WHERE DID ALL THE GROWTH GO?

EXTERNAL SHOCKS, SOCIAL CONFLICT, AND GROWTH COLLAPSES

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ABSTRACT

This paper argues that domestic social conflicts are a key to understanding why growth rates lack persistence and why so many countries have experienced a growth collapse since the mid-1970s. It emphasizes, in particular, the manner in which social conflicts interact with external shocks on the one hand, and the domestic institutions of conflict-management on the other. Econometric evidence provides support for this hypothesis. Countries that experienced the sharpest drops in growth after 1975 were those with divided societies (as measured by indicators of inequality, ethnic fragmentation, and the like) and with weak institutions of conflict management (proxied by indicators of the quality of governmental institutions, rule of law, democratic rights, and social safety nets).

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I. Introduction

This paper is motivated by several related puzzles in the comparative experience with economic growth. First, what accounts for the instability in economic performance which has characterized most developing countries over the last few decades? Second, why did so many countries that grew at satisfactory rates during the 1960s and 1970s, mostly in Latin America and the Middle East, do so badly thereafter? Third, why is it that some countries were hardly affected by the volatility in their external environment during the second half of the 1970s while others suffered extensively for a decade or more before starting to recover? Finally, why is it that external shocks often cripple economic performance to an extent that is vastly disproportionate to the direct economic consequences of these shocks?

The hypothesis advanced in this paper is that domestic social conflicts are a key to understanding these phenomena. I emphasize, in particular, the manner in which social conflicts interact with external shocks on the one hand, and the domestic institutions of conflict-management on the other. These interactions play a central role in determining the persistence of a country's economic growth, its response to volatility in the external environment, and the magnitude of the growth collapse following a negative shock. When social divisions run deep and the institutions of conflict management are weak, the economic costs of exogenous shocks–such as deteriorations in the terms of trade–are magnified by the distributional conflicts that are triggered. Such conflicts diminish the productivity with which a society's resources are utilized in a number of ways: by delaying needed adjustments in fiscal policies and key relative prices (such as the real exchange rate or real wages), by generating uncertainty in the economic environment, and by diverting activities from the productive sphere to the redistributive one.

To fix ideas, think of an economy that is suddenly and unexpectedly confronted with a drop in the price of its main export. The textbook prescription for this economy is a combination of expenditure-switching and expenditure-reducing policies—i.e., a devaluation and fiscal retrenchment. But the precise manner in which these policy changes are administered can have significant distributional implications. Should the devaluation be accompanied by wage controls? Should import tariffs be raised? Should the fiscal retrenchment take place through spending cuts or tax increases? If spending is to be cut, which types of expenditure should bear the brunt of the cuts?

Because each of these options has distributional consequences, in practice much depends on the severity of the social conflicts that lie beneath the surface. If the appropriate policy changes can be undertaken without upsetting prevailing social bargains and causing an outbreak of distributional conflict, the shock can be managed with no long-lasting effects on the economy. If they cannot, the economy can be paralyzed for years as inadequate adjustment condemns the country to foreign exchange bottlenecks, import compression, debt crises, and bouts of high inflation.

Heuristically, the core idea in this paper can be summarized by the following formula:

$$\Delta growth \quad = \quad -external\ shocks \times \frac{latent\ social\ conflict}{institutions\ of\ \ conflict\ management}$$

In words, the effect of shocks on growth is larger the greater the latent social conflicts in an economy and the weaker its institutions of conflict management. From the standpoint of empirical analysis, the main difficulty is to operationalize this equation. External shocks are relatively easy to quantify. But the other two terms on the right-hand side of the equation are considerably more problematic.

I use the term “latent social conflict" to indicate the depth of pre-existing social cleavages in a society, along the lines of wealth, ethnic identity, geographical region or other divisions. I proxy for this term by using measures of inequality, ethnic and linguistic fragmentation, and social trust. By "institutions of conflict management," I understand institutions that adjudicate distributional contests within a framework of rules and accepted procedures, i.e., without open conflict and hostilities. Democratic institutions, an independent and effective judiciary, an honest and non-corrupt bureaucracy, and institutionalized modes of social insurance are among the most significant of conflict-management institutions. I proxy for the strength of such institutions by using measures of civil liberties and political rights, the quality of governmental institutions, the rule of law, competitiveness of political participation, and public spending on social insurance.

My empirical analysis focuses on the differences in rates of economic growth between 1960-75 and 1975-89.[1] The 1970s were an exceptionally turbulent time for the world economy, and therefore 1975 presents an appropriate mid-point for testing these ideas. The bottom line is that my framework contributes to an understanding of the growth collapse that was the common fate of so many countries in the latter period. Countries that experienced the sharpest drops in GDP growth after 1975 were those with divided societies and weak institutions of conflict management. The severity of the external shocks themselves is distinctly secondary as a determinant of cross-country differences in growth across periods. Furthermore, once latent social conflict and the quality of conflict-management institutions are controlled, I find that various measures of government policy at the outset of the crisis, such as trade policies, debt-export ratios, or government consumption levels, contribute practically nothing to explaining the

[1] As shown below, an alternative approach using country-specific break years (with dates based on Pritchett 1997) yields very similar results.

growth differential across periods. The evidence suggests that social conflict has played a role primarily by inducing *macroeconomic* mismanagement.

The outline of the paper is as follows. I begin with a background discussion expanding on the puzzles noted above. Next, I present a simple model that clarifies the interactions among shocks, domestic conflict, and institutions of conflict management that were briefly discussed above. The rest of the paper is devoted to the presentation of the empirical evidence.

II. Background

In a well-known paper, which has spawned surprisingly little further work, Easterly, Kremer, Pritchett, and Summers (1993) were the first to point out the puzzle that economic growth varies considerably decade by decade, while country characteristics and policy configurations are quite persistent. Easterly et al. focussed mostly on the decades of the 1960s, 70s, and 80s, but the same point can be made by comparing growth rates over the two periods 1960-75 and 1975-89. As shown in Figure 1, growth during the first of these two periods was a very poor predictor of growth during the subsequent period. Regressing growth in 1975-89[2] on growth in 1960-75 and a constant term yields an R^2 of only 0.12 (and a coefficient on lagged growth of 0.39; see Table 1).[3] The point becomes even more dramatic when East Asian countries are excluded from the sample (see Figure 1b): in this case, the R^2 of the regression shrinks to 0.04

[2] I use 1975-89 rather than 1975-90 throughout the paper as my second period because this allows me to increase the number of countries in the sample. None of the results reported is affected if I use 1975-90 instead.

[3] Growth rates are measured by taking the log differences of GDP per capita in the initial and final years, and dividing by the number of intervening years. This may impart a downward bias on the estimated coefficient of lagged growth, as the log of GDP per capita in 1975 enters the two sides of the regression equation with opposite signs. However, carrying out the exercise using non-overlapping endpoints yields identical results, both for R^2s and for estimated coefficients. And using trend growth rates, rather than endpoints, actually reduces both the R^2 and the estimated coefficient on lagged growth.

(and the coefficient on lagged growth falls to 0.21). If one other country–Botswana–is also excluded from the sample, the coefficient on lagged growth is no longer statistically significant at any conventionally accepted level of confidence! As Easterly et al. point out, the notion that countries can be neatly separated into high-, medium-, and low-growth groups over the longer term is an illusion created by sustained high growth in a small sample of mostly East Asian countries.[4]

By contrast, investment rates tend to be significantly more persistent over time. Figure 2 displays the analogous scatter plots for investment during the two sub-periods. Whether East Asia is excluded from the sample or not, investment in the first period is very strongly correlated with investment in the subsequent period. The R^2's are of the order of 0.65-0.70 (compared to 0.04-0.12 before), and the point estimate on lagged investment is more than three times larger than in the case of the lagged coefficient for growth (see Table 1). Whatever it is that drives the variation in growth rates over shorter horizons, it is not the variation in investment.[5] What seems to vary considerably over time is the productivity with which a society's resources are utilized.

Consider more specifically the changing fortunes of Latin America, the Middle East, and East Asia over the period in question. Table 2, adapted from Collins and Bosworth (1996), shows regional averages in growth rates of GDP per worker and of total factor productivity (TFP) for the three sub-periods 1960-73, 1973-84, and 1984-94. We note that during the early period of 1960-73, economic performance in Latin America and the Middle East was on average

[4]Countries in Sub-Saharan Africa are usually thought to have experienced low growth throughout most of the post-1960 period. Yet there are eight Sub-Saharan African countries in addition to Botswana which have experienced average growth in GDP per capita exceeding 3 percent per annum during 1960-75. These countries are Gabon, Cote d'Ivoire, Lesotho, Nigeria, South Africa, Swaziland, Tanzania, and Togo. None of these countries repeated this performance in the subsequent period 1975-89.

not only comparable to that in East Asia, but actually superior in some respects. The Middle Eastern countries in the sample[6] had higher rates of labor- and total factor productivity growth than the East Asian tigers. Latin America similarly surpassed East Asia in TFP performance. The reputation of the East Asian miracle rests entirely on the fact that productivity growth—and hence output growth—collapsed in the Middle East and Latin America after 1973, but not in East Asia. The growth of output per worker continued at similar rates in East Asia, while it was sharply reduced in the Middle East and Latin America. As the table shows, the reduction in TFP growth after 1973 accounts for virtually all of the growth collapse in the latter two regions.

Why did so many economies in the Middle East, Latin America, and also Sub-Saharan Africa fall apart after 1973?[7] One plausible story is that it was exogenous shocks of various kinds—such as changes in the external terms of trade or wars—that wreaked havoc with economic performance in these regions. This is the hypothesis that was entertained in the Easterly et al. (1993) paper. These authors provide some evidence on the significance of shocks in explaining the variation in growth during the 1970s and the 1980s. But as they acknowledge, this cannot be the full story. First, the additional explanatory power that comes from introducing measures of shocks into their regression is modest (with partial R^2's for shock variables of 0.14-0.15). Second, the estimated coefficient on their most significant shock variable—the change in the terms of trade—is implausibly large. According to the Easterly et al. regressions, an unfavorable terms-of-trade shock amounting to one percent of GDP per annum is associated with a reduction in the

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[5] For a recent paper that demonstrates that investment rates are a very poor predictor of growth in the short run, see Easterly (1997).

[6] These are Algeria, Cyprus, Egypt, Iran, Israel, Jordan, Malta, Morocco, and Tunisia.

[7] Note from Table 1 that there is one region which improved its performance noticeably after 1973: South Asia.

growth rate of 0.85 percentage points per annum. This is too large, as Easterly et al. note, considering that changes in the terms of trade have no direct effect on the quantum of output (real GDP). It is too large even when Keynesian and other channels are taken into account (see Easterly et al. 1993, pp. 471-472).

Looking at the experience of individual countries, it becomes clear why external shocks alone cannot account for the different paths taken after the mid-1970s. Many of the East Asian countries were hit with external shocks that were of comparable magnitude to those experienced in Latin America, if not even stronger. Compare, for example, South Korea to Brazil and Turkey. As Table 3 shows, Korea was hit harder by the changes in world prices during the 1970s than either of the other two economies. This is largely because trade constitutes a much larger share of national income in Korea. The income loss associated with a rise in the price of imported oil is correspondingly larger in Korea than in Brazil or Turkey. Yet Korea grew even faster after 1975, while Turkey and Brazil both experienced an economic collapse.

At one level, it is not a great mystery why these experiences differ. Consider the experience of these three countries.

The South Korean government undertook a textbook adjustment in 1980 as soon as signs of a payments imbalance appeared. There was a devaluation, a tightening of monetary policy, and a program aimed at increasing energy efficiency in the economy. The result was a single year of sharp recession (exacerbated by a poor harvest and political strife) and moderate inflation. Growth picked up very quickly thereafter, to the point that Korea's growth trend was completely unaffected by the events of 1980 (see Aghevli and Marquez-Ruarte 1985).

The Turkish response was quite different. A populist government reacted to the growing current-account deficit in the mid-1970s by going on an unsustainable external-borrowing binge.

Once foreign bank loans dried up in 1977-78 as a result of concerns about repayment capacity, fiscal and exchange-rate adjustments were delayed. Between 1978 and 1980, inflation rose and the economy went into a tailspin. Some semblance of macroeconomic balance was restored in 1980, but with huge distributional consequences brought about by changes in key relative prices (the real exchange rate, real wages, and the rural-urban terms of trade). These relative-price changes had the effect of transferring income from farmers and workers to the public sector (see Celasun and Rodrik 1989), and were greatly facilitated by military rule during 1980-83. These distributional shifts have created a legacy of macroeconomic cycles in Turkey, with real wages going through periods of recovery followed by bust. Largely due to this legacy of instability, inflation has remained high since the early 1980s, and the Turkish economy has underperfomed relative to its potential.

In Brazil, widespread indexation prevented an adjustment in relative prices of the kind that eventually took place in Turkey. Even without formal indexation, strategic interaction among social groups resulting in wage-price rigidities appears to have made orthodox adjustment policies of demand restraint extremely costly in terms of output (Simonsen 1988). Consequently, fiscal and monetary restraint was tried only half-heartedly. The result was a succession of high-inflation plateaus: inflation jumped from 50 percent per year to 100 percent in 1979, 200 percent in 1983, 400 percent in 1987, 1,000 percent in 1988, and more than 2,000 percent in 1990. Each failed stabilization resulted in higher inflation rates than previously, until the real plan of 1994 finally brought price stability.

These country vignettes underscore the importance of the way in which different societies react to external shocks. In Korea, adjustment was swift and somehow non-politicized. In Turkey, adjustment was delayed and when it eventually took place it was undertaken in a manner

that imposed disproportionate costs on certain segments of society, undercutting the sustainability of macro balances in the longer run. In Brazil, strategic competition among different social groups gave prices a life of their own and rendered traditional remedies for excess demand costly and ineffective. The latter two economies were still paying the price of inadequate adjustment in the late 1980s, long after shocks of the 1970s had reversed themselves. In short, social conflicts and their management–whether successful or not–appear to have played a key role in transmitting the effects of external shocks to economic performance.

III. A simple model of social conflict

Motivated by the experiences of Turkey, Brazil and many other similar cases, I now present a simple model of social conflict arising from coordination failure. There are two groups in the model which act independently and which face a shrinking pie as a result of an external shock. Each group must decide what share of the pie they will claim. If the claims exceed the available resources, the resulting social conflict generates deadweight losses, and the size of the pie shrinks further.[8] The ex post distribution of resources is determined partly by the ex ante claims, and partly by pre-existing rules that moderate the distributional inequities that might otherwise result.

In terms of my previous nomenclature, latent social conflict in a society is parameterized in this model by the priors held by each group regarding how "cooperative" its rival will be. When social divisions run deep, there will be greater suspicion about others' motives, and a higher probability will be attached to an opportunistic grab for resources by the rival group. The

[8] This framework bears some similarity in spirit to Alesina and Drazen's (1991) paper on delayed stabilization. See also Tornell and Velasco (1992), Benabou (1996), and Tornell and Lane (forthcoming). All these papers emphasize the importance of social conflict and polarization as a reason for inefficient outcomes.

strength of conflict-management institutions, on the other hand, is captured by the degree to which potential inequities arising from asymmetric claims are moderated by the rules that govern the ex post distribution of resources. When conflict-management institutions are strong, distributional outcomes will be less sensitive to any group's opportunistic behavior aimed at obtaining a disproportionate share of the available resources.

I normalize the pre-existing level of resources in the economy to unity, and assume that these resources were initially split evenly between the two groups. (The assumption of equal distribution is for computational simplicity only; the results of the model will obtain for any initial distribution.) An external shock of magnitude Δ reduces the economy's resources to $1-\Delta$. Each group must subsequently decide between one of two strategies. The "cooperative" strategy consists of scaling down the group's demand in proportion to the lost income; that is, to claim only $\frac{1}{2}(1-\Delta)$. Alternatively, each group can choose to "fight" by holding onto its previous stake of $\frac{1}{2}$.

Unless both groups choose to cooperate, the available resources will fall short of the demands made by the groups. In this case, I assume that the economy's performance suffers, and the costs of the shock are magnified. One can think, for example, of the damage done by macroeconomic instability when fiscal and exchange-rate adjustments are inadequate in the face of external shocks. These induced costs come in two parts. First, there is a fixed cost (t) arising from the onset of social conflict, and second, there is a loss that is proportional to the excess demand for resources. Hence, denoting the demand made by group i as a_i, the resources that are available for distribution to the two groups are:

$$(1) \qquad R = \begin{cases} (1-\Delta) - q\,[\sum a_i - (1-\Delta)] - t, & \textit{if either group fights} \\ (1-\Delta), & \textit{otherwise.} \end{cases}$$

Here, q captures the sensitivity of the economy's performance to ex ante excess demands.

The available resources *R* are eventually distributed according to the following rules. If both groups opt for the same strategy, *R* is split evenly between them: when they both cooperate, they each get $\frac{1}{2} R_{cc} \equiv \frac{1}{2}(1-\Delta)$, and when they both fight, they each get $\frac{1}{2} R_{ff} \equiv \frac{1}{2}\{(1-\Delta) - q\Delta - t\}$. When the choices are asymmetric, the society's conflict-management institutions determine the outcome. When these institutions are extremely weak, the opportunistic group can shut out the other group from the distributive process and capture its full claim, $\frac{1}{2}$. In this case, the cooperating group is left with the residual $R_{cf} - \frac{1}{2} \equiv \{(1-\Delta) - q\frac{\Delta}{2} - t\} - \frac{1}{2}$. At the other extreme, one can imagine that some combination of the rule of law, institutionalized procedures, and democratic pressures prevent the opportunistic group from making any gains, in which case the available resources $R_{cf} = \{(1-\Delta) - q\frac{\Delta}{2} - t\}$ are divided evenly between the two groups. The actual outcome is a weighted average of these two extremes, with the weight on the second scenario, f, serving to calibrate the strength of conflict-management institutions.

Let p stand for the probability that each group attaches to the other's <u>non</u>-cooperative behavior. The expected value of cooperation, EV_c, from the perspective of each group can be expressed as:

$$(2) \qquad EV_c = [\tfrac{1}{2} f + (1-f)]p\,R_{cf} + \tfrac{1}{2}(1-p)R_{cc} - \tfrac{1}{2}p\,(1-f).$$

The expected value of fighting, EV_f, is:

(3) $$EV_f = \tfrac{1}{2}\left\{p\,R_{ff} + (1-p)[(1-f) + f\,R_{cf}]\right\}.$$

The optimal strategy depends on which of these is larger. I focus on symmetric cases where the two groups are identical in all respects, including their strategies in equilibrium.

We can solve for the equilibrium outcome in different ways. First, restricting ourselves to pure strategies–~~a~~ group either cooperates with probability one or fights with probability one–~~we~~ can look for fulfilled-expectations equilibria in which p is either one or zero. The nature of the equilibrium will depend on the underlying parameters. In particular, with f sufficiently high (i.e., conflict-management institutions sufficiently strong), the unique equilibrium will be $p = 0$. If f is sufficiently low, the unique equilibrium will be $p = 1$. For intermediate values of f, there will be multiple equilibria in which beliefs of either kind about the other group's action are self-fulfilling.

Alternatively, we could treat p as a parameter of the model, and look for the dominant strategies of the groups. This is more consistent with the emphasis in this paper on the importance of latent social conflict. As mentioned previously, this allows us to think of p as a measure of the latent conflict in society, as p represents each group's prior belief regarding the likelihood that social conflict will erupt following an external shock.

As shown in Figure 3, EV_c and EV_f are both declining in p, since a greater likelihood of conflict reduces the returns to either strategy. But EV_c declines faster than EV_f, for the following reason. By assumption, the economy suffers a fixed cost t whenever <u>either</u> group behaves non-cooperatively (in addition to the variable cost that depends on the magnitude of excess demands for distribution). This creates decreasing costs to non-cooperation. The result is

that the benefits of cooperation relative to fighting shrink as the likelihood that the other group will fight increases.

The three panels of Figure 3 show three types of outcomes. When f is either too low or too high (panels a and b), the EV_c and EV_f schedules do not intersect for any value of p between 0 and 1. Then, cooperative behavior is either a dominant strategy (high f, panel a) or a strictly dominated strategy (low f, panel b) regardless of p. The interpretation is as follows. When conflict-management institutions are sufficiently strong (f is high), opportunistic behavior is not rewarded ex post, and therefore expectations about the other group's strategy have no bearing on the optimal choice. Cooperative behavior is the dominant strategy for each group. On the other hand, when conflict management institutions are extremely weak (f is low), there are large returns to opportunistic behavior, and this can make fighting the dominant strategy irrespective of what the other group chooses to do.

The bottom panel (c) of Figure 3 shows the third type of outcome, associated with an intermediate value of f. Now the dominant strategy depends on the value of p: the cooperative strategy is dominant for low values of p, but fighting is the dominant strategy for high values of p. Therefore, in the presence of an intermediate range of institutions, the outcome is determined by the latent social conflict in a society.

IV. The evidence: a first look

As the model indicates, shocks, latent social conflicts, and institutions interact in complicated ways in determining changes in economic performance. In addition, there is the thorny issue of locating adequate empirical proxies for the abstract categories I have thus far

employed. As mentioned in the introduction, I will use a range of indicators to capture latent social conflicts and the quality of conflict-management institutions. I begin by presenting a few suggestive results that demonstrate the potential of the framework considered here. A broader examination, using alternative proxies, follows in the next two sections. In the final analysis, confidence in the results is increased by the finding that a wide range of proxies yields results that are statistically significant and in the direction predicted by my story.

Table 4 displays the initial results. The dependent variable in the regressions is the growth differential between the two sub-periods, 1960-75 and 1975-89. All the regressions contain the following independent variables in addition to conflict indicators: regional dummies for Latin America, East Asia, and sub-Saharan Africa, lagged growth (during 1960-75), and per-capita GDP in 1975. The lagged-growth term is included to capture convergence effects (and is usually highly significant with a large negative coefficient). Per-capita GDP and regional dummies are included to control for structural characteristics (other than those that are conflict-related) that are correlated with income levels and geographical location. In the first four columns of Table 4, the sample is restricted to countries for which high-quality data on income inequality—my preferred indicator of latent social conflict—is available for the 1970s. (Regressions with larger samples will be discussed later on.) Column (1) shows the results when the growth differential is regressed only on these variables. The estimated coefficients on the regional dummies confirm our earlier discussion: East Asia, unlike Latin America and sub-Saharan Africa, did not suffer a growth decline after 1975.

In Column (2), I include a measure of external shocks during the 1970s. This measure is calculated by multiplying the standard deviation of the first log-differences of the terms of trade (during 1971-80) with the average share of total trade in GDP (during 1970-74). It is meant to

capture the unexpected component of the volatility of the streams of income associated with foreign trade. Assuming that the terms of trade follow a random walk (possibly with drift), this is the theoretically appropriate indicator of external volatility (Rodrik 1998).[9] The estimated coefficient on the external shock variable is negative and highly significant. As expected, greater exposure to external turbulence during the 1970s is associated with larger reductions in growth after 1975. The adjusted R^2 rises from 0.48 in Column (1) to 0.60 in Column (2).

The next regression (shown in Column 3) adds income inequality. I use the Gini coefficient from the high-quality sample in Deininger and Squire (1996), and include only countries for which there is a data point sometime during the 1970s. (A simple average is used if there is more than one observation during the 1970s.) Income inequality enters with a highly significant negative coefficient, and raises the explanatory power of the regression (with the adjusted R^2 rising further to 0.65). According to the point estimate, a difference in inequality of 10 Gini points is associated with slower growth of 1.2 percentage points per annum. The coefficient on external shocks remains significant.

The regression in Column 4 includes a proxy for conflict-management institutions: the quality of governmental institutions from Knack and Keefer (1995), with the raw data coming from the International Country Risk Guide (ICRG).[10] This index is based on underlying numerical evaluations relating to the rule of law, bureaucratic quality, corruption, expropriation risk, and

[9] Note that this measure treats positive terms-of-trade shocks identically as negative shocks. The reasoning is that positive income shocks could also trigger the kind of distributional conflicts discussed previously. As an empirical matter, a volatility measure (of the type used here) is virtually indistinguishable from a measure based on rates of change. This is because countries that have experienced large increases in their terms of trade during part of the 1970s have also experienced terms-of-trade deteriorations subsequently. Consequently, the results are unchanged when I use as the shock variable the income effect of the changes in the external terms of trade during boom or bust periods.

[10] My source for the ICRG data is Easterly and Levine (1996), who average observations for the years 1980-89.

governmental repudiation of contracts. It ranges from 0 to 10, with higher values indicating superior institutions. The estimated coefficient on institutional quality is positive and highly significant, and the adjusted R^2 now rises to 0.85. In fact, once the ICRG index is included in the regression, income inequality and external shocks contribute very little additional explanatory power. This finding parallels one of the implications of the theoretical model discussed above: when institutions of conflict management are sufficiently strong to ensure that ex post distributions follow the "rule of law" rather than opportunistic grabs by social groups, neither the severity of the shocks nor the extent of latent social conflicts might play a role in determining the productivity of an economy.[11]

However, the result in Column (4) that institutional quality "trumps" latent social conflict is not a general one. Using larger samples and alternative proxies for latent conflict, I find that both types of variables enter significantly. In Column (5), for example, I replace income inequality with ethno-linguistic fragmentation, which allows the sample size to increase to 90 countries. The index of ethno-linguistic fragmentation (*ELF60*) measures the likelihood that any two randomly drawn individuals in a country will not be members of the same ethno-linguistic group (Mauro 1995). (Note that *ELF60* is not strongly related to income inequality–the correlation coefficient is only 0.13.) In this regression, both *ELF60* and institutional quality enter with statistically significant coefficients (the former negative, and the latter positive). Hence, the evidence suggests that ethnic cleavages matter to the ability to manage shocks, even when the quality of institutions is controlled for.

[11] Note that this result is entirely consistent with the idea that external shocks act as a trigger for social conflicts which hamper growth. To the extent that there was a common element to the external shocks that confronted all countries during the 1970s, the trigger effect itself cannot be discerned in a cross-section of countries.

The final column in table 4 (col. 6) shows the results with an alternative proxy for the quality of conflict-management institutions. Here, I replace the ICRG index with a composite index of democracy for the 1970s, constructed from the indicators of civil liberties and political rights compiled by Freedom House. This index ranges from 0 to 1, with 1 indicating a fully democratic system. Democratic institutions—political parties, elected representatives, free speech, and the like—can be viewed as the ultimate institutions of conflict management, in that they allow for differences among social groups to be resolved in a predictable, inclusive, and participatory manner. The sample size in this regression is 97. The estimated coefficient on the democracy index is positive and statistically significant, with the coefficient on *ELF60* remaining negative and significant. Democratic institutions turn out to have been good for managing the shocks of the 1970s.[12]

I note several additional things about the results summarized in Table 4. First, it is worth emphasizing that the proxies used for conflict and institutions are highly persistent over time. The correlation coefficients across decades for both Gini indices and the democracy index are 0.90 or higher. Therefore, it is difficult to think of a priori reasons for why these variables should contribute to our understanding of the differences in growth performance before and after 1975—except for the explanation emphasized in this paper, namely that these variables play an important role in determining different economies' response to the turbulence of the 1970s.[13]

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[12] This result on the positive contribution of democracy to adjustment is obtained for a wide range of indicators of democracy, and seems quite robust. See Rodrik (1997) for more extensive evidence on this score.

[13] There exist a large number of papers that have found a role for some of my variables, especially income inequality, institutional quality, and ethno-linguistic fragmentation (to be used below) in determining long-run growth rates. See Alesina and Rodrik (1994) and Persson and Tabellini (1994) on income inequality, Knack and Keefer (1995) , Hall and Jones (1996), Barro (1996), and Sachs and Warner (1997) on the ICRG index, and Easterly and Levine (1996) on ethnolinguistic fragmentation. (There does not seem to be a strong causal relationship going from democracy to long-run growth [Helliwell 1994, Barro 1996].) The question arises to what

Second, my results are robust across different samples and are not driven by outliers. Partial scatter plots based on the results in Table 4 are shown in Figures 4 and 5. I will report similar results for larger samples later in the paper.

Third, controlling for the change in investment rates between the two periods does not affect our conclusions. The change in investment typically enters with a coefficient that is significant at 90 percent or better (results not shown), but it does not greatly improve the fit of the regressions. This is consistent with my earlier finding that the differential growth performance after 1975 cannot be explained by what happened to investment. The primary channel through which social conflict and institutions affect changes in growth is productivity, not investment.

V. Composite indicators of social conflict

Next, I combine the variables used above and others to construct four composite indicators of social conflict triggered by the external shocks of the 1970s. As I will show in this section, these indicators correlate negatively and quite strongly with economic performance following these shocks (compared to earlier performance).

The central argument of this paper is that the extent of social conflict triggered during the 1970s was a function of three determinants: (i) the severity of the external shocks; (ii) the depth of latent social conflicts; and (iii) the quality of conflict management institutions. Accordingly, our synthetic indicators are the product of three proxies, one for each of these determinants:

$$conflict1 = shock_{70s} \times ELF60 \times (1 - democ_{70s}) \qquad (n = 105)$$

$$conflict2 = shock_{70s} \times Gini\ (hq)_{70s} \times (1 - democ_{70s}) \qquad (n = 56)$$

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extent these findings are picking up the differential effect of these determinants on growth performance after the mid-1970s.

$$conflict3 = shock_{70s} \times Gini\ (all)_{70s} \times (10 - ICRG) \qquad (n = 71)$$

$$conflict4 = shock_{70s} \times homelang \times (1 - democ_{70s}) \qquad (n = 113)$$

All four employ the same measure of shocks ($shock_{70s}$), which was the measure used in the previous section. They differ only in the combination of the other two terms.

As a proxy for latent social conflicts, I use the following variables: (a) *ELF60*; (b) *Gini (hq)*$_{70s}$, the high-quality income inequality measure used in the previous section; (c) *Gini (all)*$_{70s}$, which uses <u>all</u> available Gini coefficients for the 1970s (from the Deininger and Squire 1996 data set); and (d) *homelang*, which measures the proportion of the population that does not speak the country's official language at home (from Easterly and Levine 1996). My proxies for institutions of conflict management are the two used previously: (a) *democ*$_{70s}$, the index of democratic institutions; and (b) *ICRG*, the quality of governmental institutions.

I have constructed these four indicators with an eye toward mixing and matching different proxies while keeping the sample size reasonably large. Note that where possible, conflict measures are constructed using data from the 1970s to avoid reverse causality. I use standardized transformations of these synthetic indicators (dividing the actual values by their standard deviation), so that coefficient estimates can be interpreted more easily.

Each of the four composite indicators is then entered in two regressions (for a total of eight regressions). The dependent variable in the first type of regression is the same as in the previous section: the growth rate in 1975-89 minus the growth rate in 1960-75. In the second set of regressions, I have used a break year that is specific to each country relying on recent work by Pritchett (1997). Pritchett's research yields for each country a year in which the trend growth

rate appears to have changed.[14] The dependent variable in the second set of regressions is the difference in growth centered around this country-specific break year. All the control variables included in the previous set of regressions are included here as well.[15]

Table 5 displays the results.[16] The bottom line is that the composite indicators enter with negative and significant coefficients in all cases. Their levels of statistical significance are 99 percent or better in most instances. The magnitude of the estimated coefficients suggests that an increase of one standard deviation in the conflict indicator is associated with a growth reduction (relative to earlier performance) of 0.75-1.65 percent per year. Note also that the sample size varies from 49 to 103 countries, indicating that we are picking up a broad phenomenon going beyond the experience of a small group of countries.

A better sense of the robustness of these findings across various samples can be obtained from Figures 6-13, which are scatter plots based on results in Table 5 and on regressions for restricted samples. Figure 6 displays the partial association between growth differentials and *conflict1*, and gives a visual sense of the results in Column (1) of Table 5. Figure 7 displays the same association with the richer countries removed from the sample. Figure 8 shows the results without the sub-Saharan countries, and Figure 9 shows the results with both sub-Saharan Africa and East Asia taken out. Figures 10 and 11 are restricted to samples of sub-Saharan African and

[14] The median value of these break years in the Pritchett sample is 1977 (personal communication with Pritchett), which is not far from 1975. In related work, Ben-David and Papell (1997) have also calculated break years in trend growth using time-series techniques, but their sample is limited to 74 countries.

[15] Actually, the results are virtually identical without the control variables as well (with much lower R^2's).

[16] The regressions exclude a small number of countries which are outliers according to the DFITS statistic. These countries are Congo, Mauritius, Togo, Chile, and Gabon in the case of regressions with *conflict*1 and *conflict*4, and Gabon, Seychelles, Chile, Sri Lanka, and Iran in the case of regressions with *conflict*2, and *conflict*3. However, including these countries make little difference to the results: while the fit is generally worse, the estimated coefficients on our composite indicators of conflict remain statistically significant (and negative) in all but one instance.

East Asian countries, respectively. Across all these cases, the partial correlation between *conflict1* and growth differentials remains statistically significant, and the estimated slope coefficient changes very little. It is in fact remarkable how well the association holds within regions as well as across regions (cf. Figures 10 and 11). Two partial scatter plots using *conflict3* are shown in Figures 12 and 13 for comparison purposes.

VI. Probing further

In this section I present results with a broader range of proxies for latent conflicts and for the quality of conflict-management institutions. To render the analysis manageable, I will not attempt to combine the various proxies in the manner used previously, but simply show what happens when they are each entered one by one in the same basic regression. The conclusion is that these additional proxies enter the regression significantly and with the predicted sign also. I then examine some competing explanations for the growth collapse after 1975, to see whether my results are robust against these alternatives Finally, I provide more direct evidence that implicates macroeconomic management and its relationship to social conflict as the chief culprits.

Other measures of conflict and institutions

With regard to latent social conflicts, I use four indicators in addition to those already mentioned. The first new variable is the Gini coefficient for land, taken from Alesina and Rodrik (1994). The second is a measure of racial tension, measured on a scale of 1 (low tension) to 6 (high tension), taken from Knack and Keefer (1995). Third, I use the murder rate, from Kurian (1991). Finally, I use an index of social trust in a society which has been used by Knack and

Keefer (1996), and which comes from the World Values Survey (Inglehart 1994). The indicator *notrust* is 100 minus the percentage of respondents who replied "most people can be trusted" when asked: "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"[17] The main disadvantage of this indicator is that it is available for 29 countries only.

Note that I do not use measures of political instability (or of violence other than murder rates), even though they may be good indicators of conflict, because of concern about endogeneity: deteriorating economic performance is likely to be an independent cause of governmental turnover and domestic unrest. Measures of income distribution, ethnic and linguistic differences, and social trust, by contrast, tend to be more persistent characteristics of societies.

The correlation matrix for the proxies used for latent social conflict is shown in Table 6. Note that all of the indicators are inversely related to per-capita GDP, but that the correlation is not always strong. As expected, *ELF60, homelang*, and racial tension are highly correlated with each other, but none is strongly related to measures of inequality (see Table 4). Income inequality is strongly correlated with inequality in land holdings, but is not strongly associated with murder rates. The latter are generally weakly correlated with everything else. Finally, *notrust* is highly correlated with income inequality, but not with the measures of ethnic and linguistic divisions. The broad pattern that emerges from these correlations is that each of the indicators is likely to contribute additional information about social divisions.

Table 7 displays the results, with each indicator entered individually. The dependent variable is the growth differential between the two periods 1975-89 and 1960-75, as before. The

[17]The survey dates were 1981 and 1990-91.

independent variables include the usual controls as well as the shock variable. The sample size ranges from 26 (*notrust*) to 103 (*homelang*). In each case, the estimated coefficient on the latent-conflict proxy is negative and statistically significant ~~–at~~ the 90 percent level in the case of racial tension and the murder rate, at the 95 percent level in the case of Gini coefficient for land, *homelang*, and *notrust*[18], and at the 99 percent level in the case of income inequality and *ELF60*. These results are quite supportive of the importance placed on latent social conflicts in this paper. A representative partial scatter plot (for *ELF60*) is shown in Figure 14.

I next turn to proxies for institutions of conflict management. I use five measures in addition to democracy and institutional quality. The first is a measure of the rule of law, defined as the degree to which citizens are treated as equal under the law and the judiciary (Gwartney 1996). Measured on a scale from 0 (minimum) to 4 (maximum), this is one of the component indices used in constructing the Freedom House index of democracy. Second, I use an index that measures the extent of competitiveness of political participation in a country during the 1970s (*participation*). This index is taken from the Polity III data set of Jaggers and Gurr (1995), who define it as the "extent to which non-elites are able to access institutional structures for political expression" (it is rescaled to range from 0 to 1).[19] Third, I use an index of bureaucratic efficiency (*bemauro)* computed by Mauro (1995). It is based on a simple average of three sub-indices on the efficiency of the judiciary system, the extent of red tape, and the extent of corruption, as reported by correspondents of Business International, a private firm. The fourth is a measure of lack of corruption (*nocorr*), also from Mauro (1995), based on the relevant sub-index only. The

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[18] The coefficient on *notrust* is not significant when regional dummies are included.

[19] I have averaged annual observations over 1970-79.

two measures *bemauro* and *nocorr* range from 1 to 10, with higher values indicating better-quality institutions. The final measure is of quite a different type, and is meant to quantify the extent of social insurance in place. The motivation behind this last measure is the idea that distributional conflicts are easier to mediate when compensation—through social insurance schemes—is built into the system. I use the share of public expenditures on social security and welfare in GDP, averaged over 1975-79, as my measure of this (*social*).

All of my institutional indicators are very highly correlated with per-capita GDP, with the correlation coefficients ranging from 0.71 (*nocorr*) to 0.84 (ICRG index of institutional quality), and consequently with each other. Since I control for per-capita GDP in the regressions, a more interesting correlation in this context is the pairwise correlation after partialing out the effect of per-capita GDP. These correlations are shown in Table 8. The partial correlations are quite weak in a large number of instances. For example, democracy is strongly correlated only with *participation* (partial r = 0.79). It is weakly correlated with *bemauro* (partial r = 0.10), practically uncorrelated with *social*, and negatively correlated with *nocorr*. Generally, the variable *social* is also quite weakly correlated with the other indicators. This suggests that there may be value added in using these additional indicators.

The regression results using these proxies for conflict management institutions are shown in Table 9 (with some associated partial scatter plots in Figures 15-18). Columns (1) and (2) are the results for regressions in which my original indicators of democracy and institutions are entered separately. They differ from previous regressions in that income inequality or *ELF60* is not included, so the sample size is larger. Column (3) displays the results with *participation*, and columns (4)-(6) display the results for the rule of law index, *bemauro* and *nocorr*, respectively. Finally, Column (7) shows the results with *social*. In each case, the estimated coefficient on the

variable of interest is positive and highly significant (at the 95 or 99 percent level). The evidence is strongly suggestive that countries with greater democracy, more participatory institutions, stronger rule of law, higher-quality governmental institutions, and higher levels of social insurance have experienced less economic disruption after the mid-1970s.

Alternative explanations

Next, I consider some other variables that are often thought to be associated with growth collapses in the 1980s to see whether they affect my conclusions. In Table 10, I look for evidence for three types of explanations. First, it is often argued that countries that were outward-oriented and had more open trade regimes were better positioned to avoid getting into trouble. In order to test for this possibility, I include the following three variables on the right-hand side: the Sachs-Warner index of "openness," *swindex* (Sachs and Warner 1995)[20]; the export share in GDP, averaged for 1970-74; and the average tariff rate on intermediate imports (from the Barro and Lee data set). None of these variables enters with a statistically significant coefficient. The only one that comes close is the Sachs-Warner indicator, which is actually significant at the 90 percent level when *conflict1* is excluded from the regression (not shown). When both *conflict1* and *swindex* are included, however, the latter becomes insignificant. Indeed, *conflict1*, which is included in all the regressions, remains highly significant in all cases.

Next, I look for evidence that the worse hit countries were those with larger public sectors. Column (5) of Table 10 suggests that there is some indication that this might have been

[20] The index is calculated as the share of years during which a country is judged to be "open" by Sachs and Warner, based on a number of trade policy and other indicators. I re-calculated the index for the 1960-74 period only, and use the modified version in the regression. (Using the original Sachs-Warner version for the whole period makes no difference to the results.) I thank Andy Warner for making the underlying annual coding available.

the case. The share of government consumption in GDP during the early 1970s (*cgavg7074*) enters with an estimated coefficient that is negative and significant at the 90 percent level. However, controlling for social conflict appears to make a large difference in this case: when *conflict1* is excluded from the regression, the estimated coefficient on *cgavg7074* doubles in absolute value and becomes significant at the 99 percent level (not shown). By contrast, the magnitude and significance of the coefficient on *conflict1* is unaffected by the inclusion of *cgavg7074*.

The third hypothesis is that countries that got into trouble were those that had borrowed recklessly prior to the shocks of the late 1970s. The final regression in Table 10 shows that there was no relationship between the level of indebtedness in 1975 (measured by the debt-exports ratio, *detexp75*) and subsequent performance. The results using debt-GNP ratios for the mid-1970s are similar (not shown).

To summarize the discussion on the results in Table 10, my hypothesis centering on social conflict is quite robust against alternative explanations for the growth collapse. Indeed, once I control for social conflict using the composite indicator, I find that none of the other conventional explanations contribute much explanatory power.[21]

The role of macroeconomic mismanagement

I have argued that that social conflict influences economic performance, and that it does so in large part because it hampers macroeconomic adjustment to changed circumstances. In Table 11, I provide some direct evidence on the role of macroeconomic adjustment in the growth

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[21]The results in Table 10 do not change when I use the other composite indicators of social conflict. Nor do they depend on using a country-specific break year as opposed to 1975.

collapses after 1975. First, I construct an index of macroeconomic mismanagement after 1975 for each country ("*bad policy*") by taking a linear combination of the increases in the rates of inflation and black market premia for foreign currency between the two periods. The weights on the two components are selected such that a unit increase in the index is associated with a one-percentage point drop in growth. This index is very strongly correlated with the declines in growth; it enters the equation with a t-statistic exceeding 6 (see column 1).

Next, I regress the index of macroeconomic mismanagement on the measures of social conflict used above. Columns (2)-(6) show the main results. Income inequality, democracy, institutional quality, and a composite measure of social conflict all turn out to be strongly correlated with "*bad policy*" in the direction predicted by the hypothesis. Countries with greater inequality and social conflict were significantly worse at managing the macroeconomy, while countries with democratic and high-quality governmental institutions were better. Among our main indicators, the only one that does not enter with a significant coefficient is *ELF60*; it has the right sign, but is insignificant at conventional levels.

VII. Concluding remarks

The idea that societies react to external shocks differently, depending on the underlying social and political conditions, is certainly not novel, even in the economics literature. The same theme was developed, for example, in an early paper by Sachs (1985) which examined the reasons why most of Latin America became engulfed in a protracted debt crisis in the early 1980s while East Asia did not, and in Ozler and Rodrik (1992) which looked at the "political transmission mechanism," i.e., the political determinants of the private investment response to shocks. What is

new here is a more systematic empirical analysis that focuses on the interaction of shocks with both latent social conflicts and the institutions of conflict management, as well as the suggestion that this approach can help shed light on several important puzzles in the comparative experience with growth.

Much remains to be done. In particular, it is disappointing that the regional dummies for East Asia and/or Latin America typically remain significant after the introduction of proxies for social conflict. One possible (and plausible) reason is that the proxies used in this paper are highly imperfect. Hence there is a need to develop better, more finely-tuned indicators to calibrate latent conflict and the quality of institutions in different societies.

Nonetheless, I hope to have demonstrated that latent social conflicts and the institutions of conflict management matter to the persistence of economic growth, and that their effects are measurable. This is an important conclusion not only in retrospect—as we try to understand what went wrong in so many countries after the mid-1970s—but also prospectively. An increasing number of developing countries are integrating themselves with the international economy. As the Asian financial crisis demonstrates vividly, this will increase their exposure to shocks. Therefore, it will be all the more important to develop institutions that mediate social conflicts. The results of this paper indicate that participatory and democratic institutions, the rule of law, and social insurance are all components of a strategy to enhance resilience to volatility in the external environment.

REFERENCES

Alesina, Alberto, and Allan Drazen, "Why Are Stabilizations Delayed?" American Economic Review 82, December 1991, 1170-88.

Alesina, Alberto, and Dani Rodrik, "Distributive Politics and Economic Growth," Quarterly Journal of Economics, 109, May 1994, 465-90.

Barro, Robert, "Determinants of Economic Growth: A Cross-Country Empirical Study," NBER Working Paper No. 5698, August 1996.

Benabou, Roland, "Inequality and Growth," in NBER Macroeconomics Annual 1996, National Bureau of Economic Research, Cambridge, MA, 1996.

Ben-David, Dan, and David H. Papell, "Slowdowns and Meltdowns: Postwar Growth Evidence from 74 Countries," NBER Working Paper 6266, November 1997.

Bijan Aghevli and Jorge Marquez-Ruarte, A Case of Successful Adjustment: Korea's Experience during 1980-84, IMF Occasional Paper 39, Washington, DC, 1985.

Celasun, Merih, and Dani Rodrik, "Debt, Adjustment, and Growth: Turkey," Book IV of J. Sachs and S. Collins (eds.), Developing Country Debt and Economic Performance: vol. 3, Country Studies - Indonesia, Korea, Philippines, Turkey, Chicago and London, University of Chicago Press, 1989.

Collins, Susan, and Barry Bosworth, "Economic Growth in East Asia: Accumulation versus Assimilation," Brookings Papers on Economic Activity, 2:1996, 135-191.

Deininger, Klaus, and Lyn Squire, "A New Data Set Measuring Income Inequality," The World Bank Economic Review, September 1996, 565-91.

Easterly, William, "The Ghost of Financing Gap: How the Harrod-Domar Model Still Haunts Development Economics," World Bank, May 1997.

Easterly, William, Michael Kremer, Lant Pritchett, and Larry Summers, "Good Policy or Good Luck? Country Growth Performance and Temporary Shocks," Journal of Monetary Economics, 32 (1993), 459-483.

Easterly William, and Ross Levine, "Africa's Growth Tragedy: Policies and Ethnic Divisions," World Bank, May 1996.

Gwartney, John et al., Economic Freedom Around the World, 1975-95, Fraser Institute, 1996.

Hall, Robert, and Charles Jones, "The Productivity of Nations," Stanford University, October 1996.

Helliwell, John, “Empirical Linkages Between Democracy and Economic Growth,” British Journal of Political Science 24, 1994, 225-248

Inglehart, Ronald, Codebook for World Values Survey, ICPSR Study no. 6160, Institute for Social Research, University of Michigan, Ann Arbor, MI, 1994.

Jaggers, K., and T.R. Gurr, “Tracking Democracy’s Third Wave with Polity III Data,” Journal of Peace Research 32, 1995, 469-482.

Knack, Stephen, and Philip Keefer, “Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures,” Economics & Politics, November 1995, 207-228.

Knack, Stephen, and Philip Keefer, “Does Social Capital Have an Economic Payoff? A Cross-Country Investigation,” unpublished manuscript, July 1996.

Kurian, George Thomas, The New Book of World Rankings, 3rd ed., Facts on File Books, New York, 1991.

Mauro, Paolo, “Corruption and Growth,” Quarterly Journal of Economics, August 1995, 681-712.

Ozler, Sule, and Dani Rodrik, "External Shocks, Politics, and Private Investment: Some Theory and Empirical Evidence," Journal of Development Economics 39(1), July 1992.

Pritchett, Lant, “Economic Growth: Hills, Plains, Mountains, Plateaus and Cliffs,” unpublished paper, World Bank, October 1997.

Rodrik, Dani, “Democracy and Economic Performance,” unpublished paper, Harvard University, December 1997.

Rodrik, Dani, “Why Do More Open Economies Have Bigger Governments?” Journal of Political Economy, October 1998, forthcoming.

Sachs, Jeffrey, “External Debt and Macroeconomic Performance in Latin America and Asia,” Brookings Papers on Economic Activity, 1985:2

Sachs, Jeffrey, and Andrew Warner, “Economic Reform and the Process of Global Integration,” Brookings Papers on Economic Activity, 1995:1, 1-118.

Sachs, Jeffrey, and Andrew Warner, “Sources of Slow Growth in African Economies,” Harvard Institute for International Development, March 1997.

Simonsen, Mario Henrique, "Price Stabilization and Incomes Policy: Theory and the Brazilian Case Study," in Michael Bruno et al., eds., Inflation Stabilization: The Experience of Israel, Argentina, Brazil, Bolivia, and Mexico, MIT Press, Cambridge, MA, 1988.

Tornell, Aaron, and Philip Lane, "Are Windfalls a Curse? A Non-Representative Model of the Current Account," Journal of International Economics, 1997, forthcoming.

Tornell, Aaron, and Andres Velasco, "The Tragedy of the Commons and Economic Growth: Why Does Capital Flow from Poor to Rich Countries?" Journal of Political Economy, 100(6), December 1992.

Table 1

Persistence of growth and investment rates

	dependent variable:				
	growth of GDP per capita, 1975-89			investment rate, 1975-89	
	all countries	excl. East Asia	excl. EA & Botswana	all countries	excl. East Asia
constant	0.001	0.004	0.004	0.056*	0.053*
	(0.004)	(0.003)	(0.003)	(0.009)	(0.009)
growth of GDP per capita, 1960-75	0.392*	0.212***	0.166		
	(0.104)	(0.109)	(0.109)		
investment rate, 1960-75				0.700*	0.682*
				(0.046)	(0.044)
N	110	99	98	118	107
R^2	0.12	0.04	0.02	0.66	0.70

Notes: Standard errors in parentheses. Levels of statistical significance denoted by asterisks: * 99 percent; *** 90 percent.

Table 2: Economic performance by period and region (annual average growth rates, in percent)

	1960-73		1973-84		1984-94	
	GDP per worker	TFP	GDP per worker	TFP	GDP per worker	TFP
East Asia (excluding China)	4.2	1.3	4.0	0.5	4.4	1.6
Latin America	3.4	1.8	0.4	-1.1	0.1	-0.4
Middle East	4.7	2.3	0.5	-2.2	-1.1	-1.5
South Asia	1.8	0.1	2.5	1.2	2.7	1.5
Africa	1.9	0.3	-0.6	-2.0	-0.6	-0.4
Non-U.S. industrial Countries	4.8	2.2	1.8	0.2	1.7	0.7
U.S.	1.9	0.8	0.2	-0.5	0.9	0.7

Source: Collins and Bosworth (1996).

Table 3: Experience of three countries with external shocks (annual averages, in percent)

	change in the terms of trade, 1970-79	share of total trade in GDP, 1970-79	income loss due to changes in the terms of trade	growth of per-capita GDP, 1960-75	growth of per-capita GDP, 1975-89
South Korea	-1.4	57.2	-0.51	6.5	7.0
Turkey	-6.2	17.3	-0.41	3.8	1.2
Brazil	-2.3	16.6	-0.25	4.6	1.3

Table 4

Explaining the growth collapse in LDCs

	dependent variable: per capita growth 1975-89 minus per-capita growth 1960-75					
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
constant	3.73***	4.66**	10.33*	12.93*	11.91*	7.92*
	(1.91)	(2.09)	(2.58)	(2.83)	(2.15)	(1.90)
Latin America	-1.96*	-1.35*	-0.17	-0.23	-1.42*	-2.16*
	(0.50)	(0.63)	(0.85)	(0.71)	(0.52)	(0.41)
East Asia	2.11**	2.94*	3.08*	1.98*	1.93*	2.53*
	(0.97)	(0.92)	(0.79)	(0.64)	(0.59)	(0.78)
SSA	-3.16	0.51	1.80	-4.16*	-2.73*	-1.89**
	(2.41)	(2.83)	(2.78)	(1.33)	(0.65)	(0.73)
growth, 1960-75	-0.92*	-0.79*	-0.67*	-0.69*	-0.75*	-0.80*
	(0.19)	(0.16)	(0.16)	(0.12)	(0.14)	(0.15)
log (GDP/cap.), 1975	-0.23	-0.30	-0.55**	-1.94*	-1.65*	-0.84*
	(0.21)	(0.22)	(0.24)	(0.45)	(0.39)	(0.31)
external shocks		-0.17*	-0.15*	-0.03	-0.02	-0.01
		(0.06)	(0.05)	(0.04)	(0.03)	(0.03)
income inequality			-0.12*	-0.02		
			(0.04)	(0.02)		
institutions (ICRG)				0.74*	0.55*	
				(0.17)	(0.16)	
ELF60					-1.33**	-1.68**
					(0.64)	(0.66)
democracy						1.93**
						(0.95)
N	52	51	51	48	90	97
Adj. R^2	0.48	0.60	0.65	0.85	0.62	0.54

Notes: Robust standard errors reported in parenthesis. Levels of statistical significance inidcated by asterisks: *99 percent; **95 percent; ***90 percent.

Table 5

Regressions with composite indices of social conflict

	dependent variable: growth rate after year T minus growth rate before year T							
	T = 1975				*T = break year from Pritchett (1997)*			
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
constant	6.63*	4.11**	5.88*	5.45*	2.83	7.47**	4.88**	2.54
	(1.17)	(1.81)	(1.32)	(1.28)	(2.41)	(3.19)	(2.28)	(2.13)
Latin America	-2.29*	-1.83*	-1.65*	-2.32*	-2.10*	-1.58**	-1.22***	-2.29*
	(0.38)	(0.41)	(0.46)	(0.40)	(0.53)	(0.60)	(0.65)	(0.55)
East Asia	2.33*	1.70**	2.00*	1.68**	5.56*	3.79*	4.34*	4.35*
	(0.71)	(0.81)	(0.64)	(0.74)	(0.86)	(1.29)	(0.82)	(1.05)
SSA	-1.89*	-3.14**	-1.99**	-1.38***	-1.22	-0.09	-2.54**	-0.97
	(0.70)	(1.19)	(0.90)	(0.72)	(0.81)	(1.58)	(1.05)	(0.79)
growth prior to T	-0.69*	-0.48*	-0.58*	-0.71*	-0.95*	-0.50*	-0.78*	-0.93*
	(0.15)	(0.16)	(0.18)	(0.14)	(0.11)	(0.13)	(0.16)	(0.11)
log (GDP/cap.), 1975	-0.57*	-0.41***	-0.57*	-0.48*	-0.14	-0.84**	-0.44*	-0.13
	(0.15)	(0.21)	(0.17)	(0.16)	(0.28)	(0.37)	(0.28)	(0.25)
conflict1	-1.33*				-1.47*			
	(0.33)				(0.42)			
conflict2		-1.06**				-1.65*		
		(0.47)				(0.57)		
conflict3			-0.77*				-0.75**	
			(0.27)				(0.34)	
conflict4				-1.38*				-1.45*
				(0.46)				(0.51)
N	92	49	63	97	96	50	66	103
R^2	.57	.62	.57	.48	.65	.65	.59	.59
partial R^2 for conflict variable	0.17	0.09	0.13	0.10	0.12	0.15	0.07	0.07

Notes: Robust standard errors reported in parenthesis. Levels of statistical significance indicated by asterisks: *99 percent; **95 percent; ***90 percent.

Table 6

Correlation matrix for indicators of latent social conflict

	gini70	*giniland*	*elf60*	*homelang*	*racialt*	*murder*	*notrust*
gini70	1.00						
giniland	0.49	1.00					
elf60	0.13	-0.07	1.00				
homelang	0.27	-0.16	0.76	1.00			
racialt	0.14	-0.09	0.71	0.55	1.00		
murder	0.25	-0.13	0.09	-0.02	0.17	1.00	
notrust	0.74	0.41	0.09	0.26	0.37	0.19	1.00
gdpsh575	-0.46	-0.05	-0.38	-0.48	-0.49	-0.17	-0.65

Table 7

Regressions using indicators of latent social conflict

	dependent variable: per capita growth 1975-89 minus per-capita growth 1960-75							
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
constant	4.20**	10.33*	7.23*	5.68*	5.83*	6.66*	4.45	3.20
	(1.69)	(2.58)	(2.09)	(1.67)	(2.02)	(1.40)	(3.39)	(0.92
Latin America	-2.20*	0.18	-0.88	-2.33*	-2.26*	-2.31*	-0.77	
	(0.44)	(0.85)	(0.73)	(0.40)	(0.42)	(0.42)	(0.82)	
East Asia	1.23	3.08*	1.66	2.36*	2.26*	2.26*	1.97**	
	(0.92)	(0.79)	(1.22)	(0.70)	(0.76)	(0.76)	(0.92)	
SSA	-2.23*	1.80	-1.39***	-2.16*	-1.46***	-2.63*	-1.64	
	(0.66)	(2.78)	(0.82)	(0.73)	(0.76)	(0.68)	(1.44)	
growth, 1960-75	-0.82*	-0.67*	-0.70*	-0.82*	-0.80*	-0.76*	-0.82*	-0.66
	(0.14)	(0.16)	(0.15)	(0.16)	(0.14)	(0.16)	(0.22)	(0.26
log (GDP/cap.), 1975	-0.31	-0.55**	-0.36	-0.39***	-0.46***	-0.67*	-0.27	
	(0.20)	(0.24)	(0.24)	(0.20)	(0.24)	(0.22)	(0.36)	
external shocks,1970s		-0.15*	-0.14***	-0.01	-5.90E-03	-0.08**	-0.03	
		(0.05)	(0.08)	(0.03)	(0.04)	(0.03)	(0.05)	
Gini coefficient, 1970s		-0.12*						
		(0.04)						
Gini coeff. for land			-0.04**					
			(0.02)					
ELF60				-1.76*				
				(0.64)				
homelang					-0.02**			
					(8.67E-03)			
racial tension						-0.21***		
						(0.13)		
murder rate							-0.07***	
							(0.04)	
notrust								-0.04
								(0.02
N	110	51	45	98	103	86	60	29
Adj R^2	.40	.65	.53	.52	.47	.59	.39	.35

Notes: Robust standard errors reported in parenthesis. Levels of statistical significance indicated by asterisks: *99 percent; **95 percent; ***90 percent.

Table 8

Pairwise correlations between indicators of conflict-management institutions (components orthogonal to 1975 per-capita GDP)

	democracy	*ICRG*	*rule of law*	*participation*	*bemauro*	*nocorr*	*social*
democracy	1.00						
institutions (ICRG)	0.20	1.00					
rule of law	0.29	0.35	1.00				
participation	0.79	0.32	0.30	1.00			
bemauro	0.10	0.54	0.33	0.04	1.00		
nocorr	-0.07	0.38	0.30	-0.09	0.86	1.00	
social	0.01	-0.15	0.28	0.07	0.11	0.25	1.00

Table 9

Regressions using proxies for conflict-management institutions

	dependent variable: per capita growth 1975-89 minus per-capita growth 1960-75						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
constant	7.48*	11.20*	10.17*	6.65*	9.23*	9.35*	6.22**
	(2.01)	(2.20)	(2.16)	(1.93)	(1.69)	(1.91)	(2.39)
Latin America	-1.95*	-1.30**	-1.40*	-1.75*	-1.26**	-1.22**	-1.35**
	(0.47)	(0.50)	(0.46)	(0.47)	(0.50)	(0.56)	(0.57)
East Asia	1.85***	1.69**	2.11*	2.18**	2.81*	3.08*	2.17**
	(0.94)	(0.65)	(0.76)	(0.88)	(0.77)	(0.80)	(1.07)
SSA	-1.83**	-3.16*	-2.35*	-1.87*	-3.07*	-3.06*	-0.97
	(0.71)	(0.59)	(0.67)	(0.65)	(0.51)	(0.48)	(1.02)
growth, 1960-75	-0.75*	-0.72*	-0.72*	-0.76*	-0.83*	-0.79*	-0.67*
	(0.15)	(0.14)	(0.15)	(0.15)	(0.10)	(0.10)	(0.19)
log (GDP/cap.), 1975	-0.92*	-1.64*	-1.24*	-0.79**	-1.31*	-1.27*	-0.68**
	(0.33)	(0.40)	(0.31)	(0.33)	(0.28)	(0.32)	(0.28)
external shocks	-0.02	-0.03	-0.03	-0.06	-0.10*	-0.10*	-0.05
	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.05)
democracy	2.48**						
	(1.09)						
institutions (ICRG)		0.58*					
		(0.16)					
rule of law			0.78*				
			(0.20)				
participation				2.25**			
				(1.12)			
bureaucratic efficiency					0.51*		
(bemauro)					(0.11)		
no corruption						0.43*	
(nocorr)						(0.11)	
log social spending							0.48**
(social)							(0.23)
N	104	93	92	97	63	63	75
Adj R^2	.45	.61	.56	.58	.72	.70	.39

Notes: Robust standard errors reported in parenthesis. Levels of statistical significance indicated by asterisks: *99 percent; **95 percent; ***90 percent.

Table 10

Regressions with additional determinants

	dependent variable: per capita growth after T minus per-capita growth before T					
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
constant	2.83	3.48	1.77	1.78	5.58*	0.46
	(2.41)	(2.97)	(2.71)	(3.27)	(2.08)	(3.68)
Latin America	-2.10*	-1.75*	-1.97*	-2.01*	-2.40*	-1.98*
	(0.53)	(0.50)	(0.53)	(0.58)	(0.50)	(0.64)
East Asia	5.56*	5.57*	5.71*	5.58*	5.04*	5.82*
	(0.86)	(0.85)	(0.99)	(0.89)	(0.87)	(1.17)
SSA	-1.22	-0.92	-0.96	-1.28	-1.46**	-0.68
	(0.81)	(0.79)	(0.85)	(0.98)	(0.73)	(0.90)
growth prior to T	-0.95*	-0.98*	-0.96*	-0.95*	-0.94*	-0.99*
	(0.11)	(0.11)	(0.11)	(0.12)	(0.11)	(0.12)
log (GDP/cap.), 1975	-0.14	-0.27	-0.00	-0.02	-0.34	0.10
	(0.28)	(0.38)	(0.34)	(0.36)	(0.24)	(0.50)
conflict1	-1.47*	-1.54*	-1.52*	-1.31*	-1.23*	-1.62*
	(0.42)	(0.42)	(0.43)	(0.43)	(0.43)	(0.47)
swindex		0.90				
		(0.66)				
exports/GDP, 1970-74			-0.74			
			(1.80)			
tariff rate				-0.05		
				(1.29)		
cgavg7074					-0.06***	
					(0.04)	
detexp75						0.00
						(0.00)
N	96	91	90	81	96	67
R^2	.65	.67	.67	.65	.67	.68

Notes: Robust standard errors reported in parenthesis. Levels of statistical significance indicated by asterisks: *99 percent; **95 percent; ***90 percent. Year T is the break year from Pritchett (1997).

Table 11

Determinants of macroeconomic mismanagement

	dependent variable					
	grdiff	*"bad policy"*				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
"bad policy"	-1.00					
	(0.16)					
Gini coefficient, 1970s		0.04*				
		(0.01)				
ELF60			0.27			
			(0.28)			
democracy (1970s)				-0.99**		
				(0.49)		
institutions (ICRG)					-0.33*	
					(0.09)	
conflict1						0.56*
						(0.21)
N	79	42	82	79	72	77
R^2	0.63	0.71	0.16	0.36	0.48	0.33

Notes: Robust standard errors reported in parenthesis. Levels of statistical significance indicated by asterisks: *99 percent; **95 percent; ***90 percent. Additional explanatory variables not shown here: gr6075, log GDP per cap. 1975, shock70s (except in cols. 1 and 6), and regional dummies. "Bad policy" represents a linear combination of the increase in rates of inflation and black-market premia over the two periods.

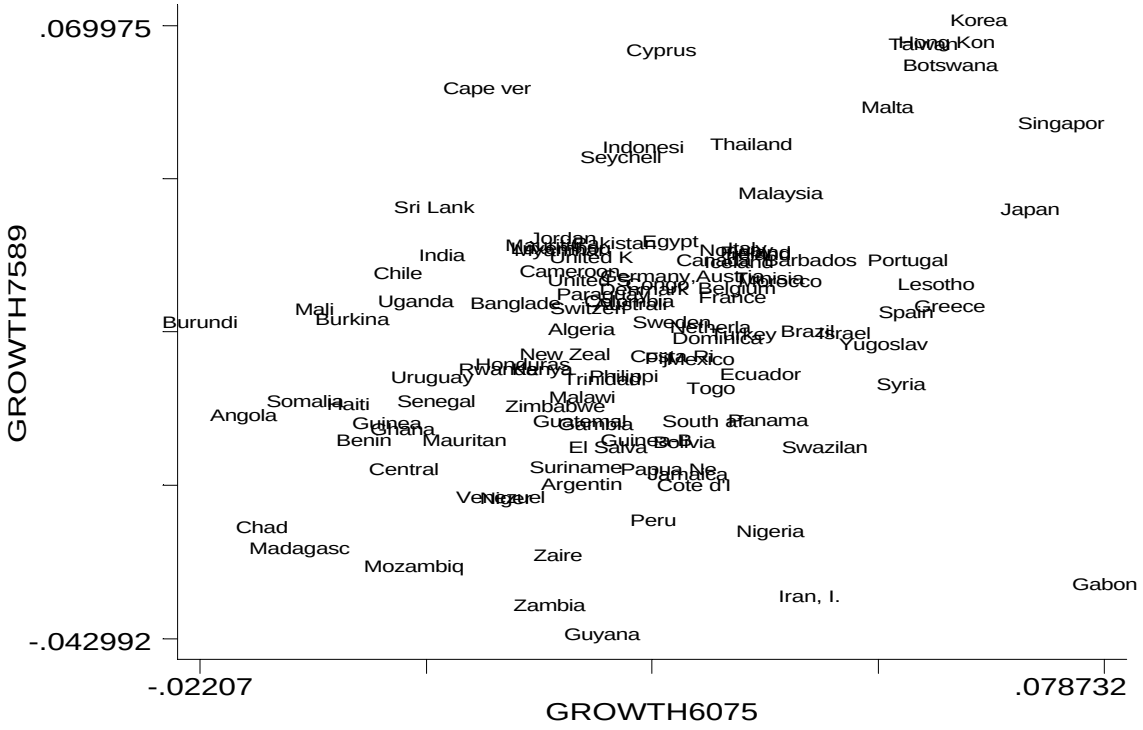

Figure 1a: Per-capita GDP growth, 1960-75 and 1975-89 (all countries)

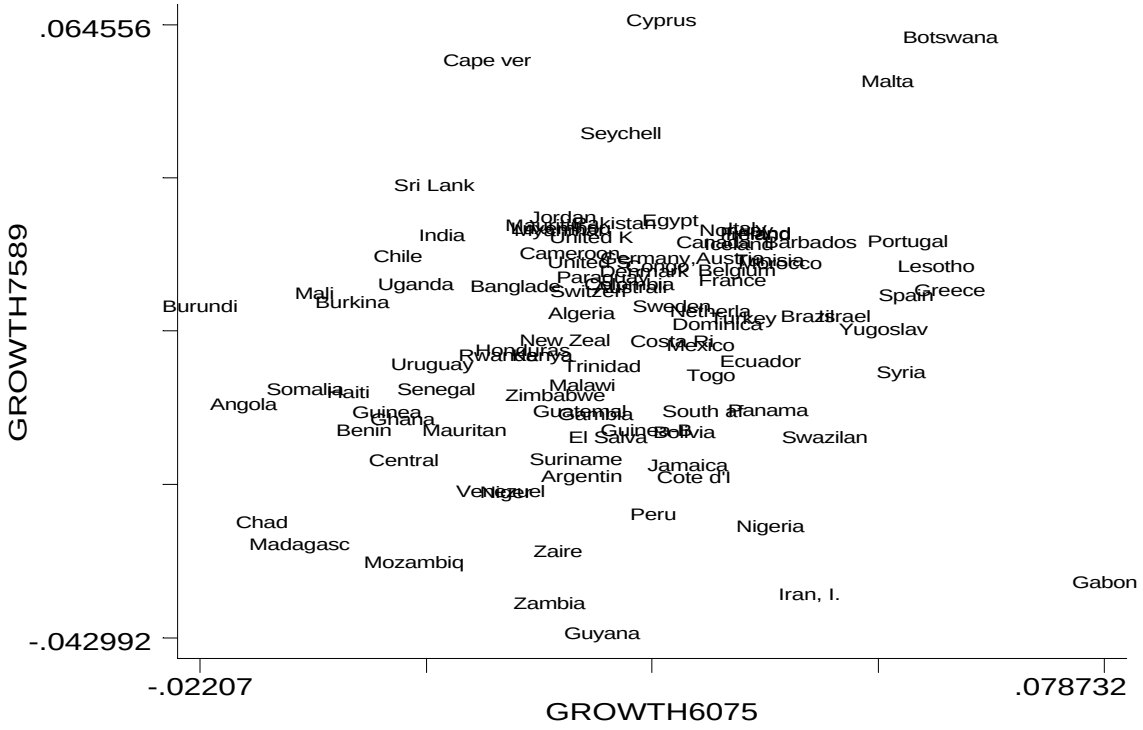

Figure 1b: Per-capita GDP growth, 1960-75 and 1975-89 (excluding East Asia)

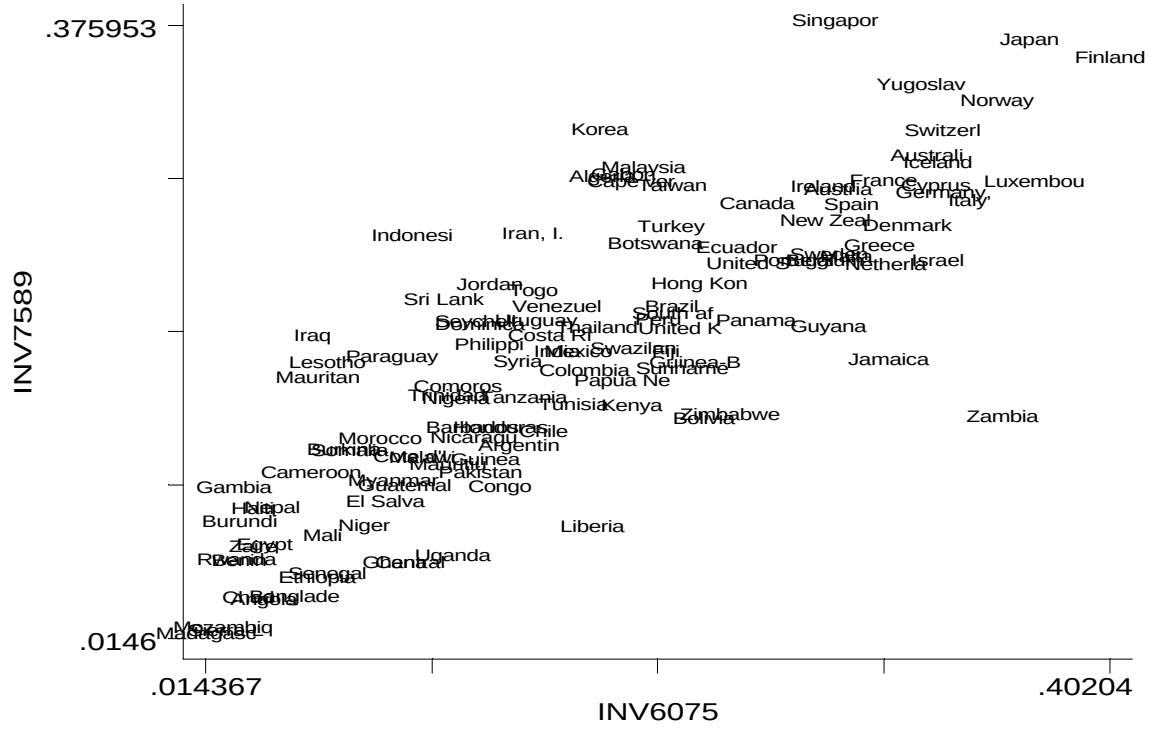

Figure 2a: Investment ratios, 1960-75 and 1975-89 (all countries)

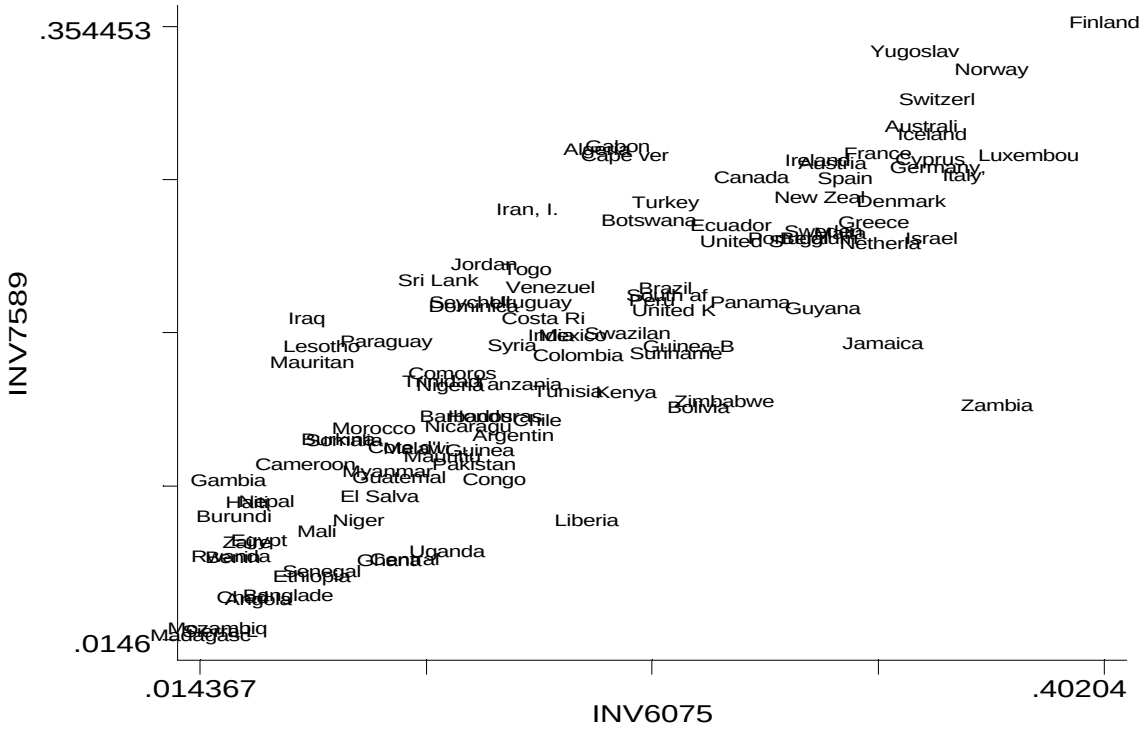

Figure 2b: Investment ratios, 1960-75 and 1975-89 (excluding East Asia)

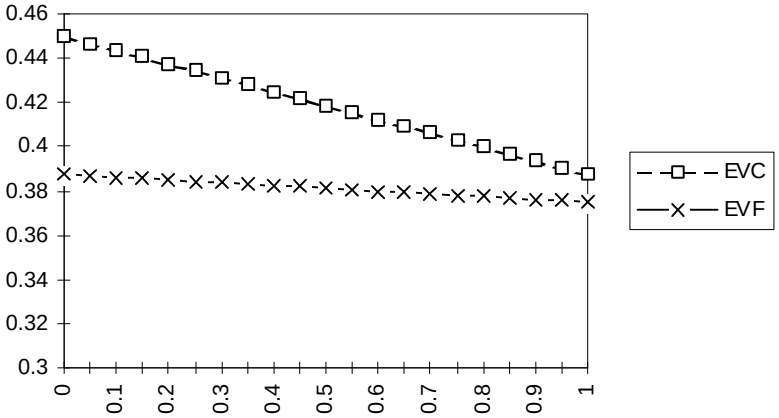

Figure 3a: High ϕ

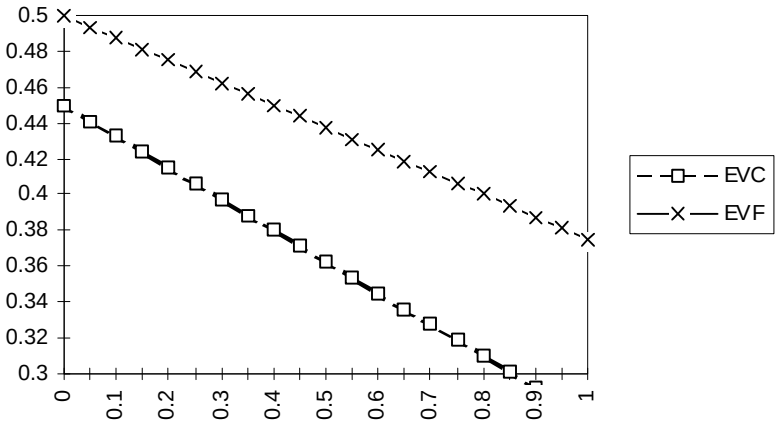

Figure 3b: Low ϕ

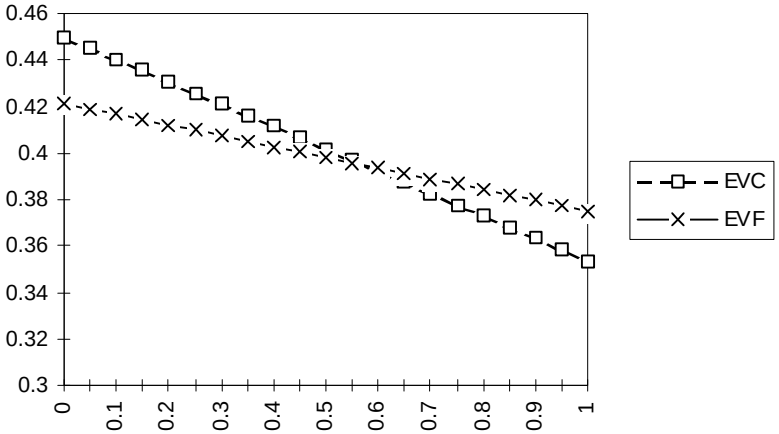

Figure 3c: Intermediate ϕ

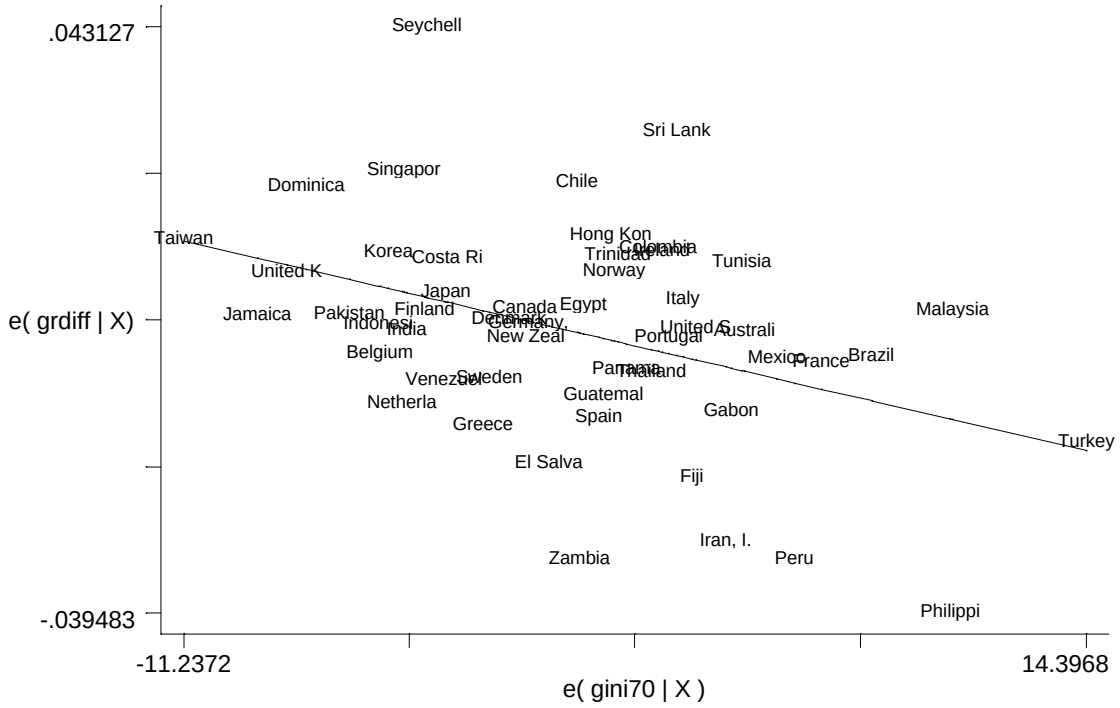

Figure 4: Partial scatter plot of growth differential against income inequality (based on Table 4. col. 3)

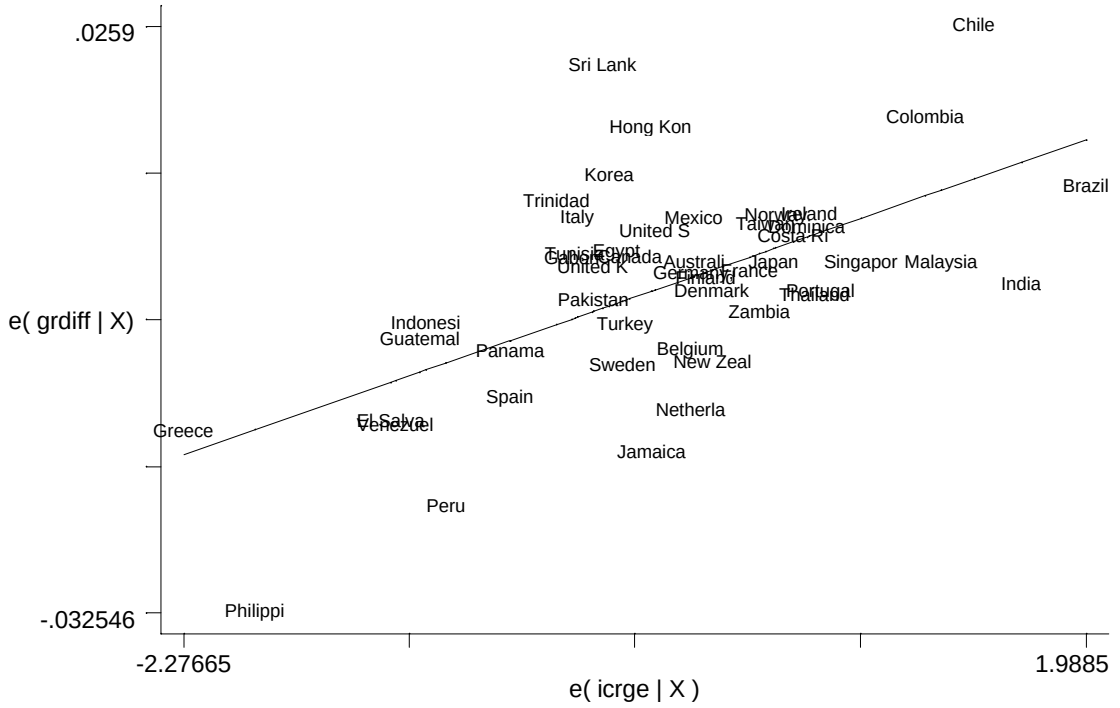

Figure 5: Partial scatter plot of growth differential against institutional quality (based on Table 4. col. 4)

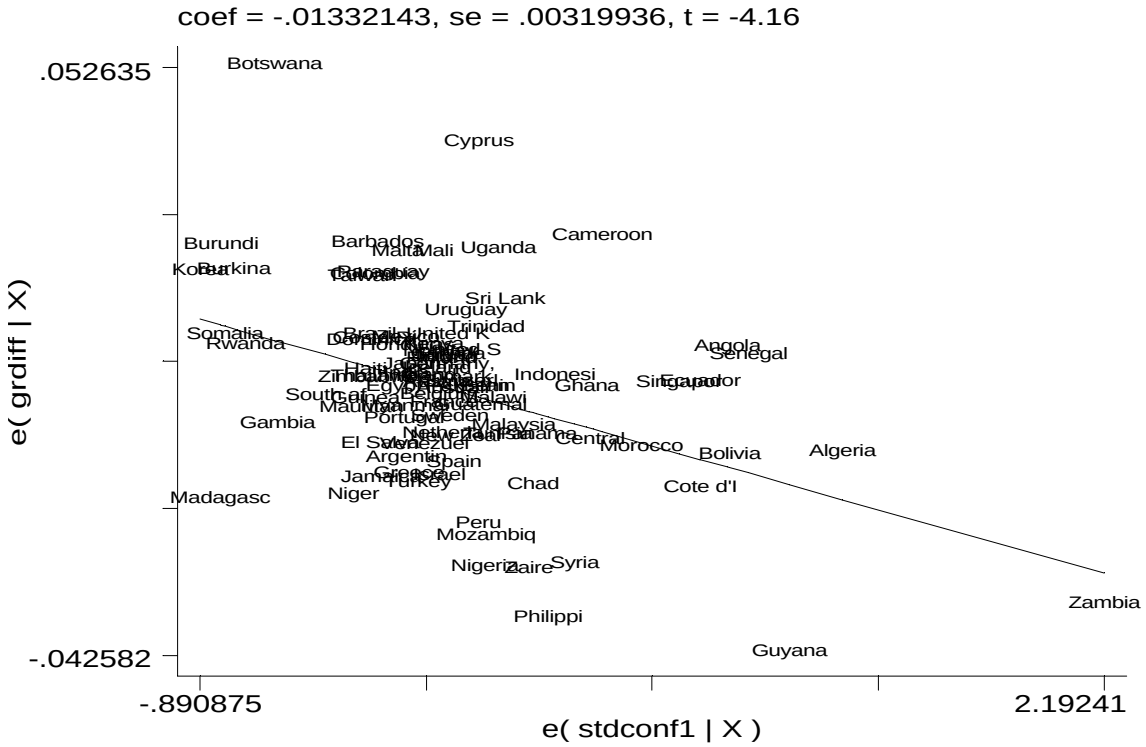

Figure 6: Partial scatter plot of growth differential against *conflict1* (based on Table 5, col. 1)

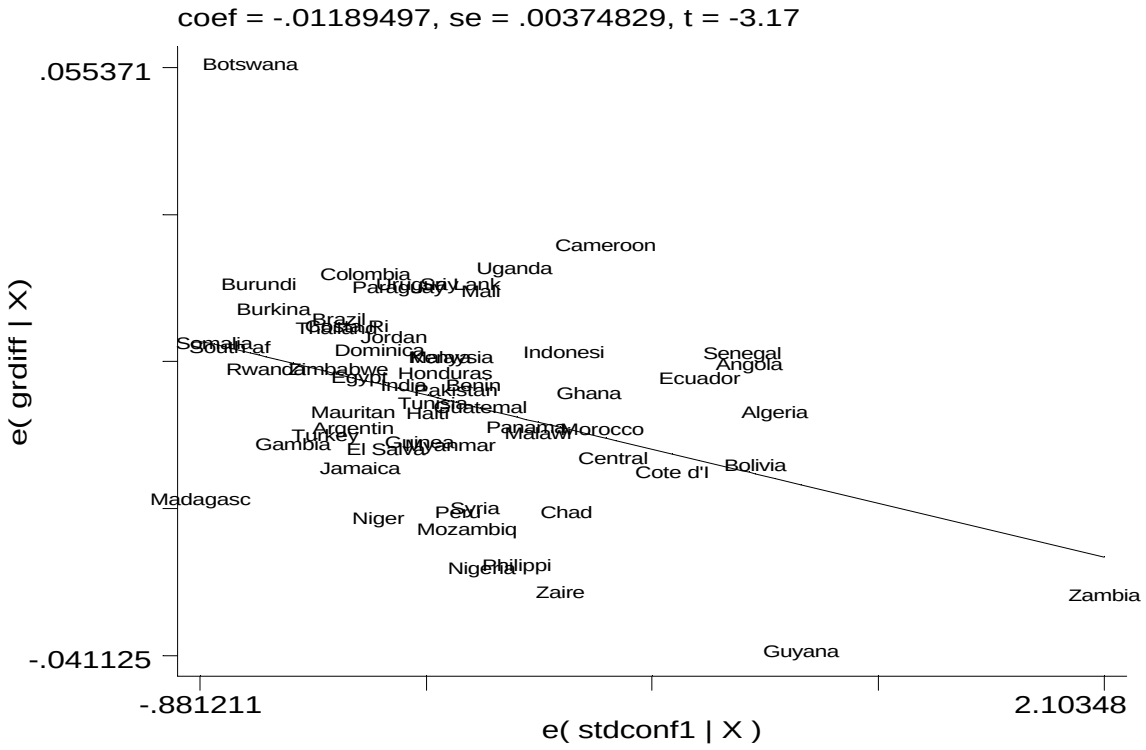

Figure 7: Sample restricted to countries with 1989 per-capita GDP < $5,000 (at 1985 prices)

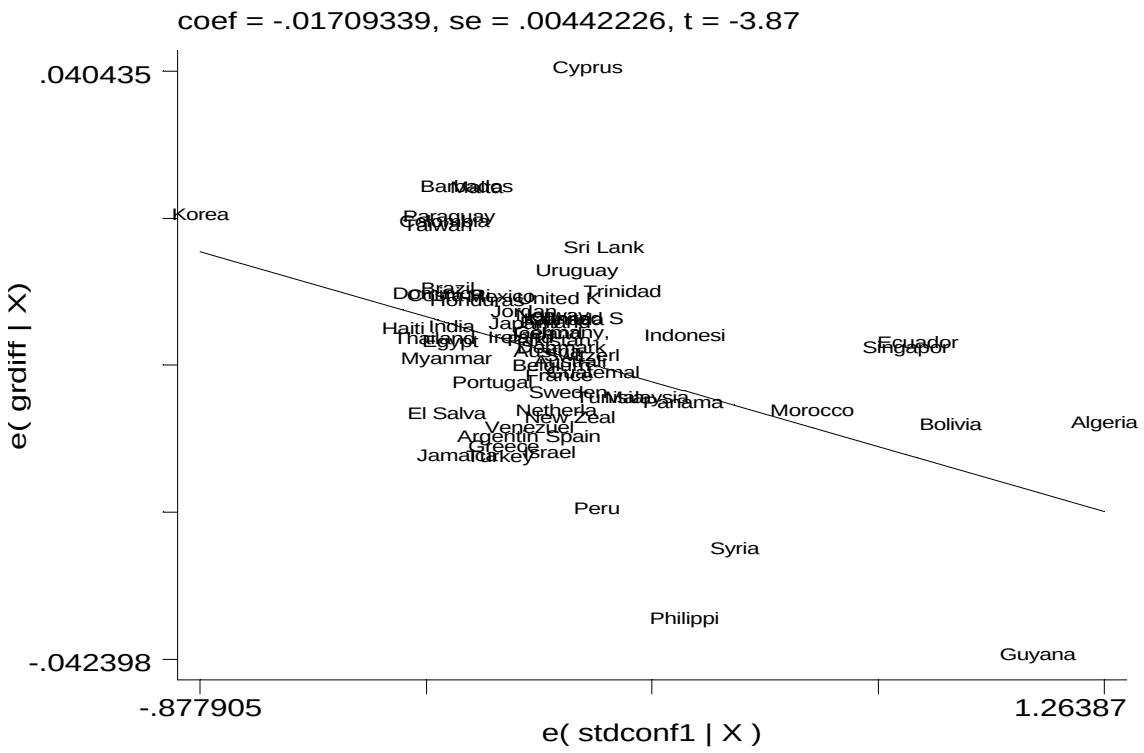

Figure 8: Sample excluding Sub-Saharan African countries

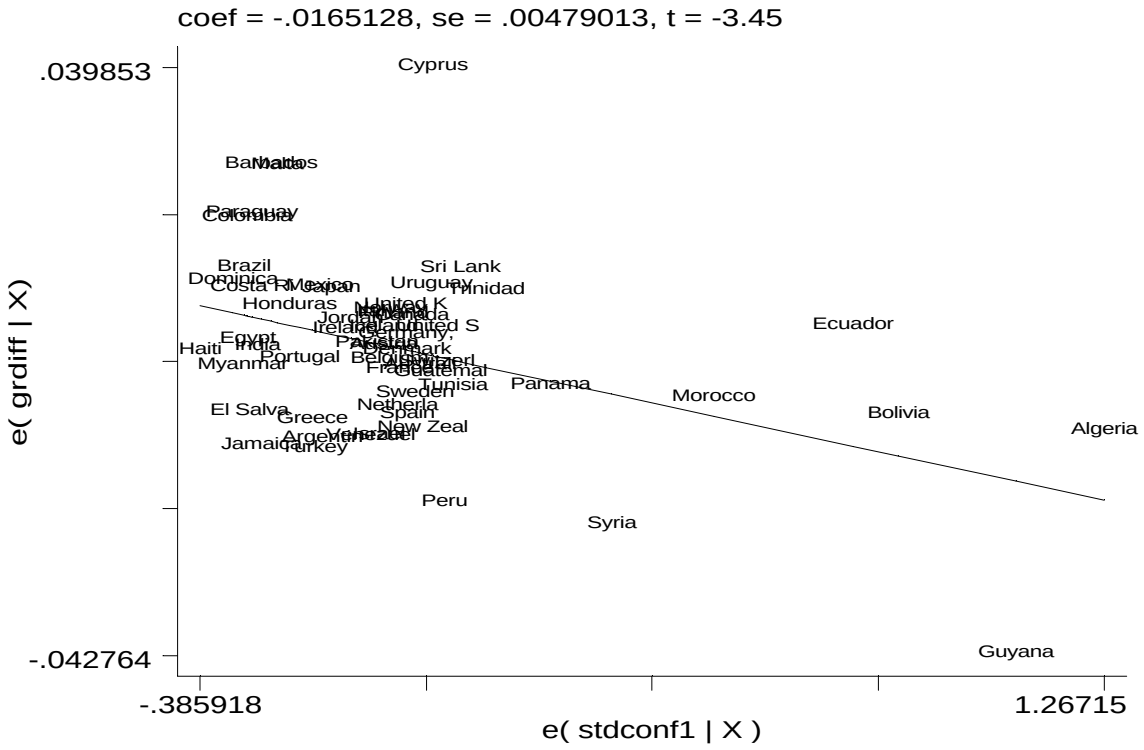

Figure 9: Sample excluding Sub-Saharan African and East Asian countries

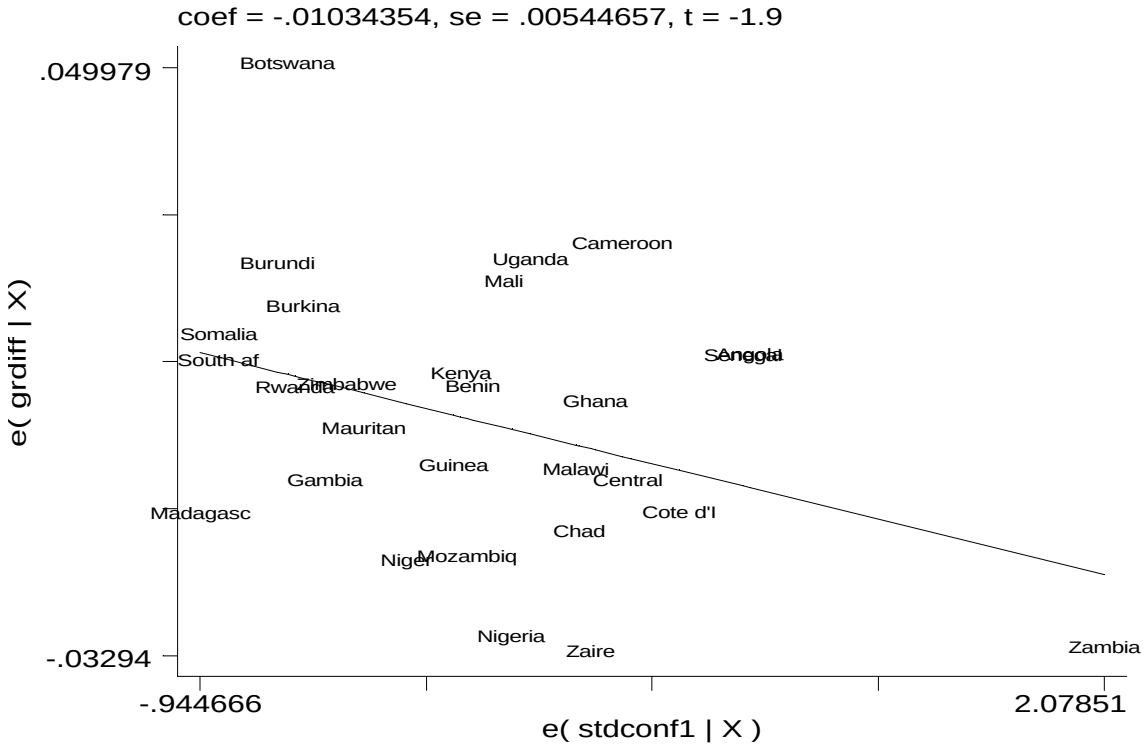

Figure 10: Sub-Saharan African countries

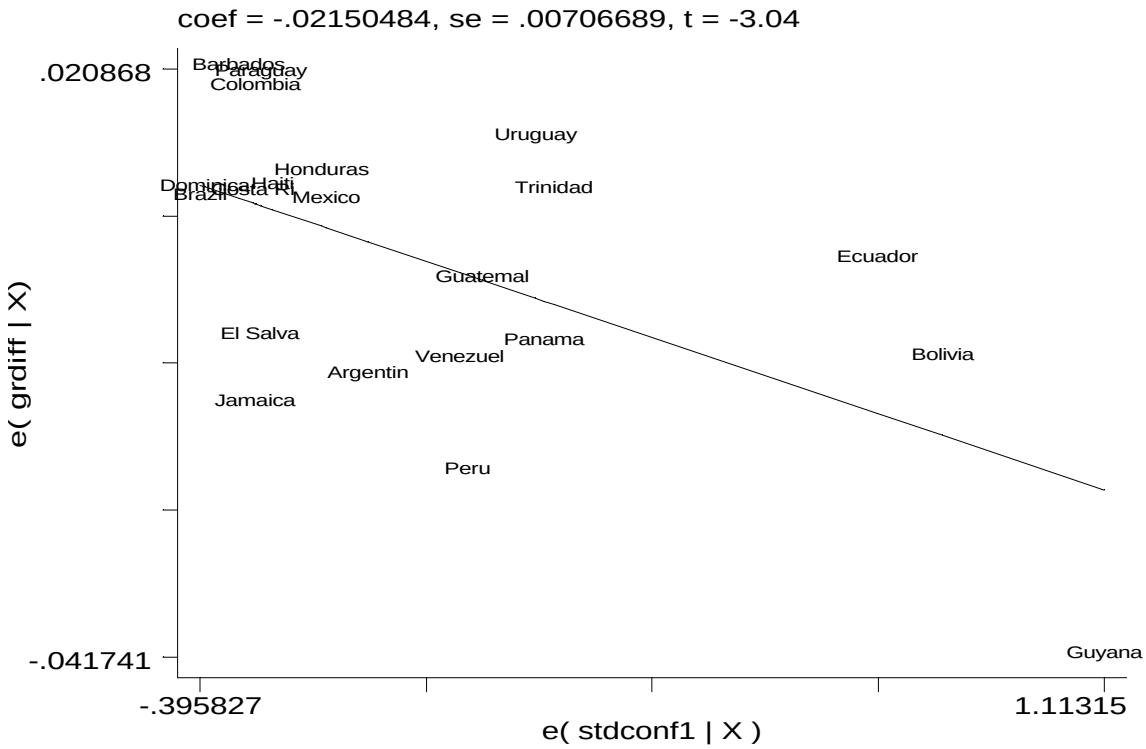

Figure 11: Latin American countries

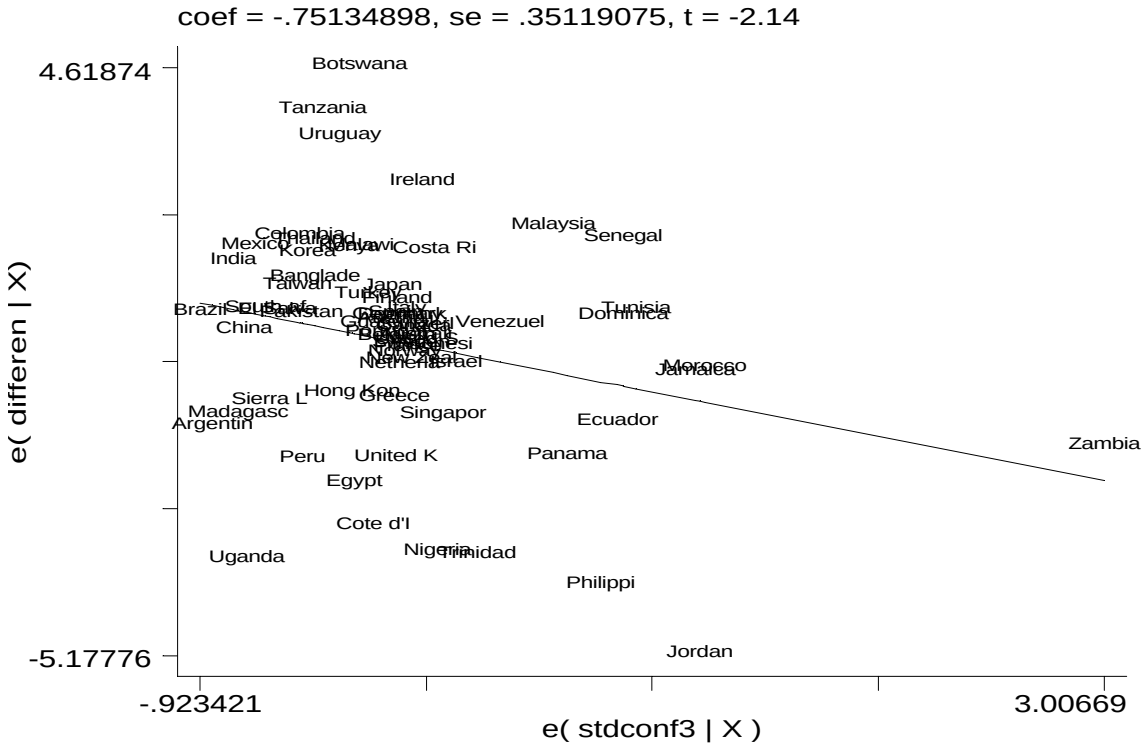

Figure 12: Partial scatter plot of growth differential against *conflict3* (based on Table 5, col. 7)

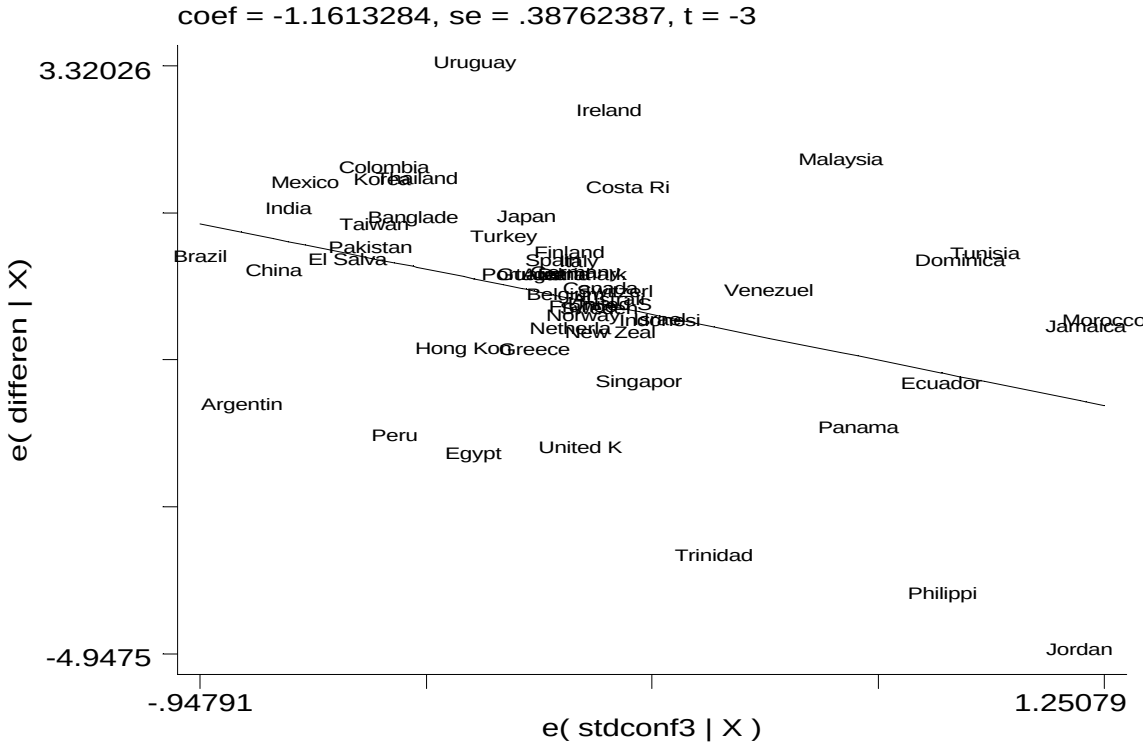

Figure 13: Sample excluding Sub-Saharan Africa

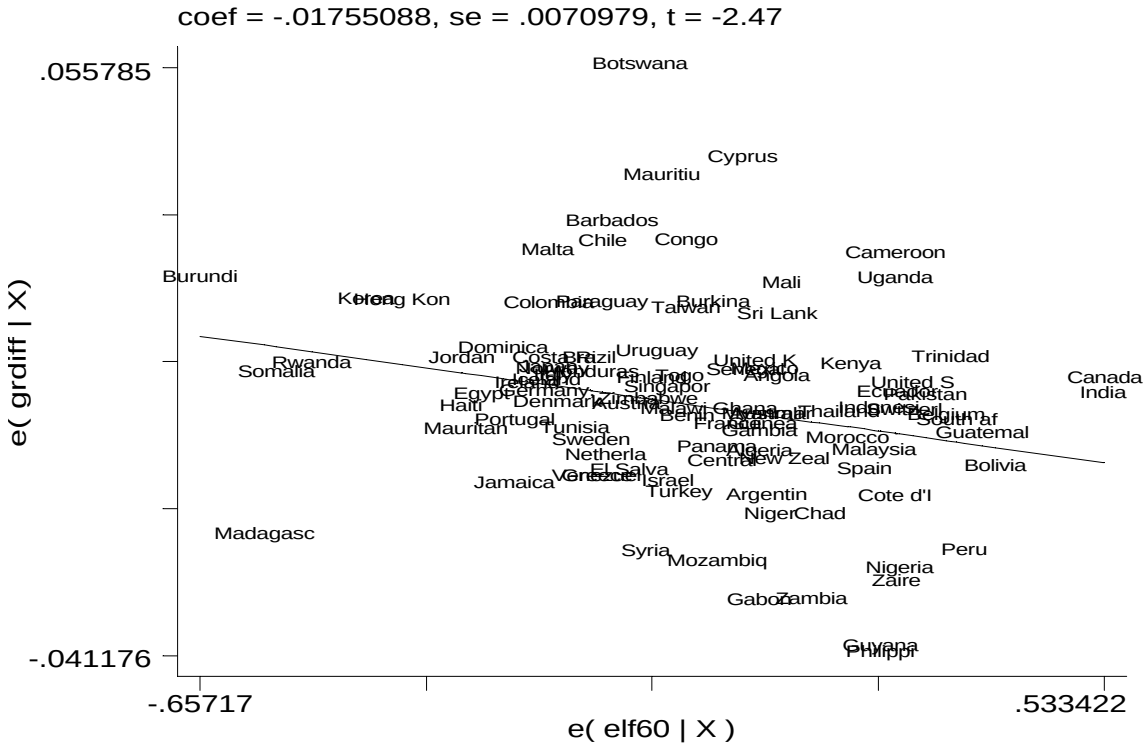

Figure 14: Partial scatter plot between growth differential and ethno-linguistic fragmentation (based on Table 7, col. 4)

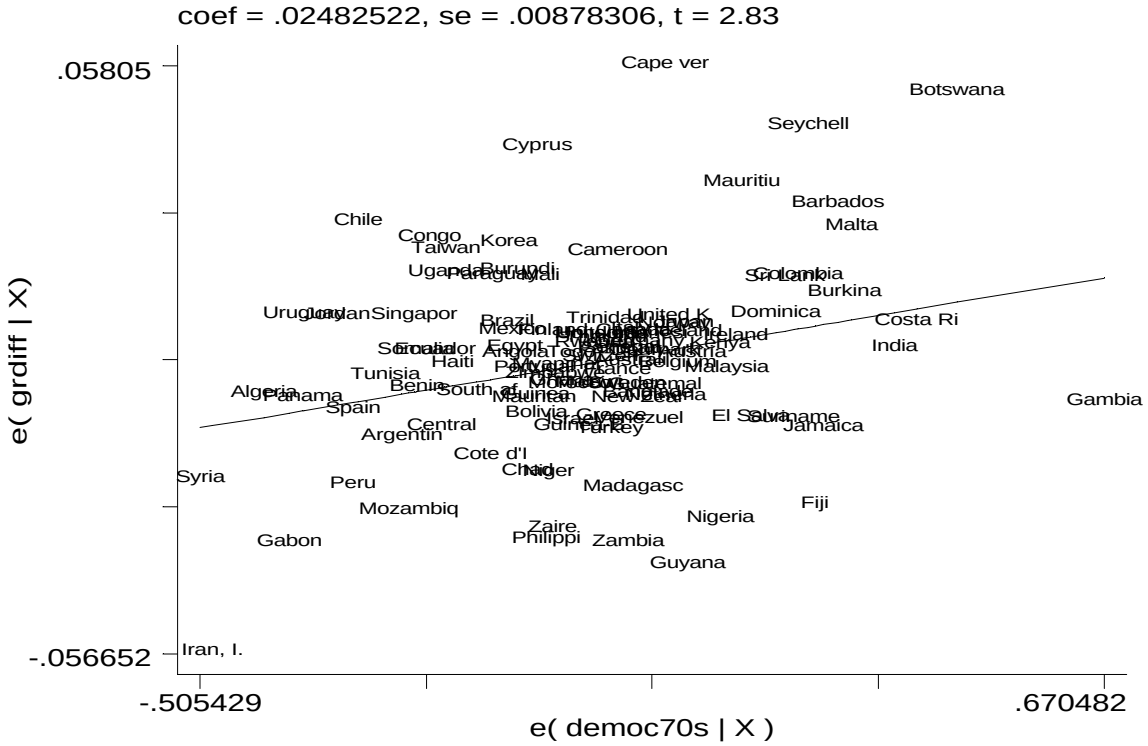

Figure 15: Partial scatter plot between growth differential and democracy (based on Table 9, col. 1)

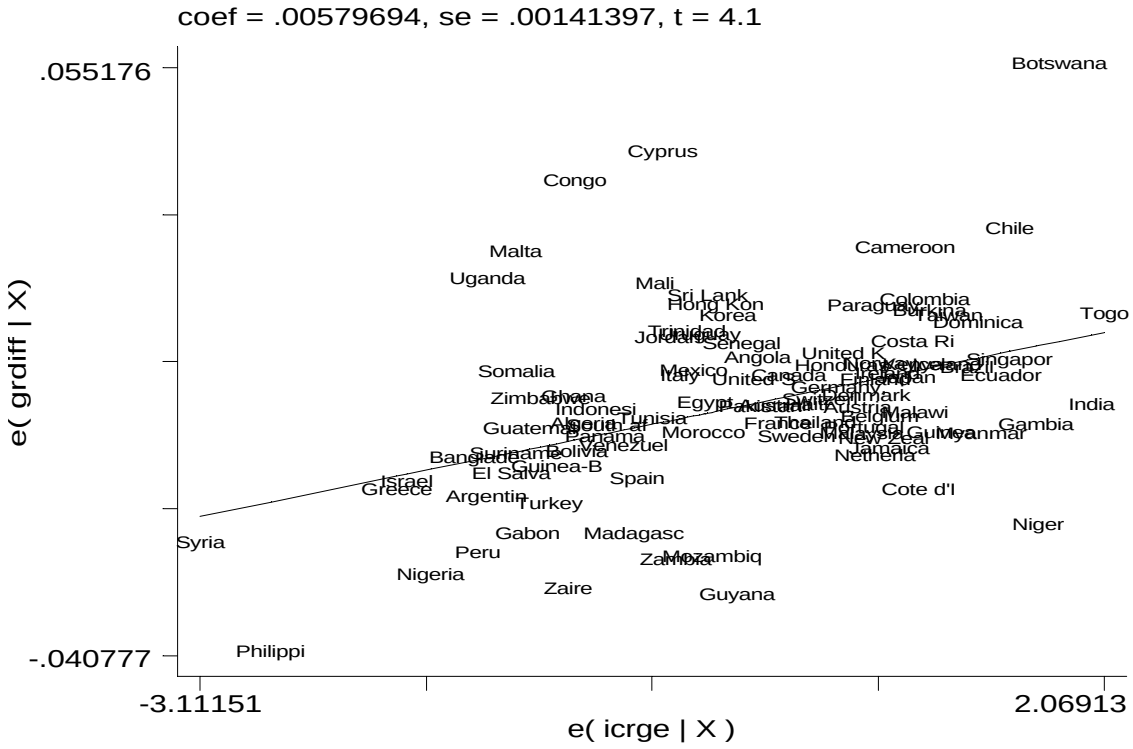

Figure 16: Partial scatter plot between growth differential and quality of institutions (based on Table 9, col. 2)

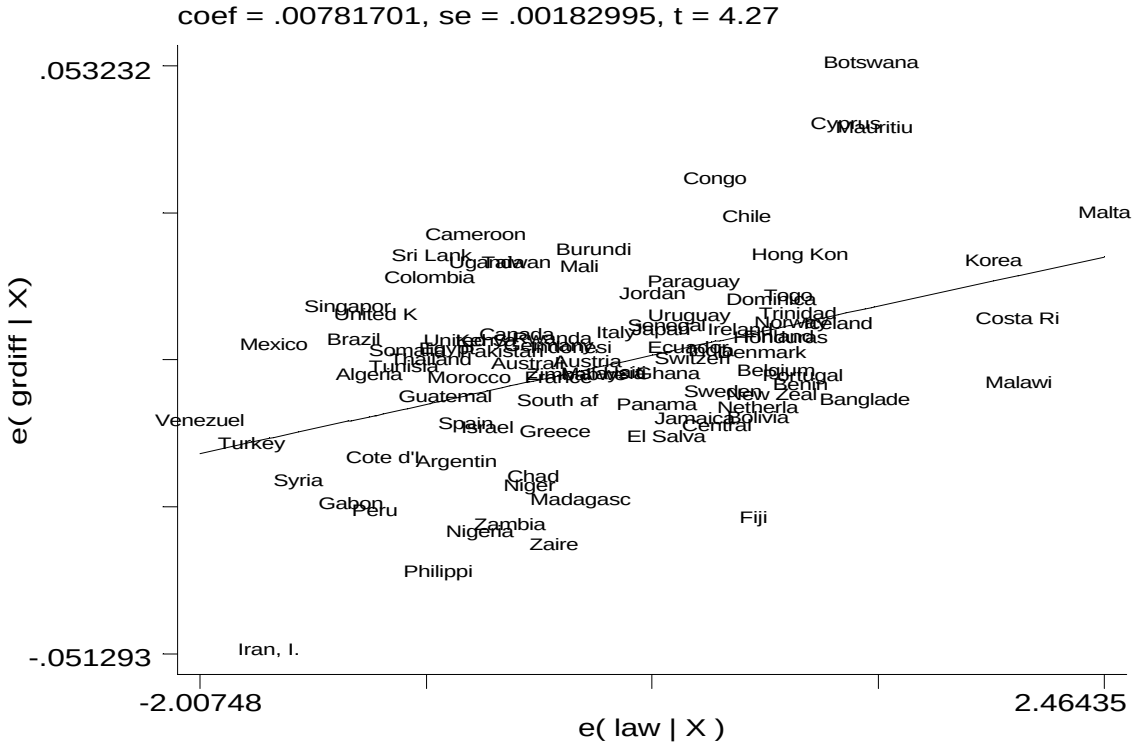

Figure 17: Partial scatter plot between growth differential and rule of law (based on Table 9, col. 3)

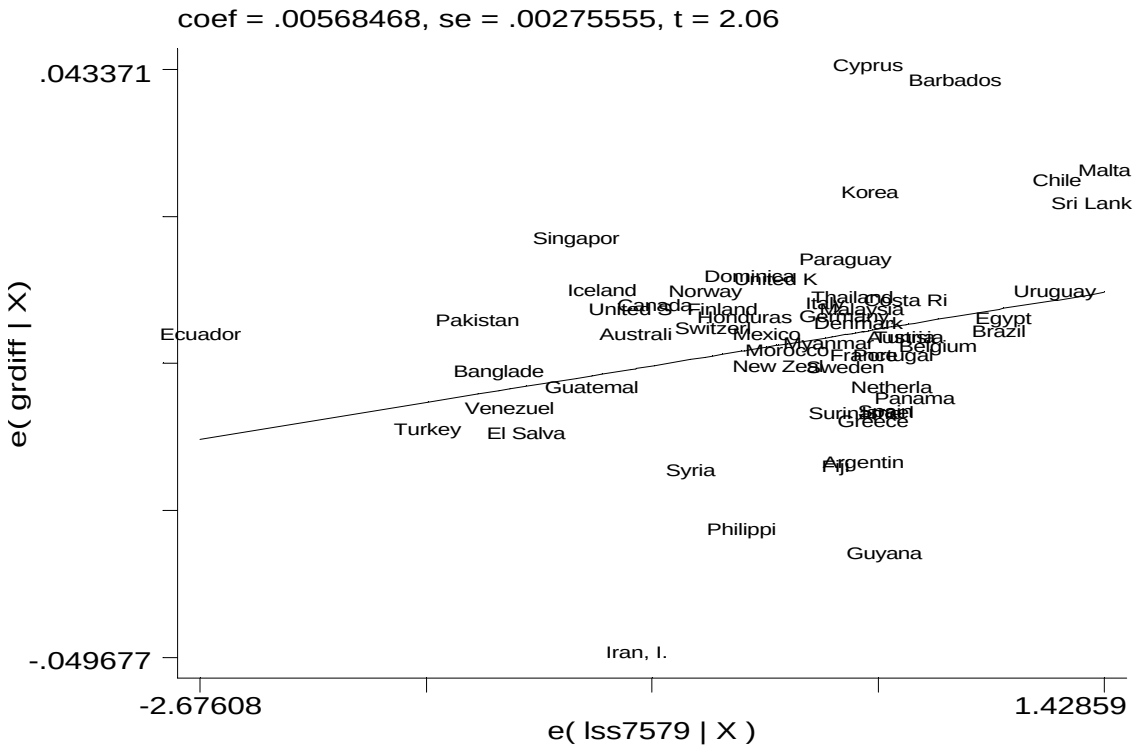

Figure 18: Partial scatter plot between growth differential and spending on safety nets, excluding Sub-Saharan Africa (based on Table 9, col. 7)