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What did structural adjustment adjust? 2
 The association of policies and growth with repeated 3
 IMF and World Bank adjustment loans 4

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Abstract 9

Analysis of adjustment loans often overlooks their repetition to the same country. Repetition 10
 changes the nature of the selection problem. None of the top 20 recipients of repeated adjustment 11
 lending over 1980–99 were able to achieve reasonable growth and contain all policy distortions. 12
 About half of the adjustment loan recipients show severe macroeconomic distortions regardless of 13
 cumulative adjustment loans. Probit regressions for an extreme macroeconomic imbalance indicator 14
 and its components fail to show robust effects of adjustment lending or time spent under IMF 15
 programs. An instrumental variables regression for estimating the causal effect of repeated 16
 adjustment lending on policies fails to show any positive effect on policies or growth. 17

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 IMF 21

1. Introduction 22
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On February 5, 1980, World Bank President Robert McNamara sought and received 24
 approval from the World Bank Board to launch a new instrument: the structural adjustment 25

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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.¹ 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 standbys, 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.”² As the 1981 World Development Report said, successful adjustment implies “a minimum sacrifice of income growth.”³ 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 Fund and the Bank are responding to current difficulties.”⁴ 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.”⁵ 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.”⁶

Because 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 3 to 5 years which will require financial support.”⁷

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;

¹ Kapur et al. (1997), volume I, p. 509.

² World Bank (1980), pp. 67–68.

³ World Bank (1981a,b), p. 4.

⁴ World Bank and IMF “Adjustment and growth; how the Fund and Bank are responding to current difficulties.” 1983.

⁵ Clausen (1986).

⁶ Corbo et al. (1987).

⁷ Kapur et al. (1997), p. 510.

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.⁸

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 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 prerequisite 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 macroadjustment 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.

⁸ World Bank (1981a,b).

The vast literature on evaluating IMF and World Bank adjustment loans has made much of the selection bias problem.⁹ This has variously been addressed by using Heckman-type selection techniques, before and after analysis, or control group methodology. For example, in an 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; Barro 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 does not eliminate—the nature of the selection bias. To return to the medical analogy, if a patient is readmitted 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 multistage 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 did not 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.”

2. Repeated adjustment lending—the record 137

The first informative statistics 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

⁹ A partial listing is Barro and Lee, 2002, Conway, 1994, Corbo et al., 1987, Corbo and Fischer, 1995, Devarajan et al., 2001, Dicks-Mireaux 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).

t1.1	Table 1									
t1.2	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)									
t1.3		Adjustment loans 1980–99	Fraction of time under IMF program, 1980–99 (%)	Per capita growth rate (%)	Current account balance/GDP	Government balance/GDP	Black market premium (%)	Inflation rate (%)	Real overvaluation (+)/ undervaluation (–) (%)	Real interest rate (%)
t1.4	<i>Africa (ranked from worst to best growth rates)</i>									
t1.5	Niger	14	61.7	–2.30	–7.6		2	2	19	15
t1.6	Zambia	18	45.4	–2.10	–12.3	–13.4	77	58	135	–10
t1.7	Madagascar	17	68.8	–1.80	–7.3	–3.5	21	17	–25	9
t1.8	Togo	15	82.9	–1.60	–6.3	–3	2	5	5	10
t1.9	Cote d'Ivoire	26	75.4	–1.40	–6.7	–1.3	2	6	62	13
t1.10	Malawi	18	83.3	–0.20	–11.1	–7.8	38	23	1	3
t1.11	Mali	15	70.8	–0.10	–9.9	–6.5	3	4		11
t1.12	Mauritania	16	73.8	0.10	–9.4		85	7	94	3
t1.13	Senegal	21	83.8	0.10	–8.5	–4.5	2	5	20	9
t1.14	Kenya	19	72.9	0.10	–3.5	–4.5	15	14	9	8
t1.15	Ghana	26	61.3	1.20	–4.2	–1	36	32	–48	–16
t1.16	Uganda	20	80.8	2.30	–7.4	–3.1	96	50	–47	–18
t1.17										
t1.18	<i>Other developing countries (from worst to best growth rates)</i>									
t1.19	Bolivia	17	68.8	–0.40	–6.8	–1.6	31	91	36	–20
t1.20	Philippines	19	77.5	0.00	–2.8	–2	6	11	–21	6
t1.21	Jamaica	18	72.9	0.40	–5.4	–12.6	20	20	–2	7
t1.22	Mex	20	54.2	0.40	–1.9	–3.9	10	41	–36	3
t1.23	Argentina	30	69.2	1.00	–2.4	–1.8	23	164	11	–5
t1.24	Morocco	22	48.8	1.10	–3.3	–5.7	4	6	–4	2
t1.25	Bangladesh	18	48.3	2.40	–2.8	0	93	6	–41	7
t1.26	Pakistan	20	61.3	2.70	–3.4	–6.9	12	8	–48	1
t1.27	min top 20	14	45.4	–2.30	–12.3	–13.4	2	2	–48	–20
t1.28	max top 20	30	83.8	2.70	–1.9	0	96	164	135	15
t1.29	average top 20	19	68.1	0.10	–6.1	–4.6	26	24	–3	1
t1.30										
t1.31	AVERAGE (all developing countries)	7	29.2	0.30	–6.0	–4.6	32	32	1	0

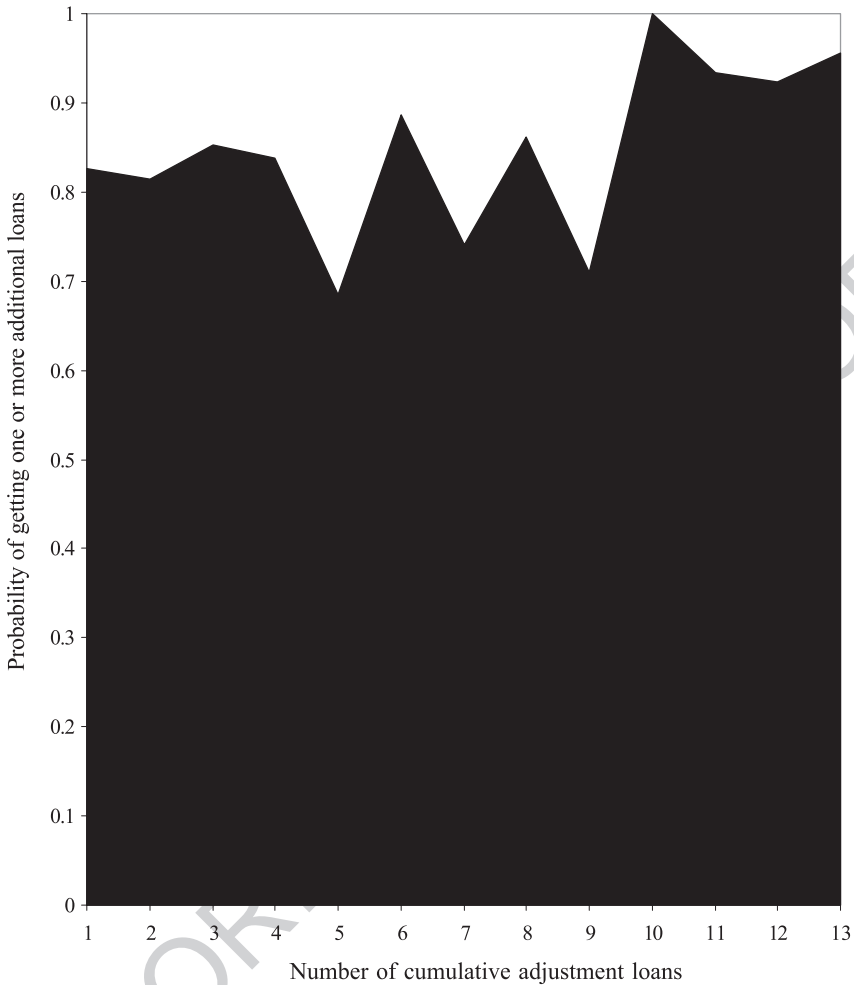


Fig. 1. Repetition rates of adjustment lending after given number of loans, 1980–99.

are extreme cases such as Argentina’s 30 adjustment loans from 1980 to 1999, and Ghana 140
 and Cote d’Ivoire’s with 26 each. There is also data on time spent under an IMF program 141
 during any particular period (similar data do not exist for the World Bank unfortunately). 142
 We have such extremes over 1980–99 as Senegal (84%), Malawi (83%), and Togo 143
 (83%).¹⁰ One might expect that it would take more than one loan to accomplish 144
 “adjustment”, but it’s hard to see why it would take such a large number. The data do not 145
 display any obvious satiation point with adjustment loans. Fig. 1 shows on the y-axis the 146
 fraction of countries that received one or more subsequent adjustment loans after having 147

¹⁰ Because 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%), Guyana (65%), and Haiti (64%). These are not exactly stellar performers.

already received the cumulative number of loans shown on the x -axis. The probability of a subsequent loan does not decrease with the number of loans already received.

This is in line with the findings of a recent Independent Evaluation Office (IEO) of the IMF report (2002) that, as of 2001, half of all outstanding IMF loans (both half of the number of outstanding loans and half of the dollar amount outstanding) were to “prolonged users” of IMF resources.¹¹ The IEO report suggests that the IMF board and management accepted longer use of IMF resources in the 1980s and 1990s because it was felt that borrowers’ problems required slow structural reforms that took many programs to work out, because aid donors cut back funds, and because other external lenders (and G-7 governments) pressured the IMF to stay involved in the borrower to give a “good housekeeping seal of approval”. A similar analysis would probably explain repeated World Bank structural adjustment loans. Hence, the emergence of prolonged use of IMF resources and the repeated World Bank adjustment loans in the 1980s and 1990s was partly as a result of external pressures. Nevertheless, it remains interesting for policy analysis to assess how effective was the repeated use of IMF and World Bank adjustment loans.

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 macrodistortions 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 lending and the rest of the developing country samples were not significantly different over the 1980s and 1990s (Table 2).

Looking at the minimums and maximums for each macrovariable, 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.

¹¹ This report defined a “prolonged user” as being under an IMF program for 7 years of any given 10-year period.

t2.1 Table 2

t2.2 Terms of trade growth and per capita growth in intensive adjustment lending countries

t2.3	Per capita growth rate %	Terms of trade growth %
t2.4	<i>Africa (ranked from worst to best growth rates)</i>	
t2.5	Niger	-2.3
t2.6	Zambia	-2.1
t2.7	Madagascar	-1.8
t2.8	Togo	-1.6
t2.9	Cote d'Ivoire	-1.4
t2.10	Malawi	-0.2
t2.11	Mali	-0.1
t2.12	Mauritania	0.1
t2.13	Senegal	0.1
t2.14	Kenya	0.1
t2.15	Ghana	1.2
t2.16	Uganda	2.3
t2.17	<i>Other developing countries (from worst to best growth rates)</i>	
t2.19	Bolivia	-0.4
t2.20	Philippines	0.0
t2.21	Jamaica	0.4
t2.22	Mexico	0.4
t2.23	Argentina	1.0
t2.24	Morocco	1.1
t2.25	Bangladesh	2.4
t2.26	Pakistan	2.7
t2.27	min top 20	-2.3
t2.28	average top 20	0.1
t2.29	max top 20	2.7
t2.30		
t2.31	AVERAGE (all developing countries)	0.3

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, eight 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 2001–02 suggests an even unhappier ending to Argentine structural adjustment.

Even in adjustment lending cases where all the macrodistortions 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% per capita growth per annum in the absence of its 20 adjustment loans, compared to its actual outcome of 0.4% 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% per year, which is the same for the developing country sample as a whole. Of course, there was

t3.1 Table 3
t3.2 IDA Countries, adjustment lending, and HIPC debt relief

t3.3		Total number of IDA countries	Number of countries that became HIPCs
t3.4	High adjustment lending, 1980–99	18	17
t3.5	Low adjustment lending, 1980–99	17	8

t3.6 Note: IDA status is as of 1980. High adjustment lending means above median (6 adjustment loans).

considerable variance around this average. The bad Zambia outcome could have had something to do with its 2.6% 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 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 statistics 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% per annum. Six of the

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t4.1 Table 4

t4.2 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)

t4.3	Country	Adjustment loans 1980–99	Per capita growth rate (%)	Current account balance/GDP	Government balance/GDP	Black market premium (%)	Inflation rate (%)	Real interest rate (%)
t4.4	Ukraine	10	-8.4	-1.3		8	215	-23
t4.5	Russian Federation	13	-5.7	1.6	-5.3		141	28
t4.6	Kyrgyz Republic	10	-4.4	-11.4	-6.1	0	25	18
t4.7	Kazakhstan	9	-3.1	-3.4	-4.0	29	117	
t4.8	Bulgaria	13	-2.2	-1.8	-4.5	25	124	-24
t4.9	Romania	11	-1.2	-2.6	1.6	194	114	
t4.10	Hungary	14	1.0	-3.1	-2.7	22	16	4
t4.11	Poland	9	3.4	-2.5	-1.5	2	52	6
t4.12	Albania	8	4.4	-4.6	-10.4	7	40	-26
t4.13	Georgia	7	6.4	-10.1	-4.3	0	37	32
t4.14	min	7	-8.4	-11.4	-10.4	0	16	-26
t4.15	median	10	-1.7	-2.8	-4.3	8	83	5
t4.16	max	14	6.4	1.6	1.6	194	215	32

countries had negative per capita growth and four had positive growth after the initiation of structural adjustment lending. 287 288

The growth results are very sensitive to when structural adjustment began in each country. We see in Fig. 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 four of the cases had a positive response. The median response remains negative. 289 290 291 292 293 294 295 296 297

The response of inflation to adjustment lending in transition countries was also disappointing. The median percentage inflation rate was 83%. Real interest rates were similarly distorted, either very negative, reflecting financial repression, or positive and very high, indicating noncredible 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 nontransition 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). 298 299 300 301 302 303 304 305 306

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% per capita growth and 215% annual inflation without 10 adjustment 307 308 309 310 311 312

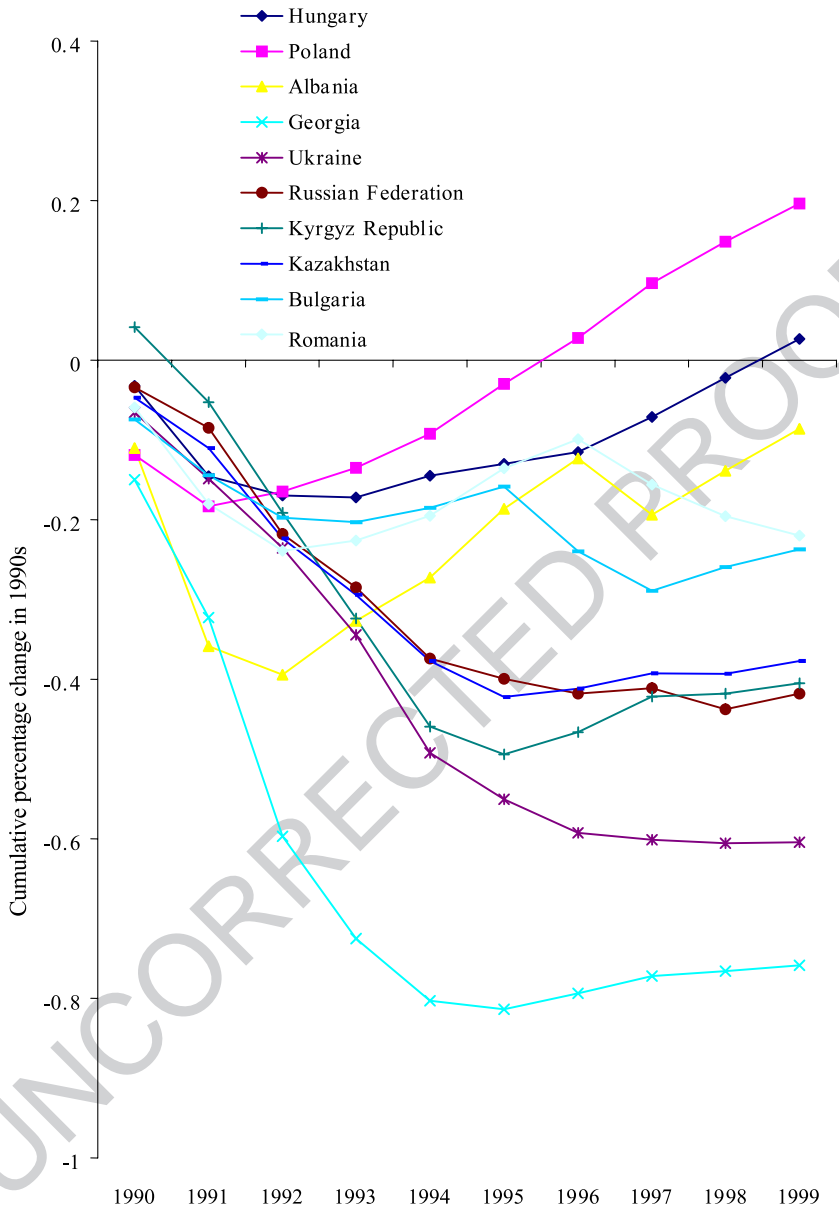


Fig. 2. Growth trajectory in 1990s of intensive-AL transition cases.

loans. The repetition of adjustment loans also suggests that lending continued although the track record on the initial adjustment loans was poor. 313 314

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 315 316

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.

3. Adjustment lending and overall macroeconomic distortions

In this section, I first show the descriptive evolution of bad policies and successive adjustment loans. Then, more formally, I pooled time series regressions of indicators of extreme policy imbalances 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 multistage treatment” story for adjustment lending, while a zero or negative association would suggest that the treatments were ineffective or were inappropriately repeated.

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%, (2) the black market premium is greater than 40%, (3) the real exchange rate is more than 40% overvalued,¹² and (4) the real interest rate is less than –5%. 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. 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% 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 is chosen from the literature on financial repression (below –5%). I restrict the sample to those countries and years that have data on all four macroeconomic distortions.

Fig. 3 shows the percent of countries that had severe macroeconomic distortions 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.

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)).

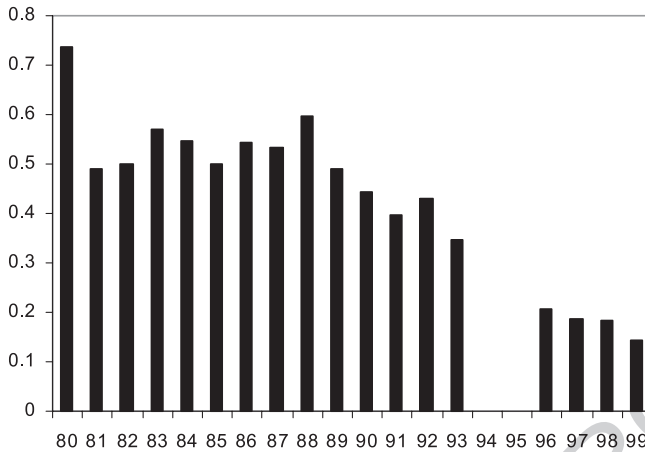


Fig. 3. Fraction of developing countries with macroeconomic distortions.

Fig. 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% regardless of the level of cumulative adjustment lending. A high level of repeated adjustment lending was not enough to get severe macrodistortions under control.¹³

How do we resolve the apparent contradiction between Figs. 3 and 4? 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.

I do not use the fiscal deficit or the current account deficit in this first indicator because it is difficult to say what level is “too high” without knowing more about each country’s circumstances. On the other hand, correction of fiscal and current account deficits are central to adjustment programs, so I add a rough indicator using (in addition to the four indicators above) a 5% of GDP benchmark for either excessive budget deficits (including grants) or excessive current account deficits. I restrict the sample again to countries that have data on all six indicators, which significantly reduces the sample. I also consider an alternative measure of adjustment lending—the cumulative time spent under an IMF program of any type. This is taken from precise dates from IMF data for each country as to

¹³ I stopped 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.

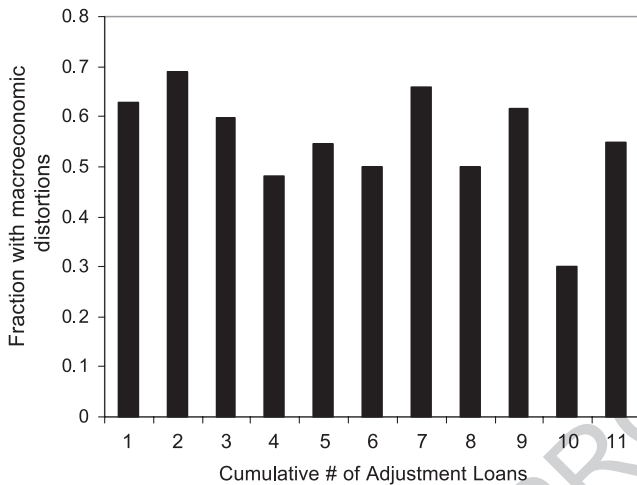


Fig. 4. Fraction of countries with macroeconomic distortions by cumulative no. of adjustment loans.

when an IMF program was in effect, which is then measured as a fraction of each year and cumulated since 1980. Similar data is not available from the World Bank.

Next, I turn to econometric estimation using these alternative indicators of macroeconomic distortions and adjustment lending. 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 as the number of adjustment loans the country has received from 1980 to the date in question. For the time under IMF agreement variable, I also limit the sample to nonzero observations. I also consider an exogenous time trend in each equation to assess the degree to which policy improved regardless of the intensity of adjustment lending. Finally, I consider whether the relationship between policy improvement and adjustment lending to be nonlinear.

Table 5 shows the results of probit regressions of the macroeconomic distortion dummy on cumulative adjustment loans in a pooled cross-section, time series sample. Quadratic terms for adjustment loans or time under IMF programs proved to be insignificant and are not shown. Using either definition of macroeconomic distortion and either indicator of adjustment lending, the regression generally finds a small but statistically significant reduction in the probability of macroeconomic distortions with each additional adjustment loan or each additional year under an IMF program. However, once a time trend is introduced, this effect vanishes. There is a time trend towards reduced probability of macroeconomic distortions that is unrelated to adjustment lending. An additional adjustment loan or an additional year under an IMF program does not reduce the probability of macroeconomic distortions once we control for this time trend. Hence, the message from the econometric estimation is the same as that from Figs. 3 and 4—countries have adjusted over time, but this is unrelated to the number of adjustment loans from the Bank and Fund, and unrelated to cumulative time spent under IMF programs.

t5.1 Table 5
 Probit pooled regression results on macroeconomic distortions and adjustment lending (clustered standard errors by country)

t5.3	Dependent variable	RHS variables ⇒	Cumulative no. of adjustment loans	Cumulative time spent in IMF programs	Time trend	No. of observations
t5.4	Dummy variable for macro distortions, four indicators	Marginal probability	−0.014			697
t5.5		Z-stat	−1.680			
t5.6		Marginal probability	0.002		−0.028	697
t5.7		Z-stat	0.200		−3.820	
t5.8		Marginal probability		−0.040		699
t5.9		Z-stat		−3.580		
t5.10		Marginal probability		−0.021	−0.018	699
t5.11		Z-stat		−1.310	−2.320	
t5.12	Dummy variable for macro distortions, six indicators	Marginal probability	−0.020			491
t5.13		Z-stat	−2.190			
t5.14		Marginal probability	−0.005		−0.027	491
t5.15		Z-stat	−0.520		−4.390	
t5.16		Marginal probability		−0.042		486
t5.17		Z-stat		−3.310		
t5.18		Marginal probability		−0.017	−0.023	486
t5.19		Z-stat		−1.130	−3.470	

t5.20 Marginal probabilities evaluated at mean of RHS variables.
 Dummy variable for four macro distortions=1 if inflation >40%, or black market premium >40%, or real overvaluation >40%, or real interest rate <−5%, 0 otherwise.
 Dummy variable for six macro distortions=1 if budget balance/GDP including grants <−5%, or current account balance <−5%, or inflation >40%, or black market premium >40%, or real overvaluation >40%, or real interest rate <−5%, 0 otherwise.

Another variant I consider is measuring time under IMF programs since 1970 instead of 1980 for the 1980–99 sample of macroeconomic distortions. The IMF was doing something similar to adjustment lending prior to 1980 and, hence, the absence of cumulative time under an IMF program in 1980 according to the measure above might be misleading. Precisely when to start measuring IMF program experience for the 1980–99 sample is unclear, but allowing for 10 years of prior experience seems like an upper bound. The results with cumulative time under IMF programs since 1970 are nearly identical to those shown in Table 5 with time since 1980, so this adjustment does not turn out to make much difference.

Table 6 presents the pooled probit results on each of the six components of the overall indicator of macroeconomic distortions. The alternative specifications use either number of cumulative adjustment loans or time under adjustment programs as an indicator of structural adjustment lending, and the results are shown with and without a time trend. The dependent variable is whether each indicator surpasses the “extreme imbalance” threshold

Notes to Table 6:

Marginal probabilities evaluated at mean of RHS variables.

Macro imbalance=1 for each indicator, respectively, if budget balance/GDP including grants <−5%, current account balance <−5%, inflation >40%, black market premium >40%, real overvaluation >40%, real interest rate <−5%, 0 otherwise.

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t6.1 Table 6
 Probit pooled regression results on individual indicators of macroeconomic distortions and adjustment lending
 (clustered standard errors by country)

t6.3	Dependent variable: dummy variable for extreme imbalance in:	Right-hand side variables→	Cumulative no. of adjustment loans	Cumulative time spent in IMF programs	Time trend	No. of observations
t6.4	Budget deficit/GDP	Marginal probability	-0.020			943
t6.5		Z-stat	-2.410			
t6.6		Marginal probability	-0.010		-0.016	943
t6.7		Z-stat	-1.080		-2.730	
t6.8		Marginal probability		-0.028		935
t6.9		Z-stat		-2.910		
t6.10		Marginal probability		-0.010	-0.017	935
t6.11		Z-stat		-0.870	-2.870	
t6.12	Current account deficit/GDP	Marginal probability	-0.003			1518
t6.13		Z-stat	-0.520			
t6.14		Marginal probability	-0.001		-0.004	1518
t6.15		Z-stat	-0.150		-0.830	
t6.16		Marginal probability		0.005		1518
t6.17		Z-stat		0.670		
t6.18		Marginal probability		0.013	-0.009	1518
t6.19		Z-stat		1.370	-2.010	
t6.20	Inflation	Marginal probability	-0.004			1441
t6.21		Z-stat	-0.980			
t6.22		Marginal probability	-0.003		-0.003	1441
t6.23		Z-stat	-0.520		-0.870	
t6.24		Marginal probability		-0.012		1442
t6.25		Z-stat		-2.250		
t6.26		Marginal probability		-0.012	0.0001076	1442
t6.27		Z-stat		-1.850	0.03	
t6.28	Black market premium	Marginal probability	-0.028			1173
t6.29		Z-stat	-3.890			
t6.30		Marginal probability	-0.015		-0.018	1173
t6.31		Z-stat	-1.860		-3.230	
t6.32		Marginal probability		-0.041		1181
t6.33		Z-stat		-5.300		
t6.34		Marginal probability		-0.026	-0.013	1181
t6.35		Z-stat		-2.700	-2.540	
t6.36	Real overvaluation	Marginal probability	-0.010			1100
t6.37		Z-stat	-1.470			
t6.38		Marginal probability	-0.005		-0.008	1100
t6.39		Z-stat	-0.620		-1.350	
t6.40		Marginal probability		-0.022		1100
t6.41		Z-stat		-2.440		
t6.42		Marginal probability		-0.014	-0.007	1100
t6.43		Z-stat		-1.080	-1.080	
t6.44	Real interest rate	Marginal probability	-0.012			1249
t6.45		Z-stat	-2.820			
t6.46		Marginal probability	-0.008		-0.008	1249
t6.47		Z-stat	-1.540		-2.270	
t6.48		Marginal probability		-0.025		1257
t6.49		Z-stat		-4.320		
t6.50		Marginal probability		-0.021	-0.004	1257
t6.51		Z-stat		-3.070	-1.120	

(such as inflation >40%). The effects of structural adjustment lending on the probability of each indicator being at extreme levels is again weak. None of the indicators show an effect of adjustment lending that is robust to choice of adjustment lending measure or the inclusion of a time trend. (Although the results are somewhat stronger with the time under IMF program measure, only extremely negative real interest rates and extreme black market premia show an effect controlling for a time trend.)

4. Checking for reverse causality

In this section, I summarize the results of robustness checks on the possibility of reverse causality from macroeconomic outcomes to adjustment loans. I do cross-section regressions for macroeconomic outcomes on initial macro outcomes and number of cumulative adjustment loans, 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; hence, the move to cross-section estimation. 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 because we do not 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 nine 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 U.S., UK, France, Germany, and Japan at the UN¹⁴ 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 Dollar, 2000). Political versus economic determinants have also been extensively covered in the literature on determinants of IMF lending (see, for example, Bird and Rowlands, 1991, 2002; Rowlands, 1995; Knight and Santaella, 1997; Thacker, 1999). I introduce a new measure of “friends of the donors”: U.S. military assistance to each country over 1980–99 as an indicator of strategic importance to the U.S. I include the log of population to measure a country’s overall geostrategic importance. I

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

include a dummy variable for Egypt and another one for oil countries. 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. Oil wealth also makes countries less in need of adjustment loans. I also include time spent under IMF programs during 1970–79 as an instrument; this variable is possibly not excludable from the outcome regressions, but it does not make much difference whether it is included as an instrument. I found only population size, the French colonial dummy, the oil dummy, and the Egypt dummy to be significant. American military assistance is significant in more parsimonious specifications, but not in the full one; in any case, all the variables add respectable explanatory power. *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). The variables measuring strategic importance do not have any obvious a priori claim to go into the policy and growth regressions directly, and so they seem good candidates for instruments.¹⁵ The instruments do not have tremendous explanatory power, with $R^2=0.27$. It is unfortunate that they are not stronger, but I have been unable to find instruments with more explanatory power.¹⁶

The macroeconomic outcome regressions use the strategic interest instruments for adjustment to attempt to remove the reverse causal effect that could be going from macrooutcomes to adjustment lending. I add the initial level of the policy indicator, and in some regressions other indicators for initial level of development that plausibly affect policy choices (as well as growth). Unfortunately, this empirical strategy fails to uncover an effect of adjustment lending on any of the policy variables in the study, or on per capita growth. This could be because of weak instruments, but, at this point, this study is unable to establish a causal link between adjustment lending and the macroeconomic outcomes, regardless of controlling for initial conditions.

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. 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 although the macroeconomic distortions improved over time (see *Fig. 4* 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 do not want to add the

¹⁵ A possible exception is the French colony dummy because 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.

¹⁶ Results not shown; the first- and second-stage regression results are available in the working paper version on <http://www.nyu.edu/fas/institute/dri/Easterly/>.

usual contemporaneous policy variables that go into growth regressions, as I am interested 496
 in the reduced form effect of adjustment lending on growth—which may be transmitted 497
 through improved policies. This result says that we fail to detect a positive growth effect of 498
 whatever policy changes are induced by adjustment lending. This is consistent with the 499
 mixed policy changes associated with adjustment lending in the previous paragraph and in 500
 the rest of the paper. I conclude that there is no reason to think that the patterns identified 501
 in the previous section reflected reverse causality from macroeconomic outcomes to 502
 adjustment lending. 503

5. Conclusions 504

The big stylized facts of adjustment lending suggest that structural adjustment did not 505
 succeed in adjusting macroeconomic policy and growth outcomes very much. Structural 506
 adjustment loans were repeated many times to the same country, which itself is suggestive 507
 of limited effect of the earlier adjustment loans. There were some successes, but also some 508
 big disasters. The principal finding is that, taken together or separately, the prevalence of 509
 one or more extreme macroeconomic distortions did not diminish as adjustment lending 510
 accumulated. There is no evidence in any of the statistical exercises that per capita growth 511
 improved with increased intensity of structural adjustment lending. These findings are 512
 robust to controlling for endogeneity of adjustment lending and initial policy distortions in 513
 the cross-section sample. 514

There are many possible caveats to the findings. Only in the last section do I attempt to 515
 address the causality problem, and the instruments there may well be imperfect. In the 516
 earlier sections, I provide econometric and other types of descriptive statistics in an 517
 attempt to place bounds on what the counterfactual would have to be to generate a positive 518
 impact for adjustment lending. The emphasis on repetition of structural adjustment loans is 519
 a new contribution to the literature, but this focus may miss some cases of success that 520
 only took a small number of adjustment loans. 521

There are also caveats that go in the other direction. I have limited myself to easily 522
 quantifiable macroeconomic indicators. Structural adjustment lending also sought to 523
 privatize state enterprises, reform inefficient and loss-prone financial systems, remove the 524
 penalty imposed on agriculture, improve the efficiency of tax collection and public 525
 spending, reform and downsize the civil service, control corruption, and improve many 526
 other areas. If anything, progress on these less-quantifiable reforms has been slower than 527
 on the macroeconomic indicators, according to complaints in many World Bank and IMF 528
 reports. 529

The findings of this paper are reminiscent of results on foreign aid—that foreign aid 530
 was not very selective in rewarding good policies and did not on average increase growth 531
 (Boone, 1995; World Bank, 1998; Burnside and Dollar, 2000). The same seems to be true 532
 of adjustment lending. Putting external conditions on governments' behavior through 533
 structural adjustment loans has not proven to be very effective in achieving widespread 534
 policy improvements or in raising growth potential. If the original objective was 535
 “adjustment with growth”, there is not much evidence that structural adjustment lending 536
 generated either adjustment or growth. 537

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