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What did structural adjustment adjust?
The association of policies and growth with repeated IMF and World Bank adjustment loans

By William Easterly

Abstract

One feature of adjustment loans that has been often overlooked in their evaluation is their frequent repetition to the same country, with such extremes as the 30 IMF and World Bank adjustment loans to Argentina over 1980-99 or the 26 adjustment loans to Cote d'Ivoire and Ghana. The rate of repetition remains high and non-decreasing as cumulative adjustment loans increases. Repetition changes the nature of the selection problem, with the possible implication that new loans had to be given because earlier loans were not effective. Seventeen out of the eighteen countries that were IDA in 1980 and were in the top half of adjustment loans received became eligible for HIPC debt relief, compared to less than 50 percent of the IDA countries in the bottom half of adjustment lending -- again suggesting that previous loans were not effective at generating the growth necessary to service the debt. There were relative successes and failures, but none of the top 20 recipients of adjustment lending over 1980-99 were able to achieve reasonable growth and contain all policy distortions. Policies improved unevenly as adjustment loans accumulated, and even those policies that improved show a nonlinear satiation point after a certain number of adjustment loans is reached. An overall indicator of severe macroeconomic policy distortion does not improve as the number of adjustment loans increases in the overall sample, with about half the adjustment loan recipients showing severe distortions regardless of the number of cumulative adjustment loans. An instrumental variables regression for estimating the causal effect of repeated adjustment lending on policies shows a significant but small improvement for some macro policies, but none for others. None of the techniques in the paper is able to identify a growth effect, positive or negative, of repeated adjustment lending. The findings of this paper are in line with the foreign aid literature that shows that aid does not discriminate between good and bad policies. There's a big difference between structural adjustment lending and structural adjustment policies.

What did structural adjustment adjust?

The association of policies and growth with repeated IMF and World Bank adjustment loans

William Easterly[1]

Center for Global Development
Institute for International Economics

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[1] Weasterly@cgdev.org. I am grateful for comments by John Williamson and for comments and assistance by David Roodman.

On February 5, 1980, World Bank President Robert McNamara sought and received approval from the World Bank Board to launch a new instrument: the structural adjustment loan (SAL). The proposal followed a year of discussion with the operations chief Ernest Stern, with the outline of the SAL emerging on a flight the two took together to the Bank-Fund Annual Meeting in Belgrade in late September 1979. The loans would provide finance over a period of several years in return for reforms in trade protection and price incentives for efficient resource use.[2] The introduction of the new instrument came against the backdrop of the second oil shock in 1979. It was intended as a preventative instrument so that the "current account deficits of many developing countries do not become so large as to jeopardize seriously the implementation of current investment programs." Although the IMF had always been making "adjustment loans" in the form of stand-bys, the IMF also in the 1980s expanded the number and maturity of adjustment loans it was making.

The dual rationale from the SALs from the beginning was to maintain growth and to facilitate balance of payments adjustment. The "specific objective" of the SALs were to help countries "reduce their current account deficit to more manageable proportions by supporting programs of adjustment ... to strengthen their balance of payments, while maintaining their growth and developmental momentum."[3] As the 1981 World Development Report said, successful adjustment implies "a minimum sacrifice of income growth."[4] This emphasis on growth continued. In June 1983, for example, the World Bank and IMF published excerpts of speeches by their respective heads under the overall heading: "Adjustment and growth: how the

[2] Kapur et al. 1997, Volume I, p. 509.
[3] World Bank 1980, pp. 67-68.
[4] World Bank 1981, p.4

Fund and the Bank are responding to current difficulties."[5] In 1986, the World Bank president A.W. Clausen gave a speech entitled “Adjustment with growth in the developing world: a challenge for the international community”.[6] In 1987, the World Bank and IMF published a volume entitled “Growth-oriented adjustment programs” with an introduction discussing the “fundamental complementarity” of “adjustment and economic growth.”[7]

Since the SALs were supposed to facilitate balance of payments correction, the structural adjustment loans were intended to end after a period of several years of adjustment. As the initial McNamara document put it, structural adjustment lending entailed "an association with a borrower in a program of structural change over three to five years which will require financial support."[8]

A flavor of the early structural adjustment package is given in 1981 in the first of what would turn out to be 26 structural adjustment loans to Cote d'Ivoire:

The loan would be in support of the Government's program of structural adjustment. The reforms envisaged by the program are designed to improve the level of public savings and the efficiency in the use of public resources; restructure the agricultural planning system and associated development institutions so that an expanded, well-designed investment program yielding high returns can be mounted in the sector; reflect the costs of providing public services to the sector; assure that rational prices and world market conditions would guide decisions to invest and produce; restructure public enterprise, management, financing and accountability to ensure efficient market oriented operations; and restructure incentives, to promote efficient export-oriented industrial investments.[9]

This statement already contains the main features of what would characterize adjustment lending for the next two decades for the IMF and World Bank: fiscal adjustment, getting the prices right, trade liberalization, and in general a movement towards free markets and away from

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[5] World Bank and IMF “Adjustment and growth; how the Fund and Bank are responding to current difficulties.” 1983
[6] Clausen. [1986]
[7] Corbo et al. 1987
[8] Kapur et al. 1997, p. 510
[9] World Bank 1981

state intervention.

The IMF had long been doing conditional stand-by loans, but it also expanded the number and types of adjustment loans in the 1980s. IMF adjustment loans, which often served as a pre-requisite for World Bank adjustment loans, stressed macroeconomic stabilization – especially fiscal adjustment and inflation stabilization. Exchange rate devaluation was also a key element in IMF loans. IMF and World Bank conditionality has evolved over time, but there is a common element of macro adjustment and getting prices right that has remained constant from the beginning.

One way to evaluate an initiative like adjustment lending is to compare results to objectives. This kind of evaluation is informative because it measures success against the ex-ante benchmarks imposed by the policy-making institutions themselves and against the expectations they created. This kind of monitoring of policy-making institutions has some normative value in that it has strong incentives for the institutions; it elicits strong effort from the institutions because it does not allow them to blame poor outcomes on unobservable shocks or on their particular choice of control variables. The conclusions reached by this kind of evaluation are not particularly favorable: "there is a long legacy of failed adjustment lending where there was no domestic constituency for reform ... donors have not been sufficiently selective with policy-based lending" (World Bank 1998, p. 48). Or as a more recent study World Bank study of African cases puts it, "that the 10 countries in our sample all received large amounts of aid, including conditional loans, yet ended up with vastly different policies suggests that aid is not a primary determinant of policy" (Devarajan et al. 2001, p. 2). This follows the World Bank's (1994) *Adjustment in Africa* report that found limited and uneven policy improvement in countries undergoing "structural adjustment." The World Bank's (2002, pp. 110-111) most

recent statement about structural adjustment is the guarded statement that it "can contribute, and often has contributed, to growth," but "the performance of adjustment operations has been mixed, especially during the 1980s."

Another way to evaluate success is the counterfactual methodology – how the intervention changed the outcome compared to what would have happened without the intervention. Countries that received adjustment loans did so because they were having poor macroeconomic and growth outcomes, and so it would not be surprising if we found a negative association between these outcomes and adjustment loans without correcting for selection bias. To use a medical analogy, we would expect hospital patients to be sicker than the average person on the street, but this does not imply that hospitals cause sickness.

The vast literature on evaluating IMF and World Bank adjustment loans has made much of the selection bias problem.[10] This has variously been addressed by using Heckman-type selection techniques, before and after analysis, or control group methodology. For example, in earlier research the World Bank (1992, p. 2) found that after controlling for selection bias, adjustment lending meant "the middle-income countries enjoyed growth four percentage points higher than would otherwise have occurred and the low-income group had growth two percentage points higher." This early study concludes "adjustment lending is also associated with improved policies." However, the results from a wide range of independent researchers, World Bank and IMF studies have been all over the map, with positive, zero, or negative effects of adjustment lending on growth, and with similarly mixed evidence of AL on policies (see the survey by Killick et al. 1998). Two recent studies (Przeworski and Vreeland (2000) and Barro

[10] A partial listing is Barro and Lee 2002, Conway 1994, Corbo et al. 1987, Corbo and Fischer 1995, Devarajan et al. 2001, Dicks-Moreaux et al. (2000), Goldstein and Montiel (1986), Haque and Khan (1998), Hutchison (2001), Kapur et al. 1997, Khan 1990, Killick 1995, Killick et al. 1998, Knight and Santaella 1997, Pritchett and Summers 1993, Przeworski and Vreeland 2000, Schadler et al. 1995, Svensson 2002, Van de Walle 2001, World Bank (1992, 1994, 1998, 2002)

and Lee (2002)) find a significantly negative effect of IMF lending on growth.

These studies have almost universally treated adjustment loans as independent events, not using the information contained in the frequent repetition of adjustment loans to the same country. The repetition of adjustment loans changes -- even if it doesn't eliminate -- the nature of the selection bias. To return to the medical analogy, if a patient is re-admitted to the hospital after the first treatment, this suggests that the first treatment was not effective.

The alternative, more favorable, explanation for why adjustment loans were repeated is that adjustment was a multi-stage process that required multiple loans to be completed. In the medical analogy, the patient needed multiple doses of medicine to fully cure the illness. Under this interpretation, we would expect to see a gradual improvement in performance with each successive adjustment loans, or at least an improvement after a certain threshold in adjustment lending was passed.

Selection bias could still operate with repetition if adjustment loans were repeatedly initiated in countries that failed to correct the macroeconomic problems and poor growth under earlier adjustment loans. It could be that governments failed to follow through with the conditions of each loan (the patients didn't take their medicine) and so additional programs became necessary. If this is the explanation, then the question then becomes why the IMF and World Bank kept giving new adjustment lending resources to countries that had such a poor track record of compliance with the conditions. Again, the interpretation is not particularly favorable to the effectiveness of adjustment lending as a way to induce "adjustment with growth."

Repeated adjustment lending – the record

The first informative statistic is simply that adjustment loans were often made multiple

times to the same country. Among the top 20 of adjustment loan recipients (Table 1), there are such extreme cases as Argentina's 30 adjustment loans from 1980 to 1999, and Ghana and Cote d'Ivoire's 26 each.[11] One might expect that it would take more than one loan to accomplish "adjustment", but it's hard to see why it would take such a large number. The data do not display any obvious satiation point with adjustment loans. Figure 1 shows that the probability of receiving another adjustment loans does not decrease with the number of loans already received.

Table 1 shows the macroeconomic experience of the top 20 recipients of adjustment loans, as measured by total number of adjustment loans from the IMF and World Bank over 1980-99. The table shows macroeconomic outcomes averaged over the period from their first adjustment loan to 1999. Looking first at the summary statistics, we see that these intensive recipients of adjustment lending had about the same macroeconomic outcomes as the developing country sample. Contrary to the objective of "adjustment with growth," the intensive recipients of adjustment loans had the same near-zero per capita growth rate as the overall developing country sample. They also had the same current account deficit, the same government deficit, and the same black market premium and inflation rate, and the same near-zero real overvaluation and real interest rate. The rest of the developing country sample includes a mixture of countries that had macro distortions so extreme that they were unwilling or ineligible to seek intensive adjustment lending and countries that had macro balances sufficiently under control so as not to need adjustment loans. Likewise, the intensive adjustment lending sample includes cases of successful and unsuccessful adjustment. On average, the two samples of intensive adjustment

[11] Since the IMF has been in the conditional loan business for a while, we could go back further with data on IMF loans. We get such startling results for the percent of time under an IMF program since 1965 as the Philippines (78 percent), Guyana (65 percent), and Haiti (64 percent). These are not exactly stellar performers.

lending and the rest of the developing country sample were not significantly different over the 1980s and 1990s.

Looking at the minimums and maximums for each macro variable, we see that intensive adjustment lending was associated with a high variance of macroeconomic outcomes. In the worst cases, there were very poor macroeconomic outcomes: very negative growth, very large current account and budget deficits, roughly triple-digit percent black market premiums, inflation rate, and real overvaluation, and either very negative real interest rates or extremely high positive real interest rates averaged over the entire period of intensive adjustment lending. These are surprising outcomes in countries supposedly under intensive conditionality for an average of 19 adjustment loans.

In the best cases, growth was strongly positive and all of these macroeconomic imbalances were under control. Unfortunately, as we see from the individual cases, there were no examples where growth was respectable and all of the macroeconomic imbalances were under control for the adjustment lending period. Uganda had good growth, but erratic and high inflation and black market premiums through 1992, despite having received 14 adjustment loans by that time. Pakistan had the highest growth in the intensive AL sample, but consistently ran large budget deficits that left it with a major public debt crisis by the end of the period. Bangladesh had respectable growth, but maintained large black market premiums through 1993 despite 17 adjustment loans over that period. Ghana has also been touted as a success story of adjustment lending, but we see a recurrent problem with inflation despite 26 adjustment loans.

This intensive adjustment lending group includes some notable disasters. Zambia received 18 adjustment loans but had sharply negative growth, large current account and budget deficits, high inflation, a high black market premium, massive real overvaluation, and a negative

real interest rate. Cote d'Ivoire got 26 adjustment loans but had negative growth, high current account deficits, and an overvalued real exchange rate (although there was some improvement after the 1994 devaluation, 18 loans into structural adjustment). Mauritania had a high black market premium and real overvaluation. In Africa, only Uganda and Ghana of the 12 intensive adjustment lending cases managed significant positive growth.

In other regions, there were also disasters. After the initiation of adjustment lending, Bolivia had a hyperinflation, negative real interest rates, and overvaluation. Bolivia stabilized inflation by 1987, but growth was poor, real interest rates went from excessively negative to excessively positive, and overvaluation remained. Argentina also had a hyperinflation, 8 loans into structural adjustment. Argentina stabilized inflation beginning in 1991, but real overvaluation became an increasingly serious problem and its record 30 adjustment loans over 1980-99 have not prevented recurrent financial crises. Outside of the sample period, the collapse of the currency board and recurrence of inflation and negative growth in 2001-2002 suggests an even more unhappy ending to Argentine structural adjustment.

Even in adjustment lending cases where all the macro distortions were more or less under control, such as Jamaica, Mexico, Morocco, and the Philippines, growth was disappointing. To give a benchmark, the 1983 World Development Report projected a "central case" of 3.3 annual percent per capita growth in the developing countries from 1982 to 1995. None of the 20 intensive adjustment lending cases reached this level of per capita growth.

These results do not prove that adjustment lending was ineffective in promoting good macroeconomic policies and good growth outcomes. It may be that performance would have been even worse without intensive adjustment lending. However, these results place bounds on our intuition on the counterfactual outcomes. It is necessary to believe that a worst case scenario

like Zambia would have had even more negative growth, even higher inflation, even more extreme overvaluation and black market premiums, and even more financial repression without repeated adjustment lending than it did with repeated adjustment lending. For a middle income country example, if we took the World Bank 1992 counterfactual finding at face value, this would imply that Mexico would have had -3.6 percent per capita growth per annum in the absence of its 20 adjustment loans, compared to its actual outcome of 0.4 percent per capita growth. For the whole sample of intensive adjustment lending countries, it is necessary to believe that per capita growth would have been negative in the absence of repeated adjustment lending.

This is not to deny that some kind of selection bias could still be operating with repeated adjustment loans, but as noted above, the interpretation of such selection bias is itself rather unflattering for adjustment lending. The adverse selection of repeated failures is a plausible description of what happened in many countries, but this raises questions about why the Fund and Bank make new loans to countries that have failed to deliver reform in response to old loans.

If a continual stream of negative exogenous shocks were driving the poor macroeconomic and growth outcomes, then perhaps the pattern of repeated adjustment loans in the face of poor outcomes is more comprehensible. I calculated also the terms of trade shocks over the adjustment lending period for each of these 20 cases. On average, the terms of trade change was only slightly negative, a decline of about 0.5 percent per year, which is the same for the developing country sample as a whole. Of course, there was considerable variance around this average. The bad Zambia outcome could have had something to do with its 2.6 percent per annum decline in terms of trade over the adjustment lending period. However, there is no clear association between terms of trade changes and macroeconomic performance in these intensive

adjustment lending cases. The success story of Uganda had a terms of trade decline almost as bad as Zambia's, nor did an even worse terms of trade decline prevent respectable growth in Pakistan. At the other extreme, Mauritania had a strong positive shock to terms of trade but still posted disappointing growth and macroeconomic outcomes.

Another informative statistic about intensive adjustment loan recipients is how many of them became recipients of debt relief under the Heavily Indebted Poor Countries (HIPC) Initiative. The IMF and World Bank declaring a country eligible for debt relief is an admission that past loans, including adjustment loans, did not bring enough current account adjustment and export and GDP growth in that country to keep debt ratios within reasonable bounds. Countries had to have low income (where low income is defined as receiving loans from the International Development Association--IDA--arm of the World Bank) as well as high debt ratios to be eligible for HIPC. In fact, all of the low income countries in Table 1 had sufficiently high debt ratios to be declared eligible for HIPC debt relief (including the "success stories" of Ghana and Uganda).

This result may be biased towards low growth economies because the IDA eligibility for HIPC was defined at the end of the period. However, table 3 shows what happened to the countries that were classified as IDA in 1980, dividing them equally into high and low adjustment lending recipients. Out of the eighteen 1980 IDA countries that were high adjustment loan recipients, all except Bangladesh became HIPCs by the end of the period. The low adjustment lending countries were much less likely to become HIPCs.

This HIPC outcome may have come about because of the IMF and World Bank practice of "filling the financing gap" with new loans, which creates perverse incentives for countries to borrow anew rather than make the macro adjustments necessary to service the old debt (Easterly

1999, 2001, Ratha 2001). Both the IMF and World Bank may have been motivated to give new adjustment loans so countries could service their old adjustment loans.

Another special case of adjustment lending was in the ex-Communist "transition" countries. These countries only received adjustment loans in the 1990s after the fall of the Berlin Wall and the breakup of the USSR, and so did not show up in the top 20 of intensive AL countries discussed above. Table 4 shows the macroeconomic outcomes that accompanied the initiation of adjustment lending in the 10 transition countries that received the most adjustment loans. Median growth was –1.7 percent per annum. Six of the countries had negative per capita growth and four had positive growth after the initiation of structural adjustment lending.

The growth results are very sensitive to when structural adjustment began in each country. We see in Figure 2 the familiar J-curve pattern of transition country growth overall in the 1990s in these 10 cases. Only Poland and Hungary seem like clear success stories, with Georgia actually the worse case of output decline (explained in part by a civil war), with only a modest recovery after the initiation of adjustment lending. Albania is in between, with strong positive growth after an even stronger output decline. Still if we follow the convention that we interpret the post-AL growth performance as suggestive of the results of adjustment lending, then at least 4 of the cases had a positive response. The median response remains negative.

The response of inflation to adjustment lending in transition countries was also disappointing. The median percentage inflation rate was 83 percent. Real interest rates were similarly distorted, either very negative reflecting financial repression or positive and very high indicating non-credible inflation stabilization or excess demand pressure on credit markets. Results on the fiscal balance, current account balance, and black market premium were less disastrous except in a minority of cases. As in the non-transition cases, we again have the result

that the worst case scenarios in this group of intensive adjustment lending cases were of very poor outcomes for every variable (see maxes and mins in Table 4).

The transition cases also show a disappointing response to repeated structural adjustment lending. Again, this not prove that adjustment lending was ineffective – it could be that growth would have been even more negative and inflation even higher in the absence of continual structural adjustment lending. But it places a bound on our intuition about the counterfactual – it is necessary to believe that Ukraine would have had a worse outcome that –8.4 percent per capita growth and 215 percent annual inflation without 10 adjustment loans. The repetition of adjustment loans also suggests that lending continued even though the track record on the initial adjustment loans was poor.

The other claim made about adjustment lending is that it led to a favorable policy CHANGE over a number of years, even if the average level of policies in adjustment lending cases was poor. To assess this claim, the next section looks at the descriptive and econometric relationship between successive adjustment loans and policy improvements.

Adjustment lending and policy improvements

In this section, I first show the descriptive evolution of bad policies and successive adjustment loans. Then, more formally, I do pooled time series regressions of policies on the cumulative number of adjustment loans using annual data for 1980-99. As highlighted in the introduction, a positive association between repeated adjustment loans and policy improvements would suggest the "necessity of multi-stage treatment" story for adjustment lending, while a zero or negative association would suggest the treatments were ineffective.

To describe the evolution of bad policies, I first construct an overall measure of macroeconomic distortions for each country and year. I define the measure as a dummy variable

that takes on the value 1 if any of the principal macroeconomic distortions are in an extreme range. So DISTORTION=1 if any of the following hold: (1) inflation is greater than 40 percent, (2) the black market premium is greater than 40 percent, (3) the real exchange rate is more than 40 percent overvalued,[12] (4) the real interest rate is less than –5 percent. These thresholds are arbitrary but the results are not terribly sensitive to the exact threshold for each variable. I choose these variables because they indirectly reflect the degree of macroeconomic imbalances and because we can say unambiguously that extreme levels of these variables are distortionary (I don't use the fiscal deficit or the current account deficit directly because it is hard to say what level is "too high" without knowing more about each country's circumstances.) Thus, a situation of excess aggregate expenditure relative to income will result in an overvalued exchange rate. An overvalued real exchange rate could also result from a (possibly exchange rate based) stabilization from high inflation that is not credible. If the imbalance is fiscal and financed by money creation the imbalance will result in high inflation, along with a high black market premium (if the nominal exchange rate is controlled) and a negative real interest rate (if the nominal interest rate is controlled). The 40 percent threshold for high inflation is chosen because it is the threshold that Bruno and Easterly (1998) showed to be associated with negative growth outcomes. I impose the same threshold for the black market premium and real overvaluation mainly to just have some exogenous threshold. The range for the real interest rate are chosen from the literature on financial repression (below –5 percent). I restrict the sample to those countries and years that have data on all four macroeconomic distortions.

Figure 3 shows the percent of countries that had severe macroeconomic distortions

[12] The definition of overvaluation is the same as in Easterly 2001, that is taking the deviation from purchasing power parity as calculated by Dollar 1992 for 1976-85, updating this using the formula (Domestic CPI/(Exchange rate*US CPI))

according to one or more of these four criteria over the structural adjustment period 1980-99. The first indication is that macroeconomic distortions did respond to structural adjustment lending, as the percent of countries with distortions declined significantly by 1999.

Figure 4 shows instead the percent of observations in which DISTORTION=1 at each successive level of cumulative adjustment lending in the pooled annual sample. Cumulative adjustment lending is defined as the number of IMF and World Bank adjustment loans a country has received since 1980 (none of the transition countries are included in this sample since their lending started more recently and since they lack data on real overvaluation). We see that the proportion of adjustment lending countries with macroeconomic distortions hovered around 50 percent regardless of the level of cumulative adjustment lending. A high level of repeated adjustment lending was not enough to get severe macro distortions under control.[13]

How do we resolve the apparent contradiction between Figures 4 and 5? There WAS macroeconomic adjustment in all developing countries from 1980-99, but it is not related to the number of adjustment loans each country received. Countries with ten adjustment loans adjusted no more and no less than countries that received little or no adjustment lending.

Next I turn to econometric estimation. To concentrate on the performance under repeated adjustment loans, I restrict the sample to countries with at least one adjustment loan (including transition countries) and as before I construct the cumulative number of adjustment loans series (AL1) as the number of adjustment loans the country has received from 1980 to the date in question. I also include an exogenous time trend in each equation to assess the degree to which policy improved regardless of the intensity of adjustment lending. Finally, I allow the

[13] I stop at 18 adjustment loans because higher levels of adjustment lending do not have a large enough sample to make the statistic meaningful. The sample size is above 20 up to 13 adjustment loans, then above 10 up to 18 adjustment loans, then falls below 10.

relationship between policy improvement and adjustment lending to be nonlinear. This allows two alternative outcomes in addition to a monotonic relationship between policy improvement and adjustment lending -- there could be either a threshold of adjustment lending necessary for policy improvement or a satiation point for adjustment lending beyond which policy fails to improve further. Finally, I also correct for serial correlation and for heteroskedasticity.

Table 5 shows the results of growth and policy indicators on number of adjustment loans, with linear, quadratic, and cubic functions of cumulative adjustment loans. I report the quadratic and cubic terms only when they are statistically significant. We see that the cubic polynomial fits the adjustment lending data well for the black market premium, inflation, and the real exchange rate. Figure 5 displays the estimated econometric relationship between these variables and cumulative adjustment loans. For all three variables, there is initial improvement in the policy distortion with the first few adjustment loans, then a period of no improvement or even backsliding with further adjustment loans, and then renewed improvement at a high level of cumulative adjustment loans. Since the turning point for the final improvement is around 23 adjustment loans, this is out of the sample range for all but Argentina, Cote d'Ivoire, and Ghana. The cumulative amount of adjustment is impressive for the real exchange rate, but much less so for the black market premium or the inflation rate.

The cumulative number of adjustment loans has a linear and statistically significant effect on the current account balance and fiscal balance. Receiving ten adjustment loans is associated with a 2.45 percentage point of GDP improvement in the current account balance and a 1.37 percentage point of GDP improvement in the fiscal balance. These improvements are in line with the original objectives of adjustment lending, although the degree of improvement seems rather modest. We do not see statistically significant improvements in the real interest rate or the

export to GDP ratio (measured at constant prices to remove exchange rate and export price effects).

Another interesting feature of these results is that the time trend shows exogenous policy improvement for several indicators. The black market premium, fiscal balance, inflation, and real interest rate all tend to improve over time for adjustment lending recipients independently of the intensity of adjustment lending across countries. This again helps explain the disparity between the pattern of universal macro adjustment in Figure 3 and the weak association between macroeconomic distortions and adjustment lending in Figure 4.

Returning to the theme of exogenous shocks that might be associated with adjustment lending and its outcomes, we do not see any association between cumulative adjustment lending and terms of trade trends. Nor is the exogenous time trend in terms of trade significant.

Finally, and most importantly, we do not see any association between cumulative adjustment lending and per capita growth. The coefficient is small, negative, and insignificant. Since this is a raw correlation, we cannot attribute causal significance to this result. I will examine causality more in the next section. There is a positive exogenous trend in growth rates over 1980-99.

Cross-section regressions and causality

Another way at getting at the degree of policy and growth improvement associated with repeated adjustment loans is to do cross-section regressions relating average policies and growth over the structural adjustment period to the number of cumulative adjustment loans a country has received. If the repetition of lending was causing a steady policy improvement, then we would expect to see average policies were better in countries that received more adjustment loans rather than less (controlling for how bad policies or growth were at the beginning of the adjustment

lending period). Performing cross-section regressions also allows us to finally address issues of causality econometrically by instrumenting for adjustment loans. Most of the instrumental variables proposed in the foreign aid and adjustment lending literature have cross-sectional rather than time series variance. I use instrumental variables techniques rather than corrections for sample selection, because I have a variable that varies continuously and because virtually every country eligible for an adjustment loan received at least one over 1980-99.

The cross-section regressions are run on these countries that received at least one adjustment loan, totaling 117 countries in all. None of the transition countries are included in these regressions because they lack data on some of the instruments or dependent variables, and in any case are inappropriate for comparison since they have been eligible for loans for a shorter period.

The problem of identification is addressed by using the "friends-of-donor" variables that have been used in the foreign aid literature as capturing political influences that affect whether a country receives bilateral foreign assistance (Boone 1995, Alesina and Dollar 2000, Burnside and Dollar 2000). The question of multilateral assistance is somewhat different, since we don't have X giving to Y because X and Y are allies, rather we have all X's lending to each Y through a multilateral institution. However, the strategic interests of powerful rich nations still plausibly affect the number of adjustment loans a country receives (in one of the more notorious cases, Mobutu's Zaire received 9 adjustment loans despite an abysmal policy record). I experiment with a variety of measures including the percent of times that a country voted with the US, UK, France, Germany, and Japan at the UN[14] and dummies for countries that were ever a colony of France and the UK. These have all been previously used in the aid literature (see Alesina and

[14] In parallel work, Barro and Lee 2002 also use UN voting patterns as an instrument for IMF lending.

Dollar 2000). I introduce a new measure of "friends of the donors": US military assistance to each country over 1980-99 as an indicator of strategic importance to the US. I include the log of population to measure a country's overall geostrategic importance. Finally, I include a dummy variable for Egypt. It is a special case as the recipient of massive US aid after the Camp David accords in 1977, which may have substituted for the role that adjustment lending would have played otherwise. I found only population size, the French colonial dummy, the US military assistance dummy, and the Egypt dummy to be significant. Kapur et al. 1997 describe American and French influences as being particularly salient in the World Bank (as well as the IMF, where a Frenchman was managing director for most of this period). Table 6 shows a parsimonious regression with these variables. I try two alternative definitions of the dependent variable: the number of adjustment loans from the IMF and World Bank over 1980-99 and the log of this number. Taking the log of the number of adjustment loans has the effect of reducing the sensitivity to extreme outliers, like Argentina with its 30 adjustment loans. The instruments are significant at the 5 percent level in either specification, except for the Egypt dummy that is significant at the 10 percent level. The variables measuring strategic importance don't have any obvious a priori claim to go into the policy and growth regressions directly, and so they seem good candidates for instruments. A possible exception is the French colony dummy, since many former French colonies belonged to the Franc zone. I will deal with this by controlling for a Franc zone dummy in the regressions for the black market premium, inflation, and for exchange rate overvaluation. The instruments don't have tremendous explanatory power, but they are likely adequate for my purposes, with an R-squared of .2.

The results of the cross-section regressions are shown in both ordinary least squares and two-stage least squares for comparison. The ordinary least squares results are weaker than the

patterns described above. The effect of adjustment lending on the black market premium and the current account deficit is marginally significant when I use the number of adjustment loans, but not when I use the log of the number. Adjustment lending has a counter-intuitive negative and significant effect on the export to GDP ratio. None of the other variables show a significant effect of adjustment lending in ordinary least squares. It could be these results mask an effect of adjustment lending on policies and growth, since there may be reverse causality from poor policy to adjustment lending.

The next two regressions use the strategic interest instruments for adjustment to attempt to remove this reverse causal effect. The instrumental variables estimator shows a stronger and statistically significant negative effect of adjustment lending on black market premiums. The coefficient on adjustment lending is much greater in absolute value under IV than under ordinary least squares, confirming the intuition that the OLS coefficient was biased because the positive feedback from a high black market premium to adjustment lending partially cancelled out the negative effect of adjustment lending on the black market premium. An analogous story holds for real exchange rate overvaluation – adjustment lending had an insignificant negative effect under OLS but a larger and significant negative effect under IV.

Unfortunately, this empirical strategy fails to uncover an effect of adjustment lending on the other policy variables in the study. Adjustment lending no longer has a significant effect on the current account balance under IV, unlike OLS. This could be because of weak instruments, as the magnitude of the coefficient increases somewhat under IV, but standard errors increase even more. However, adjustment lending has no significant effect on the fiscal balance, life expectancy, inflation, telephones per capita, or the real interest rate.

Adjustment lending still has a counter-intuitive negative and significant on export to

GDP ratios across countries, controlling for the initial export to GDP ratio. I tested whether this perverse effect could reflect the omission of a third variable that might have affected both export to GDP ratios and adjustment lending: terms of trade collapses. However, I did not find the percent change in terms of trade to be significant and the other coefficients and their significance was unchanged.

Another coefficient of interest in all the regressions is the coefficient on the initial policy level. This coefficient is well below one for all policy outcomes except life expectancy and telephones per capita. If we subtract the initial policy level from both sides of the equation, this suggests that the change in policy is a negative function of the initial level of the policy. In other words, there is strong mean reversion in the policy variables. This could help explain why the effect of adjustment lending is not generally significant even though the macroeconomic distortions improved over time (see Figure 3 again). Countries with bad policies in the early 1980s were reverting towards average policy performance over the 80s and 90s, but this improvement does not seem strongly related to the intensity of adjustment lending.

The effect of adjustment lending on growth under IV is positive but tiny in magnitude and not statistically significant, controlling for initial growth. This result holds when I introduce additional control variables for initial conditions, like initial income, schooling, and infrastructure (proxied by the log of telephones per worker). I don't want to add the usual contemporaneous policy variables that go into growth regressions, as I am interested in the reduced form effect of adjustment lending on growth -- which may be transmitted through improved policies. This result says that we fail to detect a positive growth effect of whatever policy changes are induced by adjustment lending. This is consistent with the mixed policy changes associated with adjustment lending in the previous paragraph and in the rest of the

paper.

Conclusions

The big stylized facts of adjustment lending suggest that structural adjustment did not succeed in adjusting macroeconomic policy and growth outcomes very much. Structural adjustment loans were repeated many times to the same country, which itself is suggestive of limited effect of the earlier adjustment loans. There were some successes, but also some big disasters. The accumulation of adjustment loans was associated with only limited improvement in some policy indicators – but not in others. The main robust finding is that real exchange rate overvaluation was corrected during structural adjustment lending, and there is some indication that the black market premium improved. The current account and fiscal balances show some improvement from one loan to the next, but the degree of improvement is modest and is not robust to the cross section regression method. The real interest rate fails to improve according to any of the indicators. Taken together, the prevalence of one or more extreme macroeconomic distortions did not diminish as adjustment lending accumulated, suggesting that those policies that improved were many times offset by other policies that worsened. Most importantly, there is no evidence in any of the statistical exercises that per capita growth improved with increased intensity of structural adjustment lending. These findings are robust to controlling for endogeneity of adjustment lending and initial policy distortions in the cross-section sample.

There are many possible caveats to the findings. Only in the last section do I attempt to address the causality problem, and the instruments there may well be imperfect. In the earlier sections, I provide econometric and other types of descriptive statistics in an attempt to place bounds on what the counterfactual would have to be to generate a positive impact for adjustment

lending. The emphasis on repetition of structural adjustment loans is a new contribution to the literature, but this focus may miss some cases of success that only took a small number of adjustment loans.

There are also caveats that go in the other direction. I have limited myself to easily quantifiable macroeconomic indicators. Structural adjustment lending also sought to privatize state enterprises, reform inefficient and loss-prone financial systems, remove the penalty imposed on agriculture, improve the efficiency of tax collection and public spending, reform and downsize the civil service, control corruption, and improve many other areas. If anything progress on these less quantifiable reforms has been slower than on the macroeconomic indicators, according to complaints in many World Bank reports.

The findings of this paper are reminiscent of results on foreign aid – that foreign aid was not very selective in rewarding good policies and did not on average increase growth (Boone 1995, World Bank 1998, and Burnside and Dollar 2000). The same seems to be true of adjustment lending. Putting external conditions on governments' behavior through structural adjustment loans has not proven to be very effective in achieving widespread policy improvements or in raising growth potential. If the original objective was “adjustment with growth”, there is not much evidence that structural adjustment lending generated either adjustment or growth.

Table 1: Successes and failures of repeated adjustment lending (all data refer to averages for period from first adjustment loan to 1999 for top 20 countries in adjustment loans)

	Adjustment loans 1980-99	Per capita growth rate	Current account balance/ GDP	Government balance/ GDP	Black market premium (%)	Inflation rate	Real overvaluation (+)/ undervaluation (-)	Real interest rate (%)
AFRICA (RANKED FROM WORST TO BEST GROWTH RATES)								
Niger	14	-2.3%	-7.6		2%	2%	19%	15%
Zambia	18	-2.1%	-12.3	-13.4	77%	58%	135%	-10%
Madagascar	17	-1.8%	-7.3	-3.5	21%	17%	-25%	9%
Togo	15	-1.6%	-6.3	-3.0	2%	5%	5%	10%
Cote d'Ivoire	26	-1.4%	-6.7	-1.3	2%	6%	62%	13%
Malawi	18	-0.2%	-11.1	-7.8	38%	23%	1%	3%
Mali	15	-0.1%	-9.9	-6.5	3%	4%		11%
Mauritania	16	0.1%	-9.4		85%	7%	94%	3%
Senegal	21	0.1%	-8.5	-4.5	2%	5%	20%	9%
Kenya	19	0.1%	-3.5	-4.5	15%	14%	9%	8%
Ghana	26	1.2%	-4.2	-1.0	36%	32%	-48%	-16%
Uganda	20	2.3%	-7.4	-3.1	96%	50%	-47%	-18%
OTHER DEVELOPING COUNTRIES (from worst to best growth rates)								
Bolivia	17	-0.4%	-6.8	-1.6	31%	91%	36%	-20%
Philippines	19	0.0%	-2.8	-2.0	6%	11%	-21%	6%
Jamaica	18	0.4%	-5.4	-12.6	20%	20%	-2%	7%
Mexico	20	0.4%	-1.9	-3.9	10%	41%	-36%	3%
Argentina	30	1.0%	-2.4	-1.8	23%	164%	11%	-5%
Morocco	22	1.1%	-3.3	-5.7	4%	6%	-4%	2%
Bangladesh	18	2.4%	-2.8	0.0	93%	6%	-41%	7%
Pakistan	20	2.7%	-3.4	-6.9	12%	8%	-48%	1%
min top 20	14	-2.3%	-12.3	-13.4	2%	2%	-48%	-20%
average top 20	19	0.1%	-6.1	-4.6	26%	24%	-3%	1%
max top 20	30	2.7%	-1.9	0.0	96%	164%	135%	15%
AVERAGE all developing countries	7	0.3%	-6.0	-4.6	32%	32%	1%	0%

Table 2: Terms of trade growth and per capita growth in intensive adjustment lending countries		
	Per capita growth rate	Terms of trade growth
AFRICA (RANKED FROM WORST TO BEST GROWTH RATES)		
Niger	-2.3%	-1.1%
Zambia	-2.1%	-2.6%
Madagascar	-1.8%	0.0%
Togo	-1.6%	0.1%
Cote d'Ivoire	-1.4%	-0.8%
Malawi	-0.2%	-0.8%
Mali	-0.1%	-0.6%
Mauritania	0.1%	1.9%
Senegal	0.1%	-0.1%
Kenya	0.1%	0.1%
Ghana	1.2%	-0.6%
Uganda	2.3%	-2.3%
OTHER DEVELOPING COUNTRIES (from worst to best growth rates)		
Bolivia	-0.4%	-1.7%
Philippines	0.0%	1.1%
Jamaica	0.4%	0.6%
Mexico	0.4%	-2.6%
Argentina	1.0%	0.4%
Morocco	1.1%	1.9%
Bangladesh	2.4%	1.6%
Pakistan	2.7%	-3.3%
min top 20	-2.3%	-3.3%
average top 20	0.1%	-0.5%
max top 20	2.7%	1.9%
AVERAGE all developing countries		
	0.3%	-0.5%

Table 3: IDA Countries, adjustment lending, and HIPC debt relief

	Total number of IDA countries	Number of countries that became HIPCs
High adjustment lending, 1980-99	18	17
Low adjustment lending, 1980-99	17	8

Note: IDA status is as of 1980. High adjustment lending means above median (6 adjustment loans).

Table 4: Successes and failures of repeated adjustment lending among transition countries (all data refer to averages for period from first adjustment loan to 1999 from top 10 in adjustment loans)

country	Adjustment loans 1980-99	Per capita growth rate	Current account balance/ GDP	Government balance/ GDP	Black market premium (%)	Inflation rate	Real interest rate (%)
Ukraine	10	-8.4%	-1.3		8%	215%	-23%
Russian Federation	13	-5.7%	1.6	-5.3		141%	28%
Kyrgyz Republic	10	-4.4%	-11.4	-6.1	0%	25%	18%
Kazakhstan	9	-3.1%	-3.4	-4.0	29%	117%	
Bulgaria	13	-2.2%	-1.8	-4.5	25%	124%	-24%
Romania	11	-1.2%	-2.6	1.6	194%	114%	
Hungary	14	1.0%	-3.1	-2.7	22%	16%	4%
Poland	9	3.4%	-2.5	-1.5	2%	52%	6%
Albania	8	4.4%	-4.6	-10.4	7%	40%	-26%
Georgia	7	6.4%	-10.1	-4.3	0%	37%	32%
min	7	-8.4%	-11.4	-10.4	0%	16%	-26%
median	10	-1.7%	-2.8	-4.3	8%	83%	5%
max	14	6.4%	1.6	1.6	194%	215%	32%

Table 5: Results from pooled least squares regressions of macroeconomic outcomes 1980-99 on cumulative adjustment loans

Dependent variable		C	AL1?	AL1?^2	AL1?^3	@YEAR	AR(1)	r2	obs
Log black market premium	coefficient	58.545	-0.015			-0.029	0.660	0.581	1010
	t-stat	4.312	-2.661			-4.293	5.989		
	coefficient	60.155	-0.047	0.002		-0.030	0.659	0.584	1010
	t-stat	4.134	-3.031	2.880		-4.113	5.969		
	coefficient	61.820	-0.087	0.0060	-0.00012	-0.031	0.657	0.585	1010
	t-stat	4.059	-3.251	2.925	-2.625	-4.038	5.965		
Current account balance to GDP	coefficient	551.409	0.245			-0.280	0.802	0.553	1450
	t-stat	1.384	2.222			-1.401	13.454		
Fiscal balance to GDP	coefficient	-423.798	0.137			0.210	0.727	0.569	874
	t-stat	-2.408	2.099			2.386	9.825		
Log CPI inflation	coefficient	42.256	-0.003			-0.021	0.754	0.630	1379
	t-stat	2.621	-0.760			-2.613	10.226		
	coefficient	46.384	-0.056	0.0047	-0.00011	-0.023	0.761	0.631	1379
	t-stat	2.396	-1.942	2.104	-2.157	-2.389	10.219		
Log real deviation from purchasing power parity	coefficient	-34.296	-0.021			0.017	0.904	0.818	1068
	t-stat	-1.094	-2.847			1.094	17.230		
	coefficient	-12.368	-0.054	0.002		0.006	0.906	0.820	1068
	t-stat	-0.489	-3.734	3.608		0.494	17.539		
	coefficient	-1.957	-0.090	0.0055	-0.00011	0.001	0.908	0.821	1068
	t-stat	-0.074	-3.633	3.001	-2.497	0.081	17.722		
Log real interest rate	coefficient	-15.809	0.005			0.008	0.520	0.331	1160
	t-stat	-3.316	1.910			3.322	3.314		
Export to GDP ratio (constant prices)	coefficient	-84.707	-0.0013			0.0416	0.984	0.952	1442
	t-stat	-1.386	-1.096			1.428	87.127		
Log terms of trade	coefficient	6.440	0.0018			-0.0033	0.754	0.641	1359
	t-stat	1.300	1.033			-1.308	27.283		
Log per capita growth	coefficient	-1.985	-0.0002			0.0010	0.318	0.123	1518
	t-stat	-2.404	-0.598			2.413	5.914		

Table 6: First-stage regression for cumulative adjustment loans

variable	Ordinary least squares, cumulative adjustment loans coefficient	t-stat	Ordinary least squares, log cumulative adjustment loans coefficient	t-stat
log population 1980	1.537	3.818	0.191	3.988
log US military assistance per capita	0.568	2.064	0.083	2.545
dummy for colony of France	4.062	2.808	0.526	3.062
dummy for Egypt	-10.182	-1.708	-1.186	-1.675
R-squared	0.185		0.206	
observations	98		98	

Table 7: Two-stage least squares regressions for macroeconomic policy variables as function of cumulative adjustment loans and initial policy variables

variable	Ordinary least squares, cumulative adjustment loans coefficient	t-stat	Ordinary least squares, log cumulative adjustment loans coefficien t	t-stat	Two-stage least squares, cumulative adjustment loans coefficien t	t-stat	Two-stage least squares, log cumulative adjustment loans coefficien t	t-stat
Log black market premium**								
Initial black market premium	0.349	8.631	0.344	8.473	0.406	3.795	0.384	3.574
cumulative adjustment loans	-0.008	-1.942	-0.051	-1.500	-0.025	-1.990	-0.199	-2.032
Observations	86		86		79		79	
current account balance/GDP								
Initial current account balance/GDP	0.466	10.523	0.457	10.206	0.811	2.837	0.804	2.722
cumulative adjustment loans	0.147	2.041	0.573	0.984	0.215	0.796	1.684	0.771
Observations	105		105		91		91	
exports/GDP*								
Initial exports/GDP	0.014	0.146	0.017	0.178	0.435	0.924	0.444	0.944
cumulative adjustment loans	-0.009	-2.718	-0.062	-2.452	-0.031	-2.479	-0.221	-2.368
Observations	95		95		82		82	
fiscal balance/GDP								
Initial fiscal balance/GDP	0.718	10.627	0.720	10.578	0.400	1.247	0.399	1.253
cumulative adjustment loans	0.124	1.645	0.831	1.409	0.244	0.827	1.988	0.868
Observations	74		74		67		67	
life expectancy 1997								
Initial life expectancy, 1980	0.934	24.118	0.931	23.925	1.003	8.579	1.009	8.435
cumulative adjustment loans	-0.078	-1.167	-0.685	-1.284	0.405	1.755	3.788	1.918
Observations	108		108		95		95	
log inflation rate**								
Initial logpi	0.219	5.924	0.218	5.863	0.507	3.132	0.505	3.123
cumulative adjustment loans	0.005	0.922	0.037	0.968	-0.009	-0.554	-0.072	-0.610
Observations	84		84		73		73	

Table 7 (continued): Two-stage least squares regressions for macroeconomic policy variables as function of cumulative adjustment loans and initial policy variables

2

variable	Ordinary least squares, cumulative adjustment loans coefficient	t-stat	Ordinary least squares, log cumulative adjustment loans coefficien t	t-stat	Two-stage least squares, cumulative adjustment loans coefficien t	t-stat	Two-stage least squares, log cumulative adjustment loans coefficien t	t-stat
log real exchange rate overvaluation								
Initial logrer	0.236	3.677	0.223	3.426	0.295	3.683	0.272	3.528
cumulative adjustment loans	-0.013	-1.870	-0.068	-1.065	-0.042	-2.260	-0.331	-1.984
Franc zone dummy	0.312	2.293	0.300	2.159	0.381	2.402	0.374	2.351
Observations	67		67		66		66	
log of telephones per capita								
Initial log of telephones per capita, 1980	0.972	22.466	0.971	22.278	1.303	7.083	1.269	8.218
cumulative adjustment loans	-0.014	-1.318	-0.113	-1.361	0.092	1.809	0.682	1.994
Observations	82		82		71		71	
Real interest rate								
Initial real interest rate	0.183	5.294	0.182	5.280	0.310	1.696	0.304	1.678
cumulative adjustment loans	0.001	0.488	0.007	0.354	0.013	1.597	0.100	1.670
Observations	84		84		71		71	
growth per capita								
Initial growth	0.105	5.834	0.103	5.770	-0.028	-0.141	-0.028	-0.144
cumulative adjustment loans	-0.0005	-1.349	-0.0050	-1.608	0.0004	0.365	0.0036	0.401
Observations	107		107		92		92	

Figure 1: Repetition rates of adjustment lending after given

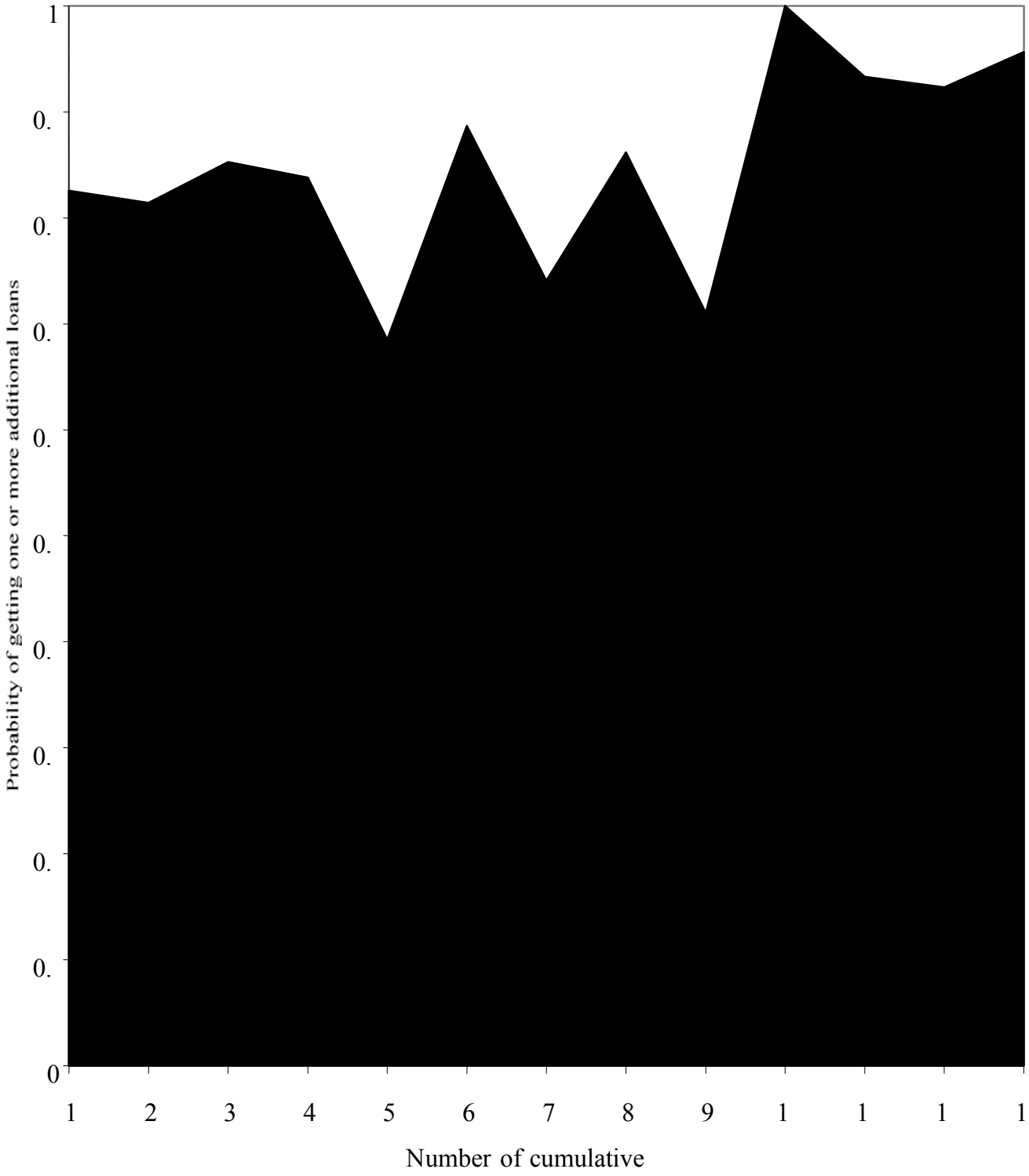


Figure 2: Growth trajectory in 1990s of intensive-AL transition cases

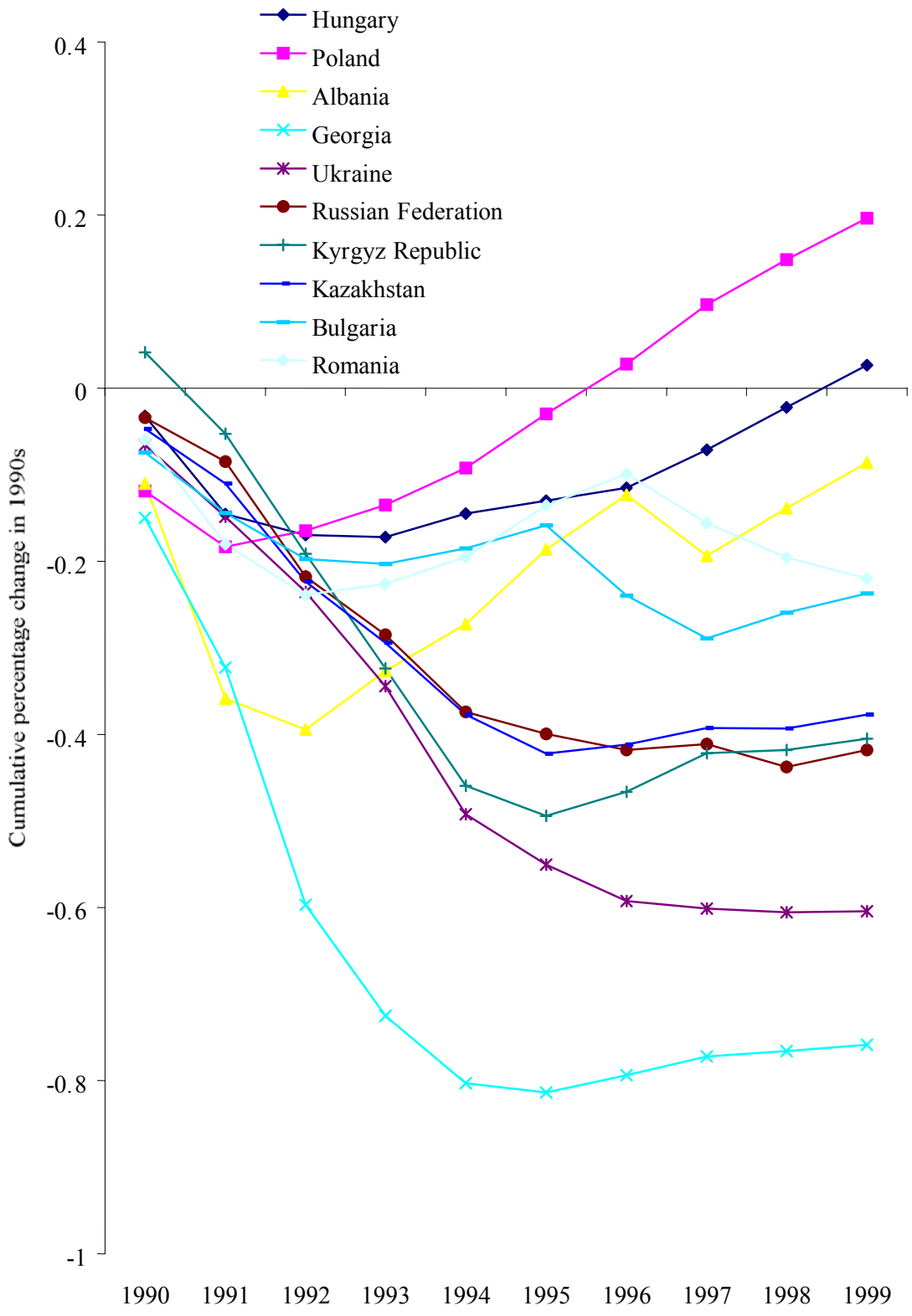


Figure 3: Fraction of developing countries with macroeconomic distortions

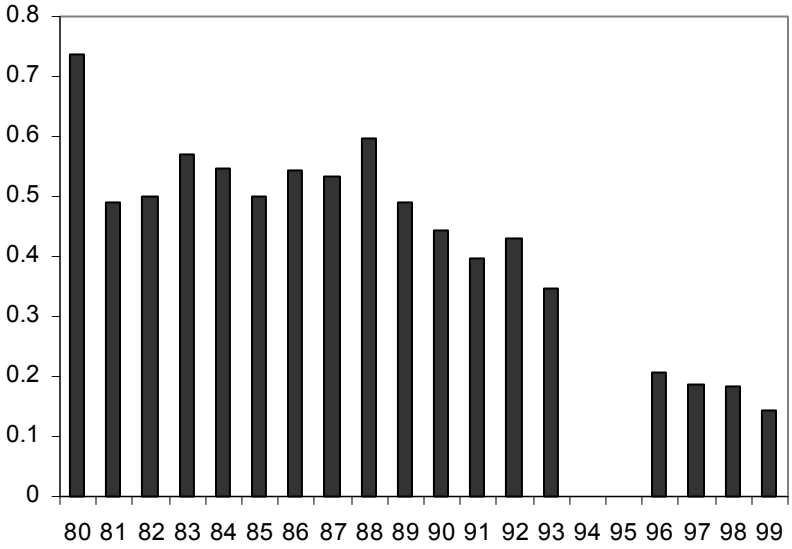


Figure 4: Fraction of countries with macroeconomic distortions by cumulative # of adjustment loans

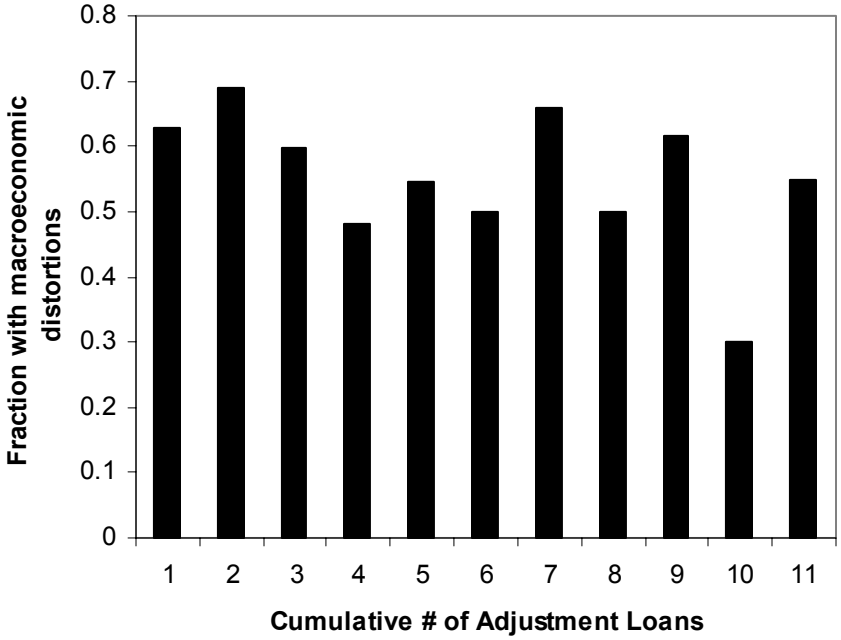
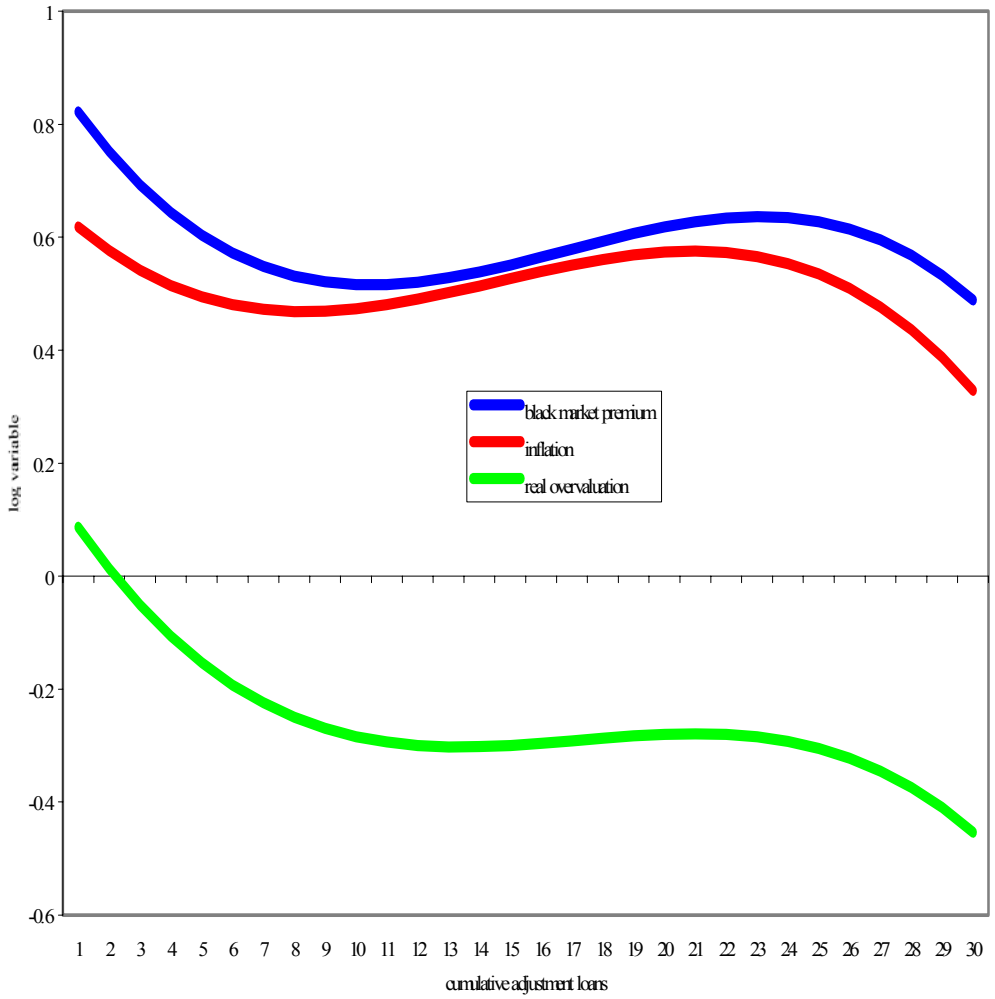


Figure 5: Adjustment policies and cumulative adjustment loans (predicted values from econometric equations)



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