

DOES WORLD BANK EFFORT MATTER FOR SUCCESS OF ADJUSTMENT OPERATIONS? [^]

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The factors that influenced the success of World Bank adjustment operations throughout the history of the lending instrument are analyzed in this paper. A review of prior studies re-examined through the lens of a new comprehensive database of 643 World Bank operations designed to support specific reform programs since 1980 through fiscal year 2003 confirms the conclusion that reform success is intimately tied to political-economic conditions in borrowing countries. However, we also find that the effort of the World Bank substantively influences the likelihood of success of reforms supported by adjustment lending.

The approach the World Bank has taken with its clients has changed significantly over time, starting with large reconstruction projects in Western Europe to what is now largely a poverty-driven agenda in mid- and low-income countries. The initial loans made by the institution in the 1940s and 1950s concentrated on infrastructure projects. In the 1970s, IDA enabled the expansion of the Bank's activities to low-income countries and the scope of the Bank's work expanded beyond infrastructure to human capital. Subsequent years of experience indicated that such investments, without change to inadequate policies in place, were not as advantageous as they could have been in many client countries. An inadequate policy environment was recognized to be a major barrier to growth. As a result adjustment lending emerged in 1980 with the intent of positively influencing the policy reform process in developing economies. The promotion of pro-poor growth policies was added to the goals of adjustment lending in the 1990s. Given the nearly 25 year history of adjustment lending within the World Bank, an examination of the factors determining its success is highly appropriate and should shape the approach toward this instrument in the future.

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A large number of studies of policy-based lending have been conducted, and most take a case study approach. Ranis (1995) conclude that policy-based lending and the embedded conditionality process work well only when countries have decided on their own to reform and his findings seem to be confirmed by a number of other studies. A more systematic approach to the causes of success of adjustment operations is taken by Dollar and Svensson (2000), who analyze a database covering 272 operations and concluded that the success of reforms supported by the World Bank through its adjustment operations is strongly related to political-economic factors in the borrowing country. Dollar and Svensson go further, asserting that there is no relation between any of the donor-effort variables and the success of reforms. More specifically, having treated those variables under the World Bank's control as endogenous to the probability of success of adjustment operations,¹ Dollar and Svensson find no evidence that these variables affect the probability of success of an adjustment operation. The operationally significant conclusion they draw is that the donor community should be more selective in providing this kind of assistance, concentrating it in countries with good political-economic environments.

This is a daunting conclusion – clearly, countries with meager political-economic indicators often have an equal or greater need for reforms and financial support from the donor community – and begs the question: is there any evidence that the World Bank can significantly contribute to the success of reform programs in borrowing countries with meager political-economic environments?

This study re-examines the results of previous studies using a newly compiled database that covers all 643 adjustment operations designed to support specific reform programs both from IBRD and IDA since 1980 through fiscal year 2003. Further evidence for the conclusion of previous studies that domestic political-economic factors have a major impact on success of the supported reforms is provided by our analysis of the newest data available. However, political-economic variables are not the sole significant factors

¹ On the basis of the fact that an exogenous shock that reduces the probability of success is likely to influence World Bank's allocation of resources, Dollar and Svensson (2000) assume that these variables are endogenous. However, they did not test whether the data support their assumption.

determining the success of reform programs. Specifically, we find that some of the variables under the World Bank's control, such as preparation costs, are not endogenous (as prior papers have assumed) and are significant contributing factors to the success of adjustment operations. This finding suggests that the World Bank does have the ability to positively affect the outcome of supported reforms in client countries, including among them countries with meager political-economic environments. In short, World Bank inputs do matter.

The remainder of the paper is structured as follows. The next section discusses our choice of the dependent variable. Section II describes the data used in this study. Section III outlines the empirical specification and estimation technique and explains the choice of explanatory variables. Section IV provides the main empirical results on explaining success of reforms. Finally, Section V summarizes and interprets the main conclusions.

I. Measuring Reform Outcomes

Case studies constitute most of the literature analyzing the outcomes of policy-based lending, probably because the lack of consistent data inhibits systematic, quantitative studies. The latter analysis requires both a measure of success of policy reform (to be used as a dependent variable) and variables capturing aspects of country-specific political-economic factors and of donor input (to be used as explanatory variables). However, a large number of development institutions and aid agencies provide support for reforms in developing countries and they report varying amounts of information in their own format.

Given the constraint of inconsistent data, this study follows in the footsteps of Dollar and Svensson (2000) and focuses on World Bank adjustment operations. The Outcome Ratings of the independent Operation Evaluation Department (OED) of the World Bank are used as a consistent measure of reform success (i.e., as our dependent variable). OED's Outcome Rating measures the extent to which the World Bank project's major relevant objectives were achieved efficiently. Specifically, we use a zero-one dummy variable reflecting failure or success of each operation as determined by OED. There are

two major disadvantages to this approach – this measure is subjective, and it evaluates only the short-term success of the reform.

As argued by Dollar and Svensson (2000), there are at least two reasons why this measure is an acceptably objective measure of success. First, the OED evaluation assesses whether reform has taken place and the larger objective of reform has been met, not simply whether the loan conditionalities were met. Second, while there is clearly a subjective element to such an assessment, it remains a dispassionate subjectivity: OED's independence within the World Bank means that there is no necessary bias in the results.

Since OED's evaluation is carried out within six to eight months of the loan's disbursement and so can only be recognized as an indicator of short-term success, we considered a number of other options for our dependent variable. However, we struggled to identify a superior alternative. As the World Bank is in the privileged situation of a preferred creditor, the issue of repayment is not as relevant as it would be to a private lender. We also considered an index combining OED's Outcome Rating with an objective medium-term (3-5 years after the operation's completion) indicator of reform success, such as change in inflation or change in budget balance. However, the reform measures differ across countries and operations, and it proved impossible to find a single quantitative measure of success. Furthermore, these objective measures are also influenced by external shocks, and it is difficult to distinguish the effects of these shocks from policy effects. Instead, the stated objectives of each project could be measured against the actual progress achieved. However, the stated objectives also differ across countries and operations. There is no database where these objectives are stated and stored, and no way to efficiently compile data and measure any advancements achieved across the breadth of World Bank loans and credits.

Thus, we concluded that although OED's Outcome Rating is imperfect, it is preferable to alternative feasible measures of success of policy reforms. Moreover, it has the advantage that it can be linked to a wide range of internal data on World Bank operations, including the resources invested in project design and in supervision of implementation.

II. Data

Our dataset covers all 643 World Bank adjustment operations approved since 1980 through the fiscal year 2003 (FY03) ending on June 30, 2003.² To compile our dataset we made use of multiple sources within the World Bank and selected outside sources. Specifically, we made use of OED's database that tracks project outcome ratings for projects evaluated by OED and information covering costs associated with the preparation and supervision of operations, and the Adjustment Lending Conditionality and Implementation Database (ALCID), which is maintained by OPCCE and has recently been improved. ALCID now also tracks data on economic sector involvement and development objectives by condition. Another internal source of information is the World Development Indicators (WDI) database, which provides various macroeconomic indicators by year and country. We also made use of external sources such as the Europa Yearbook, which provides detailed information on country governments and their political arrangements. The ethnic fractionalization indicator was drawn from Beck, Levine and Loayza (1999), which updates the dataset originally compiled in 1964 and which is used by Easterly & Levine (1997). The political instability variable was taken from Banks (2001).

The breadth of operations included has its largest concentration in the Sub-Saharan Africa region with 35% of operations, followed by the Latin America and the Caribbean region with 23% and the Europe and Central Asia region with 22%. East Asia and Pacific as well as Middle East and North Africa regions received 7% of operations and South Asia 6%. The key descriptive statistics of the most important data series in our dataset are tabulated in Table 1.

² The number of observations for our regressions varied around 400 due to missing data for individual variables. The exact number of observations for each regression is reported with the regression results.

Table 1: Descriptive Statistics

Variable	Number of observations	Mean	Standard deviation	Minimum	1 st Quartile	Median	3 rd Quartile	Maximum
Ethnic fractionalization	546	0.406	0.330	0	0.056	0.357	0.728	0.930
Political instability	502	0.166	0.363	0	0	0	0	2
Democratically elected	641	0.633	0.482	0	0	1	1	1
Time in power	641	6.596	7.933	0.006	1.663	3.652	7.609	44.334
Initial GDP per capita (log)	574	7.709	0.897	5.804	6.955	7.655	8.455	9.512
Initial population (log)	597	16.440	1.464	11.198	15.466	16.278	17.415	20.820
Preparation costs (log)	640	12.567	0.821	8.337	12.228	12.685	13.116	14.424
Supervision costs (log)	639	11.890	1.051	5.935	11.364	12.063	12.612	13.998
Finance conditions (%)	633	0.183	0.257	0	0	0.091	0.235	1
Macroeconomic and fiscal conditions (%)	633	0.188	0.172	0	0.067	0.143	0.260	1
Sectoral conditions (%)	633	0.586	0.294	0	0.417	0.632	0.821	1
Trade conditions (%)	633	0.100	0.179	0	0	0	0.133	1
Number of legally-binding conditions	633	28.262	18.635	1	15	24	38	136
Loan size (log)	643	18.422	1.098	14.914	17.728	18.421	19.337	21.822
Expected duration of the adjustment operation	641	668.410	391.202	29	398	605	836	2777
IDA dummy variable	624	0.497	0.500	0	0	0	1	1
End of cold war dummy variable	643	0.656	0.475	0	0	1	1	1

The average number of legally-binding conditions³ associated with the loans and credits in our dataset is 28 (ranging from 1 and 136), coupled with an average 14 desired actions,⁴ amounting to an average total of 42 overall conditions per operation. Since the

³ Conditions listed in the legal agreement signed by the borrowing government and the World Bank. Types of conditions include prior actions (fulfilled before the time of approval of single-tranche operations) and legal conditions of effectiveness (prior or future actions linked to release of individual tranches, regular or floating, of multi-tranche operations). As defined, legally-binding conditions do not include desired actions or triggers.

⁴ Actions, excluding triggers used only in programmatic loans, listed in the loan documentation but not included in the legal agreement. Client government compliance with these actions is not tied to the release of funds.

early 1990s there has been a trend to reduce the number of conditions: the average number of legally-binding conditions in FY03 was 18, compared to the FY90 average of 34. At the same time, the share of single-tranche operations has increased significantly; in FY03, 27 of 45 total approved operations were single-tranche, as compared to FY90, when none of 31 approved operations was single-tranche. This trend is accompanied by a slight reduction in average preparation costs of adjustment operations: the respective amounts being US\$ 425,349 (FY02) and US\$ 431,995 (FY90). The bulk of conditions in the average operation were sectoral (58% of total legally-binding conditions), trailed by finance as well as macroeconomic and fiscal conditions, each at 18%.⁵

III. Specification

Using this new database, we seek to address the following questions:

1. Is the success of adjustment operations explained by political-economic variables?; and
2. Do variables under the World Bank's control have any effect on the probability of success of its adjustment operations?

Our model can be outlined as follows: Let y_i^* be the probability of success of adjustment operation i . This probability is not directly observable. Instead we observe a dummy variable that indicate the success, y_i . Our model can be expressed as

$$y_i^* = c_y + b_i' \mathbf{b}_y + d_i' \mathbf{d}_{yp} + \mathbf{e}_{yi},$$

where c_y is a scalar, b_i is a $m \times 1$ vector of variables reflecting country conditions at the time of approval of adjustment operation i , \mathbf{b}_y is a $m \times 1$ vector, d_i is a $l \times 1$ vector of

⁵ The definitions of each classification are available in Appendix B. Broadly, sectoral conditions are composed of those that have economic sector involvement in agriculture, fishing and forestry, information and communications, education, health and other social services, industry and trade, energy and mining, transportation, or water, sanitation and flood protection sector groups. Finance conditions are those classified with any sub-sectors under the finance sector group. Macroeconomic and fiscal conditions are those coded with an economic management theme or specific sub-themes under the public sector governance theme group. Trade policy conditions are those coded under a trade and integration theme.

variables under the World Bank's control associated with adjustment operation i , \mathbf{d}_{yp} is a $l \times 1$ vector, and \mathbf{e}_{yi} is a scalar mean-zero error term.

If the variables under the World Bank's control are independent of the error term, i.e., if all these variables are exogenous, then we can use probit to estimate the indicator of success. However, if they were correlated with the error term, i.e., they were endogenous, then we would have to find instruments and use a two-stage procedure to estimate the model. The endogeneity of the variables under the World Bank's control will play a key role in determining whether the variables under World Bank's control have any effect on the success rate of its adjustment operations. Dollar and Svensson (2000) make a key assumption that these variables are endogeneous and this assumption is behind their conclusion that there is no relationship between any of the donor-effort variables and the success of the operations. They based their assumption on the fact that an exogenous shock that reduces the probability of success is likely to influence World Bank's allocation of resources. However, they did not test whether the data support their assumption.

Our experience from working in a central advisory unit that is closely involved with country teams during the reviews of the majority of World Bank's adjustment operations, suggests that good preparatory work and close cooperation between World Bank teams and government officials result in better operations. This led us to a hypothesis that additional World Bank effort corresponds to a higher probability of success if all other factors remain equal. Hence, we were led to question the assumptions of Dollar and Svensson (2000) that result in the lack of evidence that variables under the World Bank's control have any real effect towards the success of an operation. We used the Smith-Blundell test of exogeneity to investigate whether these variables are endogeneous and our data support the hypothesis that the relevant variables under the World Bank's control are exogenous (for detailed discussion see next section).

Of the 643 total adjustment operations covered in the dataset, OED had rated 557 by April 2004; 421 operations (76%) were rated satisfactory in meeting their objectives, and 136 (24%) were rated unsatisfactory. Table 2 demonstrates that country-specific

characteristics seem to have a large effect on whether an operation will be successful (i.e., rated satisfactory). Successful operations are generally associated with democratically elected governments (82% of successful operations were in countries with democratically elected signing authority, compared to 18% of failures), and a newer government is more likely to complete the objectives of the reform program. Similarly, failed adjustment operations seem to be more heavily concentrated in politically unstable environments, where government crises occur more frequently. There is no noticeable difference in the average ethnolinguistic fractionalization between successful and failed operations. Since the political-economic literature suggests that this factor affects the probability of success of reforms, it will enter our specification in a non-linear fashion. However, the literature does not identify the functional form of the relationship, and following Dollar and Svensson (2000) we choose the quadratic form. In addition, operations in countries with larger populations and higher GDP per capita are on average more successful.

Table 2: Features of Successful & Unsuccessful Adjustment Operations

	Successful	Failed
Country Characteristics		
Democratically elected	82%	18%
Political instability (average number of government crises during reform period)	0.13	0.26
Ethnolinguistic fractionalization	0.40	0.44
Length of time the incumbent has been in power prior to reform	6.5	7.8
Average initial population	49,709,981	33,689,025
Average initial GDP per capita	\$3,416	\$2,473
Variables under the World Bank's control		
Preparation costs	\$370,539	\$346,699
Supervision costs	\$203,513	\$284,769
Number of conditions (legally -binding and desired actions)	42.23	47.10
Number of legally-binding conditions	28.94	29.02
Number of tranches (tied to disbursement of funds)	1.97	2.34
Loan size (million \$)	\$184	\$179
Sample information		
Number of operations	421	136

The average values of variables under the World Bank's control (e.g., number of legally-binding conditions and loan size) are remarkably similar for successful and failed

operations. However, successful operations get on average nearly 7% more preparation resources than failed operations, while failed operations consume on average about 40% more supervision resources than the successful ones.

IV. Results

In Table 3 we report a series of probit models that are designed to estimate the probability of success of adjustment loans and credits. In the first model we include only the political-economic variables. As expected, democratically elected government and political stability increase the probability of success; and the length of time that the incumbent has been in power has a negative effect on the probability of success implying that new governments are more likely to carry out successful reforms than long-term incumbents. We assume that ethnic fractionalization influences the probability of success non-linearly. The implication is that high degrees of fractionalization lower the probability of successful reform. However, ethnic homogeneity is also a bad sign for reforms. The turning points vary between 0.42 and 0.48. Using only the political-economic variables, the model correctly predicts about 73% of the observations.

In Model 2, we add some additional variables: regional dummy variables, initial GDP per capita, and initial population. The results indicate that policy-based lending tends to be less successful in low-income countries, in Latin America, and in Africa. None of the other regional dummy variables seems to have a relationship with the probability of success. The probability of success increases with population size. Model 3 reports the results after the elimination of the regional dummy variables except for Latin America and Africa. Once again we observe the significant influence of country-specific political-economic factors on the success of an adjustment operation. Model 3 correctly predicts almost 76% of the observations.

Table 3: Probit Regressions

<i>Dependent variable: OED's Outcome Rating</i>							
Regression No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of observations	424	408	408	401	401	388	404
Constant	0.357 (2.10)	-0.294 (-0.20)	-0.324 (-0.23)	0.591 (0.28)	0.953 (0.52)	2.876 (1.29)	2.566 (1.93)
Ethnic fractionalization	2.591 (2.83)	2.652 (2.60)	2.599 (2.62)	2.606 (2.43)	2.633 (2.50)	2.804 (2.56)	2.813 (2.70)
Ethnic fractionalization (squared)	-3.078 (-2.93)	-2.775 (-2.26)	-2.729 (-2.29)	-2.752 (-2.13)	-2.821 (-2.27)	-3.037 (-2.35)	-3.144 (-2.57)
Political instability	-0.811 (-3.82)	-0.939 (-3.81)	-0.939 (-3.88)	-1.105 (-4.16)	-1.083 (-4.13)	-1.082 (-3.88)	-1.173 (-4.48)
Democratically elected	0.469 (3.19)	0.561 (3.34)	0.555 (3.37)	0.547 (2.95)	0.546 (3.06)	0.312 (1.54)	0.298 (1.50)
Time in power	-0.006 (-0.74)	-0.007 (-0.68)	-0.007 (-0.79)	-0.013 (-1.33)	-0.013 (-1.41)	-0.018 (-1.71)	-0.020 (-2.07)
Sub-Saharan Africa		-0.428 (-1.13)	-0.488 (-1.81)	-0.015 (-0.05)			
Latin America & Caribbean		-0.427 (-1.10)	-0.534 (-2.39)	-0.389 (-1.53)	-0.408 (-1.68)	-0.204 (-0.80)	-0.230 (-0.96)
East Asia		0.065 (0.17)					
Europe & Central Asia		0.170 (0.39)					
Middle East and North Africa		0.093 (0.21)					
Initial GDP per capita (log)		0.060 (0.42)	0.090 (0.74)	0.221 (1.43)	0.168 (1.36)	0.035 (0.20)	
Initial population (log)		0.020 (0.32)	0.014 (0.23)	0.079 (0.75)	0.025 (0.43)	-0.020 (-0.31)	
Preparation costs (log)				0.447 (4.10)	0.432 (4.18)	0.440 (4.16)	0.451 (4.40)
Supervision costs (log)				-0.580 (-4.46)	-0.620 (-5.41)	-0.642 (-5.33)	-0.619 (-5.39)
Finance conditions (%)				0.176 (0.31)			
Macroeconomic and fiscal conditions (%)				-1.036 (-1.58)	-1.346 (-2.72)	-1.470 (-2.92)	-1.438 (-2.94)
Sectoral conditions (%)				0.325 (0.54)			
Trade conditions (%)				0.105 (0.24)			
Number of legally-binding conditions				0.006 (1.31)	0.006 (1.18)	0.003 (0.70)	
Loan size (log)				-0.101 (-0.68)			
Expected duration of the adjustment operation				-1.01 x 10 ⁻⁴ (-0.48)			
IDA dummy variable						-0.188 (-0.71)	-0.217 (-1.22)
End of cold war dummy variable						0.557 (2.96)	0.595 (3.54)
Predicted ability	0.731	0.757	0.757	0.766	0.768	0.791	0.782
Likelihood Ratio Index	0.061	0.081	0.081	0.185	0.182	0.196	0.203

In Model 4, we introduce variables that are under the direct influence of the World Bank. Specifically, we add the following explanatory variables under the World Bank's control to the specification: preparation and supervision costs, number of legally-binding conditions, size of loan, expected duration of adjustment operation, and shares of conditions related to financial policy, to macroeconomic and fiscal policy, to sectoral policy, and to trade policy.⁶ We recognize that there is a potential endogeneity issue with these variables and we later test their exogeneity.

Before moving on to the testing of the exogeneity of the variables under the World Bank's control, we use the simple correlation and the partial correlation in the probit regression to eliminate the variables that seem to have no relationship with the probability of success: regional dummy variable for Africa, size of loan, expected duration of adjustment operation, and share of conditions related to financial policy, to sectoral policy, and to trade policy. The eliminated variables will be used as instruments for the test of endogeneity of the variables under the World Bank's control. The resulting Model 5 shows the probit estimation results after the removal of the aforementioned variables. Of the remaining variables under the World Bank's control, preparation costs positively influence the probability of success, supervision costs and the share of macroeconomic and fiscal conditions are negatively correlated with the probability of success, and the effect of the number of legally-binding conditions is statistically insignificant. Model 5 correctly predicts almost 77% of the observations.

The results of Model 5 seem to suggest that some of the variables under the World Bank's control have significant influence on the probability of success of the adjustment operations. In order to verify that our model is correctly specified, we have to address the potential endogeneity of some of the explanatory variables under the World Bank's control. Smith and Blundell (1986) devise a simple exogeneity test for models with

⁶ The definitions of each classification are available in Appendix B. Broadly, financial policy conditions are those classified with any sub-sectors under the finance sector group. Macroeconomic and fiscal conditions are those coded with an economic management theme or specific sub-themes under the public sector governance theme group. Sectoral policy conditions are composed of those that have economic sector involvement in agriculture, fishing and forestry, information and communications, education, health and other social services, industry and trade, energy and mining, transportation, or water, sanitation and flood protection sector groups. Trade policy conditions are those coded under a trade and integration theme.

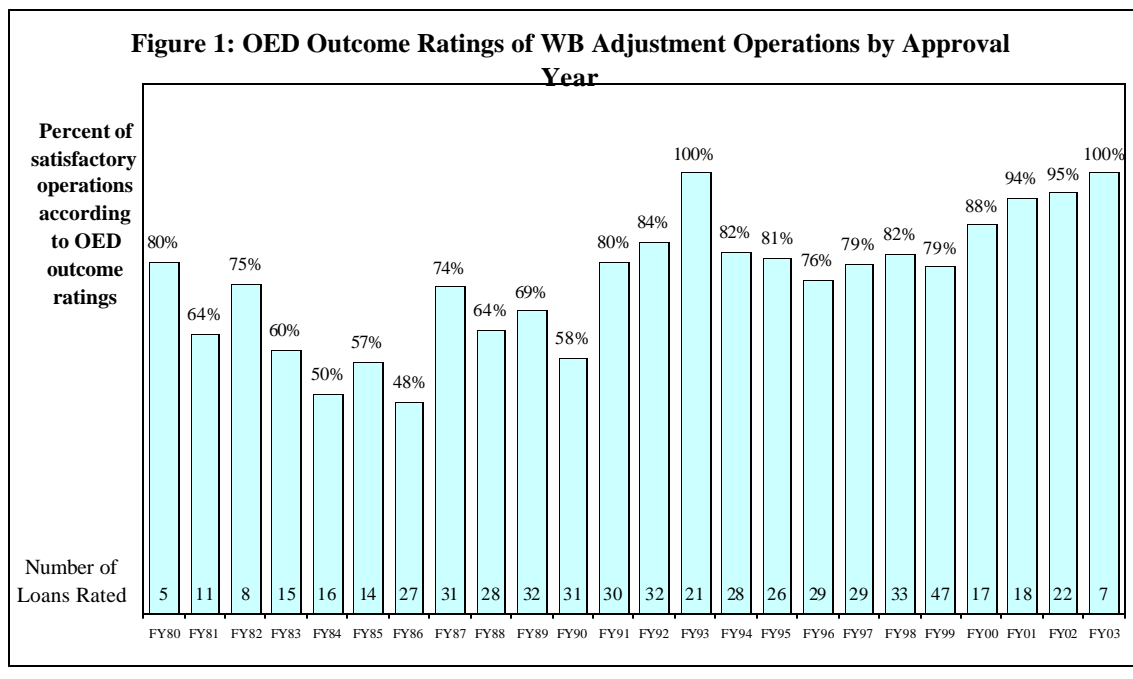
limited dependent variables. Under the null hypothesis of the test, the model (in this case Model 5) is appropriately specified with all explanatory variables as exogenous. Under the alternative hypothesis, the suspected endogenous variables (in this case, preparation costs, supervision costs, the number of legally-binding conditions, and the share of macroeconomic and fiscal conditions) are expressed as a linear combination of a set of instruments. The residuals from the first-stage regression are then included as additional explanatory variables in the model and, under the null hypothesis, they should have no explanatory power.

We use share of conditions related to financial policy, to sectoral policy, and to trade policy, size of loan, expected duration of adjustment operation, and regional dummy variables for Africa, East Asia, Europe and Central Asia, and Middle East and North Africa as instruments in the first-stage. To be valid instruments, they should be correlated with the suspected endogenous variables (preparation costs, supervision costs, the number of legally-binding conditions, and the share of macroeconomic and fiscal conditions) and uncorrelated with the dependent variable (OED's Outcome Rating). Consistent with this requirement, we do not find evidence that these instruments are correlated with the probability of the success of the reform – when included in Model 5, the instrumental variable remains statistically insignificant, while the coefficients of the suspected exogenous variables remain largely unchanged.

The Smith-Blundell test statistic for exogeneity is 1.278. This Chi-squared statistic with four degrees of freedom is not significant at any conventional level (P-value of 0.865), so we cannot reject the null hypothesis on the basis of this test. In addition, we tested different subsets of the suspected endogenous variables and different subsets of the instruments used with different specifications of the model, and we could not reject the null hypothesis for any of our specifications. Thus, there is no evidence that the suspected variables are endogenous to the probability of success, and in the rest of the paper we assume that preparation costs, supervision costs, the number of legally-binding conditions, and the share of macroeconomic and fiscal conditions are exogenous.

A possible explanation of exogeneity of preparation and supervision costs is that these costs are likely to be budgeted in advance and exogenous shocks do not have influence over the allocation of World Bank's resources. Moreover, the share of macroeconomic and fiscal conditions is likely to depend on the nature of the policy problems in the borrowing country and the government's desire to attack particular problems; and the number of legally-binding conditions is dependent on the scope of the operation and on the comfort of the World Bank with the implementation capacities of the borrowing government.

The end of the cold war had major implications for the operations of the World Bank.⁷ As illustrated in Figure 1 the average quality of adjustment lending operations as measured by OED's Outcome Ratings improved significantly after FY90. Therefore, we wanted to test whether there was a structural change in the quality of adjustment lending after the end of the cold war or this improved quality is a result of other factors.



⁷ A number of countries from the former communist block became members of the World Bank and all these countries experienced a period of large structural changes, which accompanied their political and economic transformation. The World Bank played a critical role in supporting these changes. Furthermore, the political pressure on the lending process weakened after the break-down of the Soviet Union.

In order to be able to test the effect of the end of the cold war we introduced a dummy variable with values equal to 1 for operations approved in FY91 or later and 0 if otherwise. The inclusion of this dummy variable also enabled us to use the information related to the cold war era operations for the estimation of the model rather than simply using only post-cold war data.

In addition, we introduced a dummy variable for agreement type, i.e., indicating whether the operation originates from IBRD or IDA, in order to account for differences between the probability of success between mid- and low- income countries. Model 6 reports the results after the introduction of these dummy variables.

In Model 7, we drop several statistically insignificant variables from Model 6: initial GDP per capita, initial population, and the number of legally-binding conditions. As expected, the effect of the end of the cold war on the probability of success of adjustment operations turns out to be significantly positive, whereas operations in the low-income countries tend to have lower probability of success, but this relationship is not significant. Model 7 correctly predicts more than 78% of the observations.

V. Conclusions

The relationship between the included political-economic variables and the probability of success of the reforms is stable throughout the analysis – democratically elected government and political stability increase the probability of success, the length of time that the incumbent has been in power has a negative effect on the probability of success, and both low and high degrees of ethnic fractionalization lower the probability of successful reform. These results confirm the findings of previous studies: there are institutional, economic, and political factors that affect the probability of success. The analysis also implies that policy-based lending tends to be less successful in Latin American countries and in the low-income countries but the statistical relationship is not significant.

The major conclusion of our analysis is, however, that in addition to political-economic variables there are variables under the World Bank's control that are significantly related

to the probability of the success of adjustment operations. This implies that the World Bank is able to influence the probability of success of its policy-based lending operations not only by exercising heightened selectivity, but also through the design of an operation (e.g., appropriate use of conditionality), and appropriate level of resources for preparation and supervision.

Our analysis shows that preparation costs are significantly related to the probability of success: more resources devoted to the preparation of an operation are associated with a higher probability of success. Higher preparation costs mean more time devoted to dialogue with the borrowing government and non-governmental organizations ensuring better understanding of the country needs and country ownership as well as more careful design of the operations. Country ownership and better design in turn increase the probability of success. However, further studies should investigate which components of the preparation effort are the most important for the success of an operation.

Supervision costs are another variable under the World Bank's control with significant relation to the probability of success: more resources devoted to supervision of the implementation of an operation are associated with a lower probability of success. This does not, however, mean that by decreasing the resources devoted to supervision the World Bank can increase the probability of success, but rather that devoting more resources to the supervision of operations likely to fail does not help to achieve better results. The negative relationship between supervision costs and the probability of success implied by the data is probably the result of having more supervision resources assigned to risky operations in the past, and since these resources did not increase the probability of success, high supervision costs were associated with failed projects. In order to improve the likelihood of success, resources should be directed towards the preparation and design of operations.

The share of macroeconomic and fiscal conditions is determined by the focus of the operation, which is determined by the nature of the policy problems in the borrowing country and the government's desire to attack particular problems. Therefore, the operational implication of the negative relationship between this variable and the

probability of success is that operations focusing mainly on macroeconomic and fiscal policy issues should be prepared more carefully.

According to our analysis, the number of legally-binding conditions is not significant in determining the probability of success of the adjustment operations. In other words, we did not find any evidence that attaching more conditions to an adjustment operation would have any effect on the likelihood of success of the reform program. However, our analysis does not account for other important factors. In particular, as other internal studies have shown, the number of legally-binding conditions is an important factor influencing the borrowing countries' non-financial costs associated with dealing with the World Bank.

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Appendix A – Definition and Source of Variables

Variable	Definition and source
Expected duration of the adjustment operation	Expected duration of the adjustment operation from the approval date to the original closing date in days) [Source: OED, World Bank]
Democratically elected	Binary variable taking the value 1 if the Chief Executive was put in power by a democratic election prior to the reform, 0 otherwise [Source: Europa Yearbook (various years)]
Political instability	Average number of governmental crises during the implementation of the operation [Source: Banks (1994)]
Time in power	Number of years Chief Executive has been in power [Source: Europa Yearbook (various years)]
Initial population (log)	Initial population (log) [Source: WDI]
Initial GDP per capita (log)	Initial GDP per capita - log (US\$ current, PPP) [Source: WDI]
Loan size	World Bank loan amount in US\$ millions [Source: OED, World Bank]
Loan size (log)	Logarithm of World Bank loan amount in US\$ [Source: OED, World Bank]
IDA dummy variable	Binary variable taking the value 1 if, if Agreement Type is IDA, 0 if otherwise
End of cold war dummy variable	Binary variable taking the value 1 if the operation was approved after the beginning of fiscal year 1991, i.e., June 30, 1990, 0 if otherwise
Sub-Saharan Africa	Binary variable taking the value 1 for countries in Sub-Saharan Africa; 0 if otherwise
Latin America & Caribbean	Binary variable taking the value 1 for countries in Latin America and Caribbean; 0 if otherwise
East Asia	Binary variable taking the value 1 for countries in East Asia; 0 if otherwise
Europe & Central Asia	Binary variable taking the value 1 for countries in Europe and Central Asia; 0 if otherwise
Middle East and North Africa	Binary variable taking the value 1 for countries in Middle East and North Africa; 0 if otherwise
South Asia	Binary variable taking the value 1 for countries in South Asia; 0 if otherwise
Preparation costs	Preparation costs of the adjustment operation in US\$ [Source: BW, World Bank]
Preparation costs (log)	Logarithm of preparation costs of the adjustment operation in US\$ [Source: BW, World Bank]
Supervision costs	Supervision costs of the adjustment operation in US\$ [Source: BW, World Bank]
Supervision costs (log)	Logarithm of supervision costs of the adjustment operation in US\$ [Source: BW, World Bank]
Overall number of conditions	Overall number of conditions [Source: ALCID, World Bank]
Number of legally-binding conditions	Number of legally-binding conditions [Source: ALCID, World Bank]
Ethno-linguistic fractionalization	Index of ethnolinguistic fractionalization. Measures the probability that two randomly selected people in a country belong to different ethnolinguistic groups [Source: Easterly & Levine (1997) and Beck, Levine and Loayza (1997)]
Finance conditions	Proportions of conditions related to financial policy out of total conditions [Source: ALCID, World Bank]
Macroeconomic and fiscal conditions	Proportions of conditions related to macroeconomic and fiscal policy out of total conditions [Source: ALCID, World Bank]

Sectoral conditions	Proportions of conditions related to sectoral policy out of total conditions [Source: ALCID, World Bank]
Trade conditions	Proportions of conditions related to trade policy out of total conditions [Source: ALCID, World Bank]
OED's Outcome Rating	OED evaluation on adjustment operations – binary variable taking the value 1 if the operation is rated moderately satisfactory or better; 0 if otherwise. OED bases its ratings of operation outcomes on assessments of whether the reform design was appropriate in terms of reducing poverty and fostering growth in the private sector, and to what extent stated policy goals have been met [Source: OED, World Bank]
Number of legally-binding conditions per tranche	Number of legally-binding conditions divided by the number of tranches [Source: ALCID and BW, World Bank]

Appendix B – Classification of Conditions

Starting in fiscal year 2002 a new two-dimensional measurement and reporting system of World Bank activities was instituted to more accurately reflect the Bank's operational activities. For our purposes we include an analysis based on sectoral and thematic involvement of our adjustment operations. Sector classifications used in the Bank are based on the UN's classification of economic activities with slight changes made to allow our system to better mirror the Bank's complex range of involvement. Themes were mainly developed to observe the development goals behind our involvement, and are most often used to track progress towards the Millennium Development Goals. We chose to group the conditions into areas (due to the classification to themes and sectors, not necessarily mutually exclusive) we were most interested in, namely: finance, macroeconomic and fiscal, sectoral, and trade. The areas were grouped as follows:

Finance: Banking sub-sector; Capital Markets sub-sector; Housing Finance and real estate markets sub-sector; Non-compulsory health finance sub-sector; Non-compulsory pensions, insurance and contractual savings sub-sector; Micro- and SME finance sub-sector; Payment systems, securities clearance and settlement sub-sector; and General Finance sub-sector.

Macroeconomic and Fiscal: Analysis of economic growth sub-theme; Debt Management and fiscal sustainability sub-theme; Economic statistics, modeling and forecasting sub-theme; Macroeconomic management sub-theme; Other economic management sub-theme; Public expenditure, financial management and procurement sub-theme; and Other accountability/ anti-corruption sub-theme.

Sectoral: Agriculture, Fishing and Forestry Sector Group; Information and Communications Sector Group; Education Sector Group; Health and Other Social Services Sector Group; Industry and Trade Sector Group; Energy and Mining Sector Group; Transportation Sector Group; and Water, Sanitation and Flood Protection Sector Group.

Trade: Export development and competitiveness sub-theme; International financial architecture sub-theme; Regional integration sub-theme; Technology diffusion sub-theme; Trade facilitation and market access sub-theme; and Other trade and integration sub-theme.