inventors of the aid-financed investment key in the 1950s and 1960s had confidence in two short to medium run links: the link between aid and investment, and between investment and growth. We can test empirically how well these links held in Africa.

Testing the aid-financed investment approach

We perform two simple exercises for African countries: we regress investment on aid, and we regress growth on investment.¹³ The prediction of the aid-financed investment model is that there will be a significant coefficient of greater than or equal to one in the investment on aid equation. In the growth on investment equation, the prediction is that there will be a significant short-to-medium run relationship between growth and investment, implying a “reasonable” ICOR of between 2 and 5. We do not use any other controls, because the models we are testing are bivariate models -- investment depends on

aid, and growth depends on investment. We also do not attempt to control for endogeneity of aid or investment -- our interest is in whether aid, investment, and growth jointly evolved as the inventors of the aid-financed investment key to growth expected.

Table 1 shows the results of the investment on aid equation, using overseas development assistance as a ratio to GDP as our definition of "aid." The investment to GDP numbers are from Summers and Heston 1993, with subsequent updates.

Table 1: Results of regressing Gross Domestic Investment/GDP on ODA/GDP country by country in Africa, 1965-95

Coefficient of Investment on ODA	Number of countries	Percent of Sample
Total	34	100%
Positive, significant, and ≥ 1	0	0%
Positive and significant	8	24%
Positive	17	50%
Negative	17	50%
Negative and significant	12	35%

Table 1 shows that no African country satisfied the prediction that investment would increase with aid at least one for one. Eight countries showed a positive and significant relationship between aid and investment, but twelve countries showed a *negative* and significant relationship. Table 1 is not good news for the aid-financed investment approach to African development.

Of course, there are many statistical difficulties establishing a *causal* relationship between aid and investment. Our aim is less ambitious. We just want to know if aid and investment evolved the way the proponents of the aid-financed investment model predicted. The answer is unambiguous: no.

To see an individual country illustration of the Table 1 results, Figure 1 shows actual and predicted investment in Madagascar. Actual investment stayed under 2 percent

of GDP. The predicted investment, if aid had gone one for one into investment, would have reached 18 percent of GDP.

For the second exercise, we regress annual growth on investment/GDP lagged one year (with a constant) for each African country over 1960-95. The reader might object that it is unreasonable to expect investment to pay off one year to the next. We agree; we use annual data with a one year lag only because that has been the practice in the aid-financed investment approach.¹⁴ We will also do a statistical exercise using four-year averages. The results from the annual data are as follows:

Table 2: Regression of GDP growth on lagged investment country by country

	Number	Percent of sample
Total sample of African countries	35	
Positive and significant w/ $2 < ICOR < 5$	2	6%
Positive and significant	5	14%
Positive	18	51%
Negative	17	49%

Note: regression includes a constant term

Only two African countries meet the condition of a positive and significant relationship with a “reasonable” ICOR between 2 and 5. Only five African countries have a positive and significant relationship between investment and growth of any kind in the annual data. Half of the sample has a negative (though not significant) relationship between investment and growth.

Figure 2 shows the evolution of actual output in Zambia compared to that predicted by the ICOR model with actual Zambian investment. Output would have reached near \$2500 in 1985 international prices, instead of declining to \$600. This is assuming an ICOR of 4, which as we saw above is a popular ICOR.

Table 3 shows the results of a regression of four-year average growth rates on four-year average investment rates, lagged one period, for the sample of African countries.

Table 3: LS // Dependent Variable is GROWTH (4 year averages)

Included observations (Africa only): 307
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.782878	0.370807	7.504927	0.0000
Investment/GDP, lag	0.044044	0.030759	1.431915	0.1532
R-squared	0.008705	Mean dependent var		3.259935
Adjusted R-squared	0.005455	S.D. dependent var		3.792423
S.E. of regression	3.782066	Akaike info criterion		2.667034
Sum squared resid	4362.726	Schwarz criterion		2.691313
Log likelihood	-843.0038	F-statistic		2.678356
Durbin-Watson stat	2.049589	Prob(F-statistic)		0.102752

The relationship between growth and investment in Africa is still not statistically significant with four-year averages. This echoes results in the worldwide sample, in which lagged investment is also not significant in a panel growth regression (Blomstrom, Lipsey, and Zejan 1996). The short-run to medium-run link from investment to growth is simply absent.

Figure 3 shows a scatter plot of the data underlying Table 3, with lines marking average investment and average GDP growth. We see that the off-diagonal quadrants contain as many datapoints as the diagonal ones. We label some particularly egregious outliers. Gabon in 1977-81, for example, had sharply negative GDP growth despite lagged investment of over 35 percent of GDP. In the other direction, Lesotho in 1973-77 had growth of nearly 15 percent with lagged investment of only 8 percent.

We can also test the aid to investment to growth links jointly. We ask how much per capita growth would have been in each country if all aid went into investment and investment went into growth with an ICOR of 4. (We subtract population growth in each

country to give per capita growth.) Figure 4 gives us the answers, compared with African countries' actual per capita growth rates. There is no apparent correlation between growth predicted by the aid-financed investment to growth approach and the actual growth rate. Moreover a majority of the datapoints lie below the 45% line in the graph, indicating that actual growth fell short of predicted growth. Countries like Guinea-Bissau, Zambia, Zimbabwe, and Mauritania should have done well according to the aid-financed growth model; instead they had close to zero per capita growth.

Figure 5 shows the example of Mauritania's income over time if the aid-financed investment approach had worked. Mauritians would have followed a trajectory much like South Koreans if only this approach had worked; instead Mauritians saw their per capita income stagnate.

Sources of growth accounting

The evidence so far has demonstrated the failure of the short-run investment to growth link. It is obvious that in the long run, physical (and human) capital play some role in producing output. Research on East Asia suggests a large role for physical and human capital accumulation during their rapid growth (Young 1994, Krugman 1995). The question then becomes, how big a role do physical and human capital investment play in Africa, compared to other factors? Even if they play a role, is investment the endogenous outcome of policies?

We address the first question in Table 4. We use the data of Benhabib and Spiegel 1994 (B-S) on physical capital, human capital, labor and output. We then calculate how

much of growth is due to factor accumulation in 5 East Asian nations (the only ones in their sample) and 25 African nations. We see according to their sample, that East Asia indeed had a large advantage over Africa in physical capital accumulation. Labor force growth was about the same in the two places. However, Africa had a large advantage over East Asia in growth of human capital. The three factors balance out to account for 1 percentage point of the 3.1 percentage point growth differential between East Asia and Africa, 1965-85. This leaves 2.1 percentage points of the growth explained by “total factor productivity growth.” Whatever TFP growth contains, the main story behind Africa’s failure relative to East Asia’s success is *not* factor accumulation.

We can also address the importance of factor accumulation by seeing how much of the cross-country variation in the combined East Asia and Africa sample does factor accumulation explain. Since output growth is the sum of TFP growth and factor growth, we have:

$$\text{Variance (output growth)} = \text{Variance (TFP growth)} + \text{Variance (Factor growth)} + 2 * \text{Covariance (TFP growth, Factor growth)}$$

We can calculate with this formula what percentage of the variance of output is due to the variance of factor growth in the B-S data. Neoclassical theory tells us that the covariance term (which was 16% of total output growth variance) should be assigned to total factor productivity. It measures the degree to which factor accumulation responds to TFP growth. But even without this term, TFP growth’s cross-country variation accounts for 60 percent of output growth’s variance while factor accumulation only accounts for 24 percent.

Nehru and Dhareshwar 1993 find that capital accumulation in East Asia was not as far ahead of Africa as B-S indicate (growth rates of 7.4 percent and 5.3 percent respectively). However, Nehru, Swanson, and Dubey 1993 find that growth in human capital was equal in the two places. These alterations to the Benhabib-Spiegel figures roughly cancel out, still leaving most of the growth differential explained by total factor productivity growth.

We did the variance decomposition in the growth accounting exercises of Nehru and Dhareshwar 1993 and King and Levine 1994. In both, physical capital growth rate per capita variation accounts for below 25 percent of per capita output growth variation 1960-89. We looked also at Bosworth and Collins' 1996 reporting of TFP growth and physical and human capital accumulation for 8 regions and 3 time periods. The variance in factor accumulation accounts for only 20 percent of the cross-regional, cross-time variation.

Policies, investment, and growth

Even the part of output growth variation explained by capital accumulation does not necessarily imply a causal link from capital accumulation to growth. In the neoclassical model, as already mentioned, capital accumulation is a function of the TFP growth rate in the steady state. An increase in TFP growth would raise both capital growth and output growth, but there would not be a causal relation between capital growth and output growth (Barro and Sala-i-Martin 1995). In models that endogenize TFP growth, it becomes a function of economic policies. In endogenous growth models that stress physical and human capital accumulation, capital growth and output growth both respond to economic policies. This suggests that we should look to policies more than to investment as "key" to Africa's poor growth.

Policy differentials can take us quite far in explaining the Africa - East Asia growth difference. Figure 6 shows that 5 indirect indicators of policy explain 2.6 of the 3.4 percentage point growth differential between East Asia and Africa. The five are telephones per worker, fiscal surplus/GDP, the black market premium on foreign exchange, financial depth (M2/GDP), and initial schooling.¹⁵ The other portion is the net of the convergence effect (which was an advantage for Africa) and an Africa dummy variable that measures how much of Africa's poor growth was unexplained.¹⁶ Given the importance of policies in explaining Africa's growth, we now turn to the question of how aid influenced policy.

2. Aid-induced Policy Reform

What we have established so far is that the traditional aid to investment to growth linkages underlying the aid-financed investment "key to growth" are not very robust. On the other hand, differences in economic policies can go a long way toward explaining differences in countries' growth rates. This finding is encouraging, because it means that reforms that in many cases are not technically difficult can help poor countries increase their growth rates and accelerate poverty reduction. Most economists now recognize the importance of policy, and the proximate objective of development assistance has gradually shifted from financing investment to inducing policy reform. So this section asks: did aid-induced policy reform turn out to be the key to unlock Africa's growth potential?

If policy reforms have short-term costs -- perhaps focused on particular segments of the population -- then foreign aid can potentially help reformers get launched. Stabilization typically requires fiscal adjustments that will lead to higher taxes or lower

services for some groups. Trade liberalization will hurt firms and workers in previously protected industries. State enterprise reform and privatization are likely to lead to transitional unemployment. If a government wants to implement growth-enhancing reforms, foreign aid can help with the adjustment costs.

Jeffrey Sachs (1994) analyzes eight major economic reform episodes in the post-war period: Bolivia, Chile, Germany, Israel, Mexico, Poland, and Turkey. In each case he finds a crucial contribution of aid, though he also stresses that the government in question committed itself to reform before large-scale aid arrived. Sachs concludes that the role of aid is to “help good governments to survive long enough to solve problems” (p. 512).

On the other hand, Dani Rodrik (1996) points out that “aid can also help bad governments to survive. For debating purposes, one can cite at least as many cases as Sachs does to demonstrate an association between plentiful aid and *delayed* reform.... One of the pieces of conventional wisdom about the Korean and Taiwanese reforms of the 1960s is that these reforms took place in large measure because US aid, which had been plentiful during the 1950s, was coming to an end...” (p. 31).

Burnside and Dollar (1997) examined the relationship between aid and an index of macroeconomic and trade policies, for 56 developing countries. They showed first that policies can be explained to a considerable extent by underlying country characteristics. These characteristics included the rule of law, ethnic fractionalization (which is associated with poor policies), or political instability (also associated with poor policies). When they added aid to the regression equation, they found no effect of aid on the policy index. This finding does not refute Sachs’s view that aid has contributed to reform in certain cases. Rather, it suggests that aid has supported governments with bad policies to about the same

extent that it has supported reforming governments. Aid-induced policy reform turned out to be no more of a key than aid-financed investment. Aid-induced reform was not the key because aid did not, on average, induce reform.

We can get some insight into the relationship between aid and policy by looking at individual country cases. Zambia is a good example of Dani Rodrik's critique that aid can enable governments to delay reforms. Policies in Zambia were poor and getting poorer throughout the 1970-93 period, yet the amount of aid that the country received rose continuously, reaching 11% of real GDP by the early 1990s (Figure 7). The Bank and the Fund gave Zambia received 18 adjustment loans over this period. One could argue that this large amount of assistance sustained a poor policy regime.

For each Zambia, however, there is a Ghana. Ghana received very little aid during the period it had bad policies, while donor support has been strong since it reformed (Figure 8). Case studies of Ghana generally find that foreign financing helped consolidate a good reform program. In the Burnside-Dollar sample of 56 countries, these different experiences cancel out: aid and policy are virtually uncorrelated. When they introduced other variables that are likely to affect policy into the equation, there was still no relationship between aid and policy.

One obvious response to the problem that finance may as well delay reform as encourage it, is to make assistance *conditional* on policy reform. The International Monetary Fund and the World Bank intend to give financial support only as governments carry out reform measures. These conditional flows are only a small part of official flows; nevertheless, other donors pay attention to progress with structural adjustment programs in making their decisions about aid allocations. In the 1980s there was great

hope that making a large fraction of development assistance conditional on policy reform would spur growth and poverty reduction throughout the developing world.

There are a number of reasons, however, why conditionality failed to be the key that would yield permanent improvements in policy. First, conditionality is inherently hard to monitor. Take, for example, a condition that seems relatively simple: that the fiscal deficit not exceed a certain level. Government policy influences the fiscal deficit, but shocks not under the government's control also affect it. A country may miss an agreed fiscal target because of a shock. We would want them to, because a target that is "good policy" in one environment becomes "poor policy" in an altered environment. Thus, whether or not a country has met a policy target requires an element of subjective judgment. The subjectivity involved becomes more acute as the reforms become more complex institutionally.

The second problem with conditionality is that it only has a force during the life of the adjustment program. A government in financial difficulty may agree to certain reforms and carry them out in order to obtain conditional resources. If there is no strong commitment to these reforms, then the government can reverse them at the end of the adjustment program. From a theoretical point of view, it seems unlikely that conditional aid could induce permanent policy change if there is not a domestic constituency for reform.

The third and probably most serious problem with conditionality concerns the incentives within donor agencies. Governments set up donor agencies to provide financial assistance. These agencies want to disburse funds. The monitoring of policy reform requires some subjective judgment. So the likely outcome is that the donors will

find that governments are making a good effort -- even where there is little objective progress -- and disburse their funds. The *Economist* describes this kind of donor behavior as follows:

Over the past few years Kenya has performed a curious mating ritual with its aid donors. The steps are: one, Kenya wins its yearly pledges of foreign aid. Two, the government begins to misbehave, backtracking on economic reform and behaving in an authoritarian manner. Three, a new meeting of donor countries looms with exasperated foreign governments preparing their sharp rebukes. Four, Kenya pulls a placatory rabbit out of the hat. Five, the donors are mollified and the aid is pledged. The whole dance then starts again. (August 19, 1995)

There is a large empirical literature on structural adjustment lending and its effect on policies [see e.g. Mosley (1987), Mosley et al. (1995), and Thomas (1991)]. These reviews draw primarily on case studies. These reviews conclude that conditionality to promote reform is ineffective in countries in which there is no strong local movement in that direction. Mosley et al., for example, conclude that in Africa structural adjustment lending of the World Bank affected the policies of recipients “a little, but not as much as the Bank hoped.” In their view the main problem with conditionality was that the World Bank had strong incentives to disburse funds, and thus was inclined to see a good effort even where there was none. In their sample of adjustment loans, governments carried out only 53% of loan conditionalities. *Nevertheless, almost all of these adjustment loans disbursed.*

The lesson of the case study literature is that the existence of a conditional loan in no way ensures that governments will reform. Recall that the Fund and the Bank gave Zambia 18 conditional loans during the period depicted in Figure 7. Collier (1997) gives the example of Kenya, in which the World Bank provided aid to support policy reforms in the agricultural sector. However, the Bank financed the identical reforms five separate times,

and each time the government did not do the reforms or subsequently reversed them. Yet all of these adjustment loans disbursed.

At the same time, adjustment lending has successfully supported many reform programs. Among the cases cited by Sachs in which foreign aid helped reforming government, several were the recipients of adjustment loans from the IMF and the World Bank. In her case studies of aid effectiveness in Latin America, Cecilia Lopez (1997) singles out Bolivia as a case in which adjustment lending provided finance to a determined reforming government. Bolivia is a good example of a country in which foreign assistance increased in lock-step with policy reforms (Figure 9). Much of this increase in finance came through adjustment loans. Gustav Ranis' 1995 review of policy-based lending concluded that: "the lending cum conditionality process works well only when local polities have decided, largely on their own, possibly with outside technical help, to address their reform needs, effect certain policy changes sequentially, and approach the international community for financial help in getting there."

In its own internal reviews the World Bank has come to the same conclusion reached by these outside studies, that strong domestic support of the reform program is necessary if adjustment lending is to succeed. The Operations Evaluation Department (OED) of the World Bank is an independent office that judges ex-post the success or failure of all loans. For adjustment loans, it examines whether governments have actually reformed. OED has found that about one-third of adjustment loans fail to achieve the expected reforms. It has identified "borrower ownership" or commitment as a key factor in successful adjustment (World Bank, 1997).

In a recent study Dollar and Svensson (1998) investigated underlying determinants or indicators of “ownership” of successful reform programs. They had a large sample of World Bank adjustment loans (105 cases in which reforms were successfully carried out, and 55 cases in which reforms were not carried out). They found a number of political-institutional features clearly associated with successful reform programs. In particular, the probability of success of reform depended on whether the government was an elected one and on how long it had been in power. Other things equal, a newly elected government that signed an adjustment program had a 95% probability of success, compared to only 65% for an authoritarian government that had been in power 12 years or longer (Figure 10). The political-economy variables successfully predicted the outcome of 75% of adjustment loans. Many of the failed adjustment loans were predictable in that the environments into which the Bank made the loans were not conducive to reform.

This study also examined factors under the control of the World Bank: the size of the loan, the number of conditions, the amount of resources used to prepare the loan, and the amount of resources devoted to analytical work in the four years prior to the adjustment loan. It found that these “Bank effort” variables are remarkably similar on average for successful and failed adjustment programs. When they combined all the variables in a multivariate analysis of success and failure of adjustment programs, what emerged was that successful reform depends on institutional-political characteristics of countries. The Bank-related variables have no significant relationship with reform outcome.

In the past, World Bank behavior did not sufficiently take into account that the success or failure of reform is to a large extent outside its control. Zambia provides a case in point: in the 1980s the World Bank approved four structural adjustment loans for Zambia, totaling \$212 million. These loans disbursed almost fully (the Bank canceled less than 2% of the committed amount). After loan completion, the Operations Evaluation Department rated three out of the four as failures. The government did not satisfactorily implement the reforms supported by these loans. The Dollar- Svensson results suggest that this outcome was largely predictable. Zambia at that time did not have conditions conducive to reform. A non-democratic government had been in power for a long time, and such a government is not a likely reformer. It may have been worth taking a chance on the first adjustment loan. But it is easy to conclude in retrospect that a succession of policy-based loans for Zambia was not a good use of resources.

What these different studies suggest is that countries' own institutional and political features determine policy reform. Foreign finance -- even conditional finance -- is not likely to generate a reform program in a country in which there is no domestic constituency for reform. Development economists increasingly recognize this "borrower ownership" of the reform program as a prerequisite for success. Once a serious reform program has started in a country, then financial assistance can be useful to help consolidate it.

3. Policies Plus Money

One of the main themes of our paper is that good policies are more important than money. With bad policies, aid and investment do not generate many results. Good policy,

on the other hand, will tend to attract money and use it well. However, we do not want to go too far in emphasizing the primacy of policy over finance. The main point that we want to make in this section is that the combination of good policy and finance is very powerful. First, we are going to show that the combination of good policy and a high level of private investment is strongly correlated with growth. Then we are going to examine in more detail the determinants of private investment and in particular argue that in a good policy environment foreign aid crowds in private investment. The conclusion that emerges from this analysis is that large financial assistance is only useful to poor countries after they have made substantial progress with policy reform. Once they have reached that stage, however, the money is quite important.

We showed in section 1 that total investment is not a very good predictor of growth. Furthermore, Easterly and Rebelo (1993) have shown that public investment has no robust relationship at all with growth. Pritchett (1996) argues that much public investment does not actually translate into increases in physical capital. Private investment, on the other hand, does have some relationship. Table 5 shows a panel regression of growth on private investment as a share of GDP, an index of economic policy, and initial income. The index of economic policy includes openness as measured by Sachs and Warner (1995), inflation, the budget surplus, and a measure of institutional quality (rule of law, absence of corruption) from Knack and Keefer (1995). There are a number of problems with interpreting this regression that we will return to: for the moment treat it as telling us about partial correlations. There is a strong partial correlation between private investment and growth, after controlling for policy and initial income. But if we interact policy and private investment (regression 2), the interactive term has more statistical

significance than either private investment alone or policy alone. Rapid growth is associated with the combination of good policies and high private investment.

The reason that we have to be careful interpreting this regression is that it may be that growth causes private investment, rather than vice versa. Furthermore, we will show later in this section that good policy increases private investment; that is, the latter variable is clearly endogenous. In the third column we address these problems by instrumenting for private investment and for private investment interacted with policy. The results are qualitatively the same as the OLS regression. An exogenous change in private investment would have no effect on growth in a country in which policies are very poor and only a modest effect in the developing country of average policy. This reaffirms the conclusion of our first section that investment by itself is no magic key for development.

In a good policy environment, on the other hand, an exogenous increase in private investment has a fairly strong effect. An increase in private investment of 6 percentage points of GDP (the standard deviation in this sample) would increase growth by 0.6 percentage points. Hence, it is only when interacted with good policy that we find a positive and significant effect of investment.

What can developing countries and their supporters do to increase private investment in a good policy framework? To address this question we attempted to explain private investment as a function of

initial income level;

demographic-political characteristics such as ethnolinguistic fractionalization or political stability;

economic policies

government consumption

foreign aid.

This approach is consistent with the new growth literature, in which private accumulation is a function of initial conditions and the incentive regime.

The basic effort to explain differences in private investment across countries and over time is fairly successful (Table 6). High levels of private investment are associated with good economic policy, low levels of government consumption, and political stability. (Since economic policy enters positively both this equation and the growth equation with private investment included, policies affect growth both through the accumulation of capital and through the efficiency of capital.)

It is interesting that initial income appears with a large positive coefficient. In growth regressions we typically find that, other things equal, poor countries grow faster. In this private investment equation, other things equal, richer countries have higher investment. This finding suggests that low-income countries have trouble generating savings or attracting foreign investment even after they have put good policies (including secure rule of law) into place. It is also noteworthy that aid enters with an insignificant coefficient in the private investment equation.

The picture changes if we interact aid with the economic policy index. There is a positive coefficient on this interactive term, and a negative one on aid squared interacted with the policy index. This is similar to what Burnside and Dollar found concerning aid, policies, and growth: foreign aid leads to higher private investment in an environment of good policies, but not in an environment of poor policies. The negative coefficient on the

quadratic term means that there are diminishing returns to aid: the marginal impact of aid declines and becomes negative at high volumes. The measurement of this curvature is not very precise as it depends on a few large outliers in the aid times policy dimension. If we drop these outliers, the positive coefficient on the aid times policy term remains strongly positive (regression 3). Because of concerns about the endogeneity of aid, we repeat these three regressions using instruments for aid and the interactive terms (regressions 4-6).

The basic story remains the same in these instrumented regressions. Regression 6 says that the interaction of aid and good policy has much more explanatory power than either variable alone. The effect of foreign aid on private investment depends on the quality of economic policies. In a good policy environment, 1 percent of GDP in aid crowds in 1.9 percentage points of private investment; in a poor policy environment aid crowds out private investment (Figure 11).

These results help explain why the growth effect of aid depends so critically on economic policies. It appears that when a poor country puts good policies into place, private investors—both domestic and foreign—are uncertain as to the reliability of the reform. If there is fear of reversal, then investors will hold back. Also, even with good management, impediments such as weak infrastructure hamper low-income countries. In this environment foreign aid to a reforming government may improve the environment for private investment—both by creating confidence in the reform program and by helping ease infrastructure bottlenecks. In a poor policy environment, on the other hand, aid financing crowds out private investment, probably by increasing the government's capacity to undertake projects that compete with the private sector.

The positive coefficient on the interactive term has a second, equally important interpretation: the impact of policy reform depends on the amount of assistance that a poor country is receiving. Regression 6 indicates that a 1 unit increase in the policy index has a negligible impact on private investment if aid equals zero. (Burnside and Dollar show that there is still some modest growth effect, which presumably comes from more efficient use of existing capital stock.) With aid equal to 2 percent of real PPP GDP, on the other hand, the same policy reform would increase private investment by 1.4 percentage points. This response of private investors is one reason why the growth effect of reform is greater when a poor country is receiving some foreign aid.

4. Conclusion

Our study of aid, investment, and policies in Africa leads to four principal conclusions:

- The traditional aid-investment-growth linkages are not very robust. Aid does not necessarily finance investment and investment does not necessarily promote growth.
- Differences in economic policies can explain much of the difference in growth performances. Poor quality of public services, closed trade regimes, financial repression, and macroeconomic mismanagement explain Africa's poor record.
- Foreign aid cannot easily promote lasting policy reform in countries in which there is no strong domestic movement in that direction. Country "ownership" of reforms is more important than donor conditionality.
- These three conclusions imply that societies themselves must take the lead in putting growth-enhancing policies into place. When this happens, foreign aid

can play a powerful supporting role, bringing ideas, technical assistance, and money. The combination of private investment, good policies, and foreign aid is quite powerful.

So where do we stand on the search for the key in Africa? The failure of past keys induces us to be cautious on claims for a new key. But even if aid-cum-private investment-cum-policy reform falls short of being the one and only key to growth, disbursing aid into good policy environments would be an improvement on current practice.

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Endnotes

¹¹ The authors of these books or articles are, in order: Blomstrom and Lundahl [1993], Borgin and Corbett [1982], Glickman [1988], Ravenhill [1986], Sadiq Ali and Gupta [1987], Easterly and Levine [1997], Frimpong-Ansah [1991], Soyinka [1996], Ayittey [1998], and Turok [1987]. These were taken from Easterly and Levine's [1997] bibliography and from recently published works.

² p. 101, World Bank (1993).

³ p. 91, World Bank (1996b)

⁴ World Bank 1995d, p. 33

⁵ The World Bank 1995a, (p. 23)

⁶ European Bank for Reconstruction and Development 1995, p. 66, p. 5, p. 71. The Chief Economist of the EBRD, Nicholas Stern, clarified in private correspondence that ICOR-based estimates of required investment finance do not determine EBRD lending decisions to individual countries.

⁷ IMF (1992, p. 18)

⁸ Hadjimichael et al (1996, p. 1)

⁹ IMF (1993, p. 79)

¹⁰ p. 23, World Bank 1996a.

¹¹ p. 15, World Bank 1997b

¹² p. 99, World Bank 1995c

¹³ This section applies to Africa analysis from Easterly 1997.

¹⁴ See World Bank (1995b) and International Monetary Fund (1996a).

¹⁵ based on Easterly and Levine 1997

¹⁶ The Africa dummy is about .017, so that half of the growth differential is unexplained when Africa's convergence advantage is taken into account.

Chart1

Figure 1: Madagascar: Actual investment to GDP and that predicted by aid-financed investment model

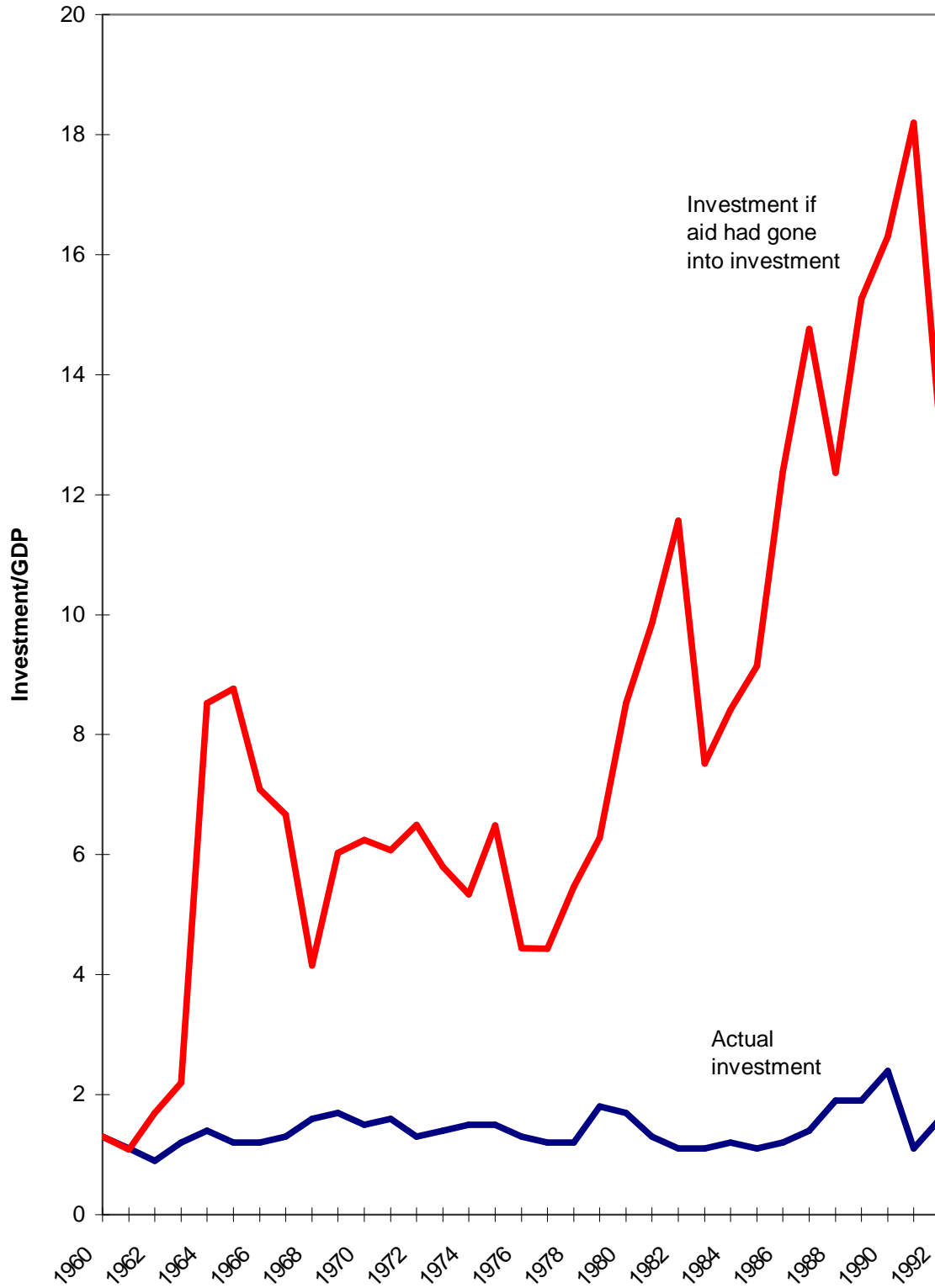


Figure 2: Zambian per capita income if all of actual investment had gone into growth as ICOR model predicted

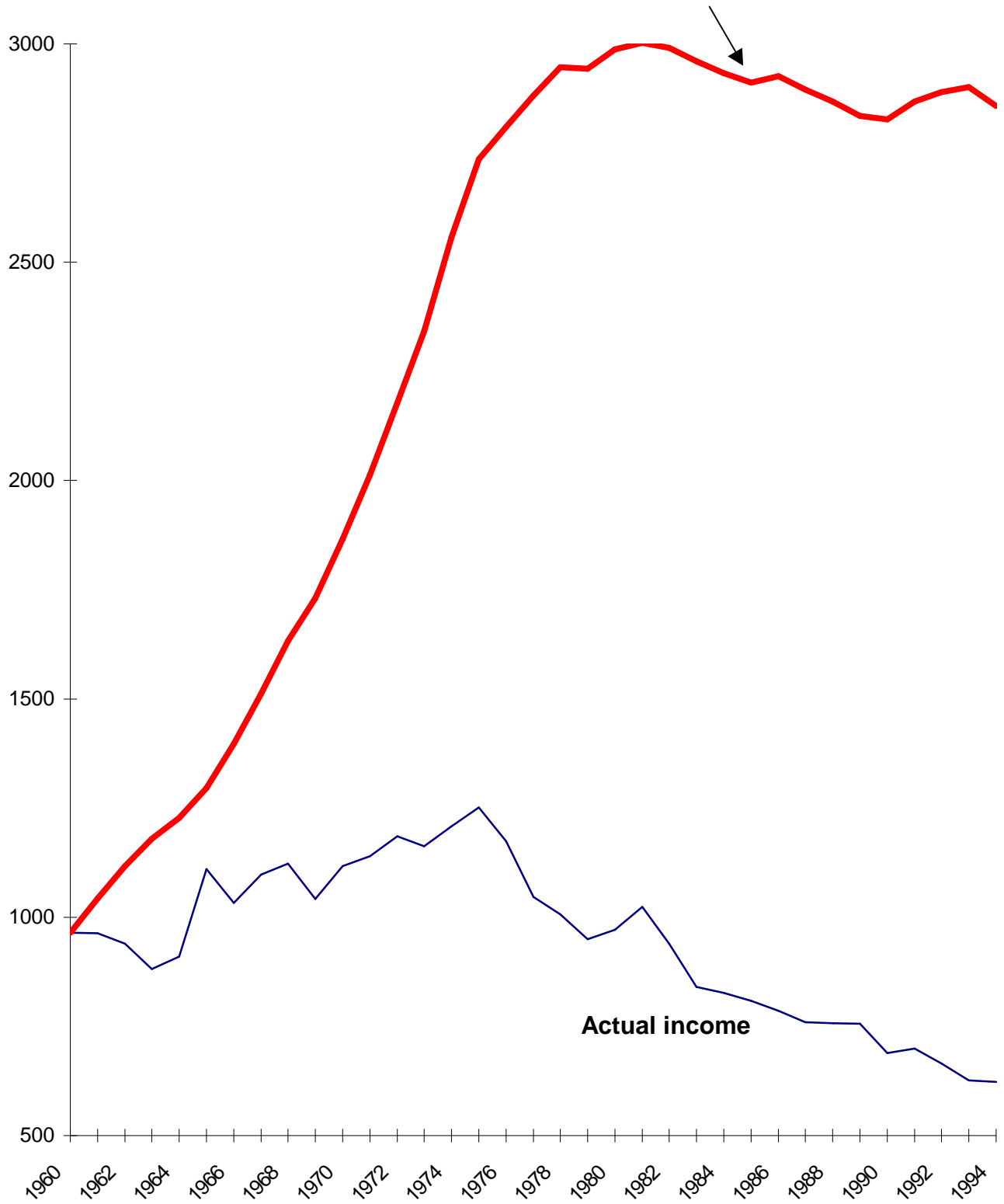


Figure 3: Growth and lagged investment in Africa, 4-year averages, 1953-1995

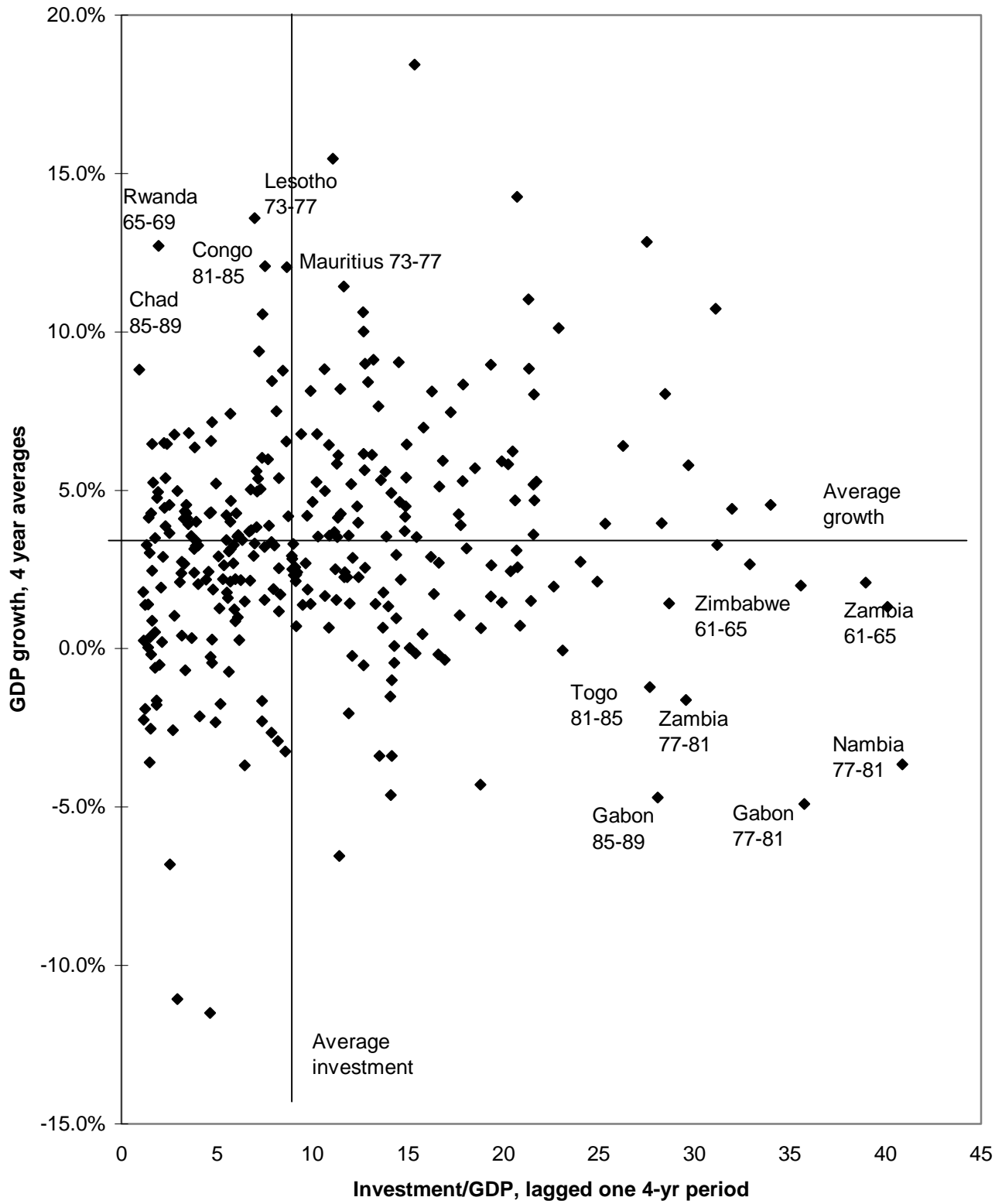


Figure 4: Actual growth versus that predicted by the Financing Gap model for African countries

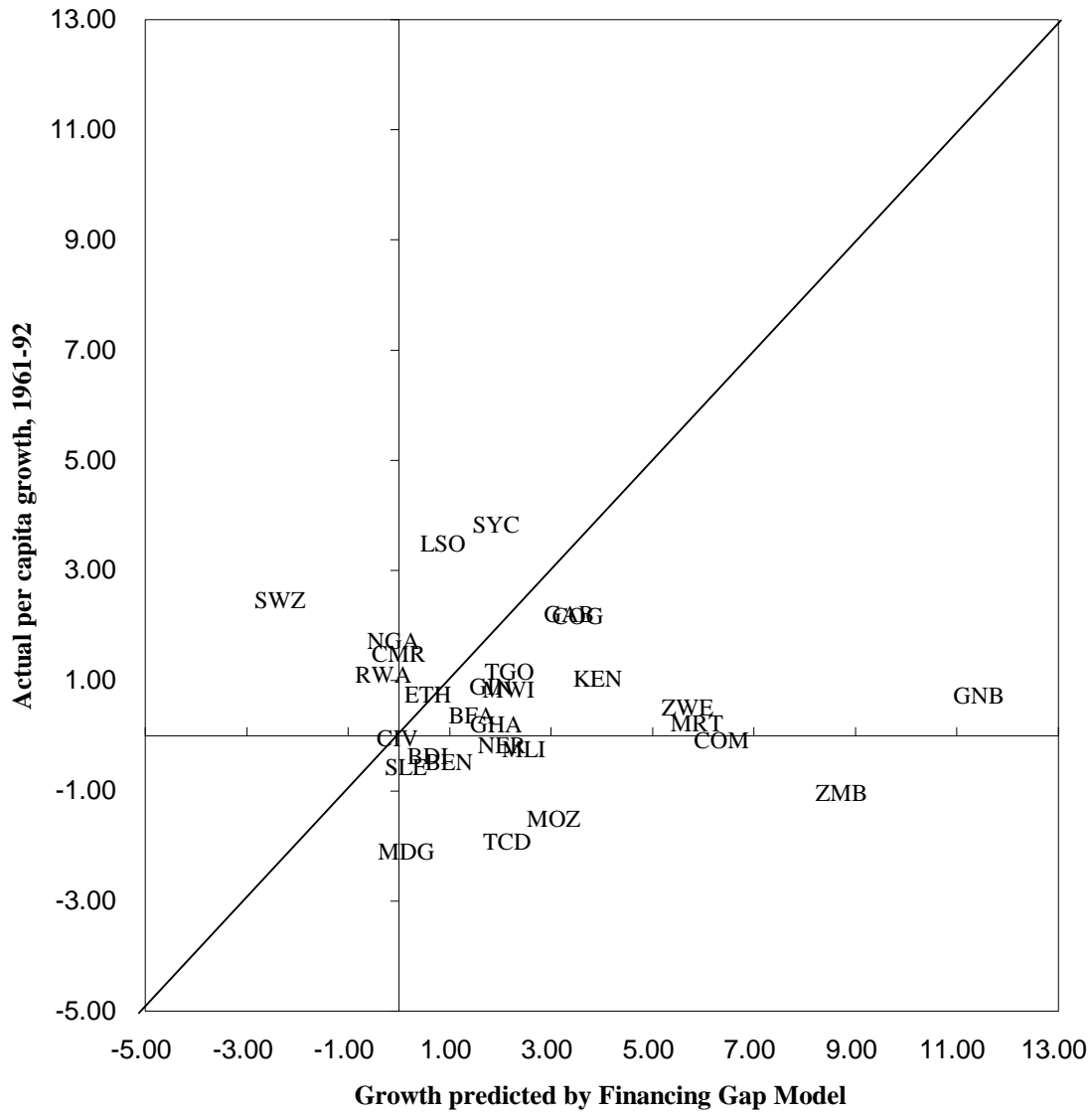


Figure 5: Mauritania: Gap between aid-financed investment model and reality

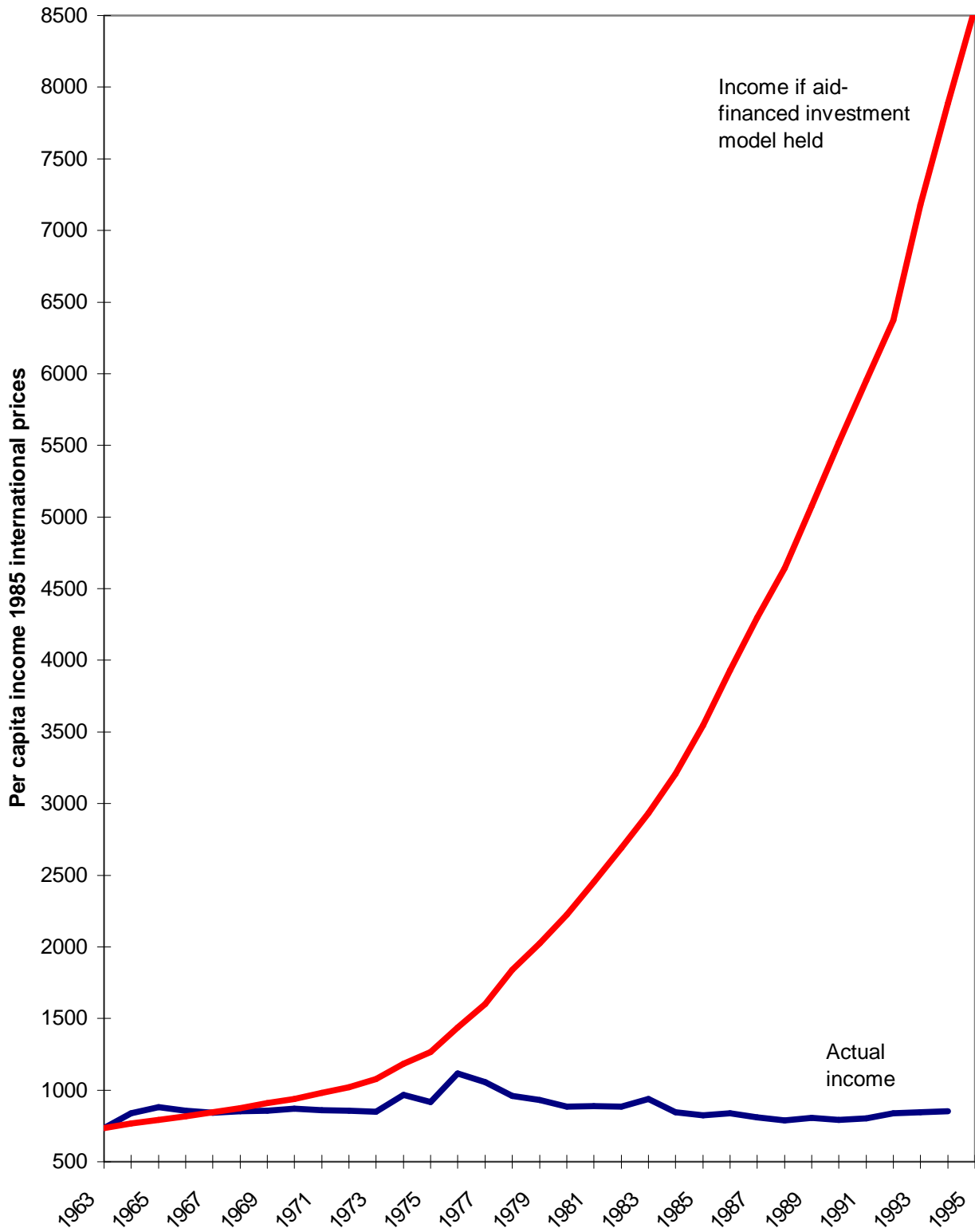
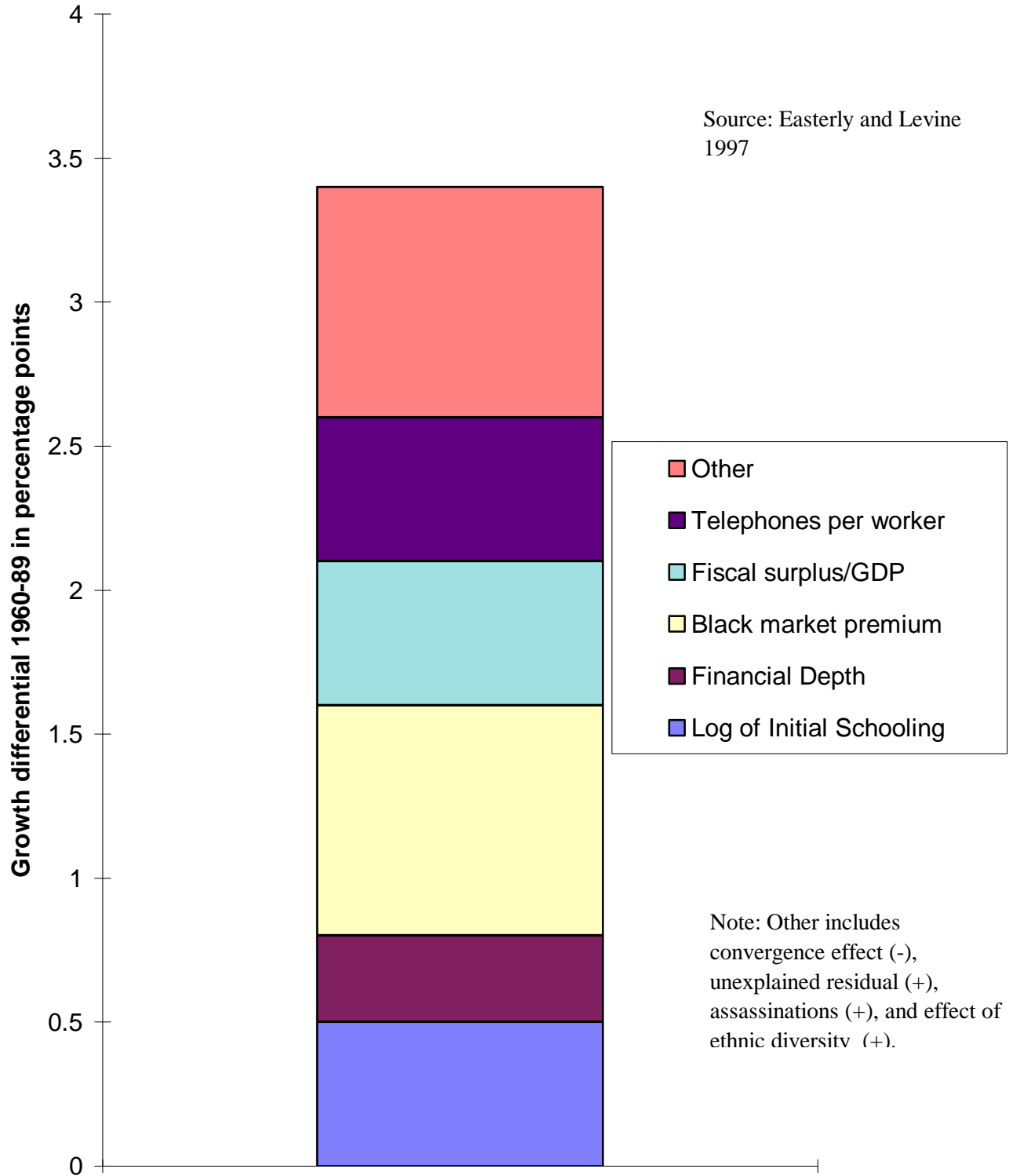


Figure 6: Decomposition of Growth Difference Between East Asia and Africa by Policy Indicator



Table

Table 4: Sources of growth decomposition between East Asia and Africa, 1965-85

	Rates of growth of:					
	Physical Capital	Labor	Human capital	All Factors of Production	Total Factor Productivity	Output
5 East Asian Nations	8.4%	2.4%	2.2%	4.3%	2.4%	6.7%
25 Subsaharan African Nations	1.9%	2.2%	5.7%	3.3%	0.3%	3.6%
East Asia-Africa growth difference explained by:	2.1%	0.0%	-1.2%	1.0%	2.1%	3.1%
Share of cross-country output growth variance in East Asia + Africa sample explained by:				24%	76%	

Notes:

(1) Source for each factor's growth by country is Benhabib and Spiegel 1994

(2) We assume share of 1/3 for each factor of production.

(3) We assigned the covariance term between factor accumulation and TFP growth (16% of growth variance) to TFP, because it is TFP-induced factor accumulation according to neoclassical theory.

East Asian Nations:

MALAYSIA
JAPAN
THAILAND
INDONESIA
KOREA

African Nations:

BOTSWANA
CAMEROON
CENT AFRICAN REP
CHAD
GABON
GHANA
IVORY COAST
LESOTHO
LIBERIA
MADAGASCAR
MALAWI
MALI
MAURITIUS
MOZAMBIQUE
NIGER
NIGERIA
RWANDA
SENEGAL
SIERRA LEONE
SOMALIA
SUDAN
SWAZILAND
TANZANIA
UGANDA
ZAMBIA

Table 5. Growth, Investment, and Policy

Time dimension: six four-year periods: 1970-73 to 1990-93

Countries: 49

Dependent variable: Growth rate of per capita GNP

Method	(1) OLS	(2) OLS	(3) 2SLS
#obs	198	198	194
Constant	2.57 (0.96)	3.25 (1.23)	2.76 (1.03)
Private Investment	0.14 (2.94)	0.07 (1.24)	-0.02 (0.13)
Policy Index	0.78 (5.57)	0.27 (1.22)	0.21 (0.74)
Initial Income	-0.65 (1.74)	-0.63 (1.71)	-0.42 (0.98)
Investment x Policy	--	0.03 (2.54)	0.04 (1.95)
R ²	.40	.41	.40
Adj: R ²	.37	.38	.37

Note: t-statistics (in parentheses) have been calculated with White's heteroskedasticity-consistent standard errors, for all regressions in the paper.