World Bank Structural Adjustment Programs and their Impact on Economic Growth: A

Selection Corrected Analysis

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Introduction[1]

The purpose of this article is to examine the determinants of World Bank decisions to enter into Structural Adjustment Programs (SAAs)[2] and the subsequent impact of such lending practices on the recipient countries economic growth. There is considerable discussion in the International Political Economy and development literature as to the consequences of SAAs (Adepoju 1993; Berry 1996; Cagaty 1994; Chipeta 1993; Commonwealth Secretariat 1989; Cornelius and Weder 1996; Dorosh et al. 1996; Frasusum and Sahn 1996; Handa and King 1997; Harrigan and Mosley 1991; Kane 1993; Krueger et al. 1989; Krueger and Ruttan 1989a; Krueger and Ruttan 1989b; Mosley, Harrigan, and Toye 1991; Sadasivam 1997; Sahn 1996; Sahn 1996a; Sklånes 1993; Sowa 1993; Stryker and Tuluy 1989; Sukhamte 1989). However, there are a number of methodological limitations that permeate this literature. We argue that these limitations affect the confidence students of comparative and international politics may place in their conclusions.

The first shortcoming of the literature relates to the case study method, which does not permit general inferences. This method, which sometimes amounts to a "before and after" analysis of the impact of a loan on the economic development of a single country, tends to exaggerate the connection between SAAs and macroeconomic indicators (Harrigan and Mosley 1991). These studies do have considerable value because they put in context the individual country's situation and provide suggestions for appropriate testable indicators as markers of development. However, the case study is an inappropriate method to ascribe

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[1] We would like to thank, David Cingranelli, Dave Clark, Mark S. Hurwitz, Claude E. Welch and James Raymond Vreeland for their helpful comments, suggestions, and advice on various aspects of this project.
[2] While the World Bank introduced Sectoral Adjustment Loans in 1984 as the mechanism for structural adjustment, they are essentially the same as SAAs (Harrigan and Mosley 1991, 31). Therefore, for the purpose of this article we will refer to those as structural adjustment programs.

positive or negative economic outcomes to the presence of SAAs without some kind of counterfactual analysis.

The second category contains studies that use an appropriate method to study the effect of SAAs, but they are not without their own shortcomings. The 'with and without' approach constitutes a counterfactual analysis and it considerably improves our ability to test the impact of SAAs on economic growth. Nevertheless, its limitation stems from its inability to account for selection biases. Therefore, in the spirit of cumulative and integrative research (Most and Starr 1989) this study will attempt to improve our understanding of SAAs on economic growth by accounting for possible case selection, especially in relation to the seminal study written by Harrigan and Mosley (1991).

In this article, we attempt to correct for those methodological deficiencies by using different statistical methods to account for endogenous relationships between the decision to enter into a program and a recipient's economic growth. The "bias" to which we refer in our study corresponds to the potential misestimate of the effect of treatment (World Bank selection of loan recipients) on the outcome (economic growth). We expand on those research weaknesses in the next section. We reach the general conclusion that World Bank lending practices have very little impact of recipient countries' economic growth. The section that follows introduces how we can methodologically redress the situation. Our methodological challenge is put to empirical test in the penultimate section and we conclude in the final section of the paper.

1. A Methodological Note: Inconclusive Answers and Biased Questions

One of the most prevalent problems facing a political scientist when constructing a research design is the issue of selection bias (Achen 1986; Geddes 1990; Harrigan and

Mosley 1991; King, Keohane, and Verba 1994; Przeworski and Teune 1970; Przeworski and Vreeland 2000, Clark, Duchesne and Reed 2006). The two most important types of bias relevant to this study are 1) selection on the independent variable and 2) selection on the dependent variable.

Studies, which select on the independent variable, will not have a problem of "causal inference" because they have not limited the range of possible outcomes of the dependent variable (King, Keohane, and Verba 1994, 137). However, selection on the independent variable does limit the generality of any conclusions.

In regards to the selection on the independent variable, Harrigan and Mosley (1991, 64-65) note two insufficient methods to assess the role of structural adjustment programs. The first method called "the planned target" method compares what was expected to happen during the period under study and what actually happened (Harrigan and Mosley 1991, 64-65). They note that this method, often used by World Bank officials, suffers from a number of limitations. They contend that World Bank targets are "optimistic guesses…and cannot predict exogenous events bearing on the economic outcomes" (1991, 65). Thus, if a country under-performs economically this may be erroneously attributed to a fault in the design of the programme or in its implementation. In fact, an under-performing economy may have nothing to do with the design of the programme or its implementation; it may be that the indicators examined do not reflect the effects of the programme but instead some exogenous factor (Harrigan and Mosley 1991, 65). We are in unison with Harrigan and Mosley on this issue and our study constitutes an attempt to correct this unfortunate situation.

The second method termed "before versus after" examines a country at time t and then examines the same country at time t + 1 (Adejopu 1993; Cagaty 1994; Commonwealth

Secretariat 1989; Dennis 1992; Handa and King 1997; Sadavisam 1997). If the situation has improved or worsened in comparison to time t – 1 then one may conclude (incorrectly) that the change in situation is simply due to the disbursement of, in this case, SAAs (Mosley, Harrigan, and Toye 1991, 190). However, this is an inappropriate conclusion because there may well be a myriad of other variables that effect this change. Mosley, Harrigan and Toye note that this is a particularly serious problem: "if one attempts to compare the periods immediately before and after the major wave of programme lending [SAAs] in the early in 1980s, which featured two major oil crises, a serious draught in Sub-Saharan Africa, a world-wide depression and wild fluctuations in interest rates". (1991, 190)

Indeed, the "before versus after method" tends to exacerbate any positive or negative consequences attributed to adjustment (Mosley, Harrigan, and Toye 1991; Sahn 1996). There are some positive aspects to using such case studies. They help put the economic situation of the countries receiving SAAs in their accurate context, they provide detailed useful information, and they provide the empirical material to generate hypotheses and draw conclusions in regards to the attribution of structural adjustment programs. However, in order to draw general conclusions, one needs to conduct not only a comparative test but also one that controls for counterfactuals.

There are also serious policy implications that arise from definitive statements on the basis of a single case study. These statements, when disseminated widely, may encourage countries' governments which fund the World Bank and the institution itself to re-evaluate their support for SAAs because of the Loans perceived harmful effects. Yet, such a re-evaluation would not stem from an empirical method, which controlled for the effects of non-random selection bias or the effects of the 1980s global recession, but rather an inappropriate method from which commentators drew unfounded definitive conclusions.

Although some case studies may point to some negative impacts of SAAs, without an appropriate method, the student of SAAs cannot simply assume that it is necessarily the case.

Studies that select on the dependent variable occur when a researcher fails to let the dependent variable fluctuate (King, Keohane, and Verba 1994, 129). Selecting on the dependent variables introduces research biases. More commonly, a researcher will allow some variation in the dependent variable. This allows for examination of the dependent variable but it limits the full range of its variation (King, Keohane, and Verba 1994, 130). The results of this bias are twofold. In quantitative research, "numerical estimates of causal effects will be closer to zero than they really are" (King, Keohane, and Verba 1994, 130), while in qualitative research, "the true causal effect is larger than the qualitative researcher is led to believe" (King, Keohane, and Verba 1994, 130).

For instance, as suggested by Geddes (1990, 138), selecting cases on a regional basis (Sahn 1996) "amounts, in effect to selection on the dependent variable". Yet, this is precisely what Sahn examines. This method introduces biases and exaggerates the causal inferences that one may, in this case, apply to the effects of structural adjustment programs.

Harrigan and Mosley (1991) and Mosley, Harrigan, and Toye (1991) suggest that an appropriate way to examine the effects of Structural Adjustment Programs (SAAs) is through a "with and without method". This method compares what actually happened with what is believed would have happened in the absence of a "programme loan" (SAA) (Mosley, Harrigan, and Toye 1991, 190). They believe that it is the only method that "affords any hope of separating out the influence of programme loans from that of extraneous variables" (Mosley, Harrigan, and Toye 1991, 190). While this method introduces a very valuable and useful framework to assess the impact of SAAs, the method

does not account for "non-random selection bias" (Przeworski and Vreeland 2000). The inability of the framework presented by Harrigan and Mosley (1991) and Mosley, Harrigan, and Toye (1991) to account for this possible selection bias limits the confidence we may place on the study's findings concerning the effect of SAAs on economic growth. The limitation of this otherwise excellent study is that it fails to account for why certain countries received SAAs and why others, i.e. their counterfactual examples, did not. In addition, finding an adequate control group is a monumental task.

In comparison, Przeworski and Vreeland (2000), and Vreeland (2004) use a similar, although considerably more sophisticated and appropriate analysis, to examine the effect of IMF Loans on economic growth and account for any possible case selection bias.[3] They note that their general procedure involves estimating a separate growth model for, "countries observed under and those not under the programs, with instruments for the effects of selection" (Przeworski and Vreeland 2000, 397). Their model, based on Heckman's (1976, 1978, 1979, 1988, 1990) pioneer work, involves essentially a two-step process. Initially, the model compares the residuals between countries that did and those that did not receive structural adjustment programs. The model then filters those cases that have residuals which correlate with each other and leaves those countries that have independent residuals, which in effect produces a random sample. This method then allows us to examine the impact of World Bank SAPs on economic growth, building upon the work of Harrigan and Mosley (1991) by controlling for issues of selection[4].

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[3] Dreher (2006) suggests another method to account for selections biases. He resorts to pooled time-series with instrumental variables to account for such biases. He also notes that when the selection variable is dichotomous, as in our specific case, the Heckman approach is the most appropriate method (775). This is the route that we follow in this study.

[4] For a sceptical view of this method of analysis, see Cornia (1987).

2. Research Problem

In this article, we follow in Przeworski and Vreeland (2000) footsteps, and use a variety of different estimation techniques which control for issues of selection in order to assess the impact of World Bank SAPs on economic growth. While Harrigan and Mosley (1991, 69) suggest that their results "cannot be explained by non-randomness of (Structural Adjustment Agreement) SAA selection"; their approach unlike Przeworski and Vreeland (2000) cannot account for whether certain countries chose to become recipients of SAAs while similar countries, i.e. their counterfactual pairs, did not.

In their regression analysis, Harrigan and Mosley found that the combined impact of finance and policy reform in compliance with the World Bank's demands had "overall [a] weak positive effect" on economic growth (1991, 83). However, the model appears to be sensitive to the incorporation of time lags into the equation. For example during the period 1980-1986, recipient countries' economies grew more slowly than their Non SAA counterparts (Harrigan and Mosley 1991, 73). In comparison, the period 1982-1986, reversed these signs and Non SAA countries' economies grew more slowly than their SAA counterparts (Harrigan and Mosley 1991, 74). This effect, however, was statistically insignificant in most cases (Harrigan and Mosley 1991, 90). Thus, the incorporation of a two-year lag (Harrigan and Mosley 1991, 74) produces the effect noted above. Harrigan and Mosley (1991, 73-74) suggest, and we agree, that a time lag allows the effects of the SAA to work through a country's economy.

Harrigan and Mosley (1991, 90) note that compliance with Bank policy was the main reason for GDP growth, but they also indicate, as did Cornia, Jolly and Stewart (1987) previously, that SAAs had a negative impact on investment. Their approach splits the countries under examination into Low Slippage and Normal Countries. Low Slippage

countries are those that implemented a majority of the SAA requirements. In comparison, Normal Countries implemented less than a majority of their SAA requirements. In our analysis, we do not split the sample into those categories because it censors cases where countries did not receive an SAP.[5] This would amount to making an a priori judgement on the impact of SAPs on economic growth, thus selecting on the dependent variable. That is to say, it is impossible to examine whether the level of compliance with World Bank stipulations affected economic growth in the absence of counterfactual cases. Instead, the use of the two stage models that account for issues of selection better enables us to test the effects of SAPs on economic growth on a larger range of countries that could, in theory, need a World Bank loan.

The relationship between the receipt of SAAs and economic growth has long been debated. Berry (1996) asserts that SAAs had a negative impact on income equality. He adds that they need up to fifteen years to recover[6]. In addition, Cornelius and Weder (1996), in their examination of the impact of SAAs on the newly independent Baltic States like Latvia, Lithuania, and Estonia, found that the gap between incomes of rich and poor widened significantly as a result of structural adjustment. The impact of foreign aid on savings and investments is also controversial. On one hand, some have suggested that foreign aid have a positive impact on savings, leading to an increase in government spending with a subsequent impact increasing economic growth (Heller 1975; Pillali 1982). Those who argue that foreign aid also increases investment also support this view (Massell et al. 1972; Chaudhuri 1978; Levy 1987, 1988). On the other hand, other scholars reply that there exists a negative impact of SAAs upon savings, decreasing a country's net savings rate (Griffin 1970; Griffin and

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[5] We do however account for SAA implementation in the second stage of our treatment effect analysis.

Enos 1970; Weisskopf 1972). Finally, other studies found no significant relationship in either direction between foreign aid and savings (Mosley 1987; Boone 1996). Despite the lack of consensus among these studies, the World Bank continues its policy of SAAs to promote growth. The Bank's intent for this cash transfer is to facilitate imports that would increase economic growth and from the World Bank's perspective lead to development (Mosley, Harrigan, and Toye 1991, 27).

In the face of so many contradictory results, we, as a community of interested scholars and practitioners, still lack a full understanding of the impact of the Bank structural adjustment loans. We hope and believe that we can shed some better lights on this essential phenomenon.

3. Research Design and Results

RESEARCH DESIGN

This study uses a cross-national, annual time-series dataset comprised of 131 developing countries, with a population of at least 500,000 in 1981, which were in existence for the entire period under examination. Thus we exclude OECD nations, and countries that became independent during this period. Our rational is to provide the best case scenario for defenders of the Fund who argue that the benefits of structural adjustment are cumulative and long term. We take them at their word and use two different approaches to measuring structural adjustment implementation. The first is a running count of the time countries have spent under structural adjustment for the entire period. The second is a dichotomous

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[6] To our knowledge limited data availability prevent direct testing of Berry's (1996) remarks in this study. Nevertheless, they provide us with a possible guide as to how long we should expect any consequences of SAAs to last.

indicators of whether a country was under a World Bank SAA or not each year. Both are explained in more detail below. The data spans the time period from 1981 to 2007. To be sure, our models examining the impact of World Bank SAPs on economic growth are limited to 2000 due to data availability constraints. During the 1981-2007 period, the World Bank negotiated a total of 485 SAPs to (390 over the 1981-2000 period) to countries in our sample. The unit of analysis is the country year. We use a two-stage analysis. In the first stage we control for the underlying issues why countries enter into these programs. We do this because these the factors that make countries more likely to enter into these programs may also be associated with different levels of economic growth. For example, we know that poor countries, those in economic trouble with low rates of economic growth, and few foreign currency reserves tend to be those that enter into these programs (Vreeland 2003). These countries are also particularly tough cases in which to promote economic growth. Thus one needs to account for these issues to see whether the Bank is having a positive impact on economic growth even in such difficult cases. At the second economic growth stage we investigate whether being under World Bank SAPs has a subsequent impact on economic growth in loan recipient countries. We summarise the variables used in both equations in Tables 1 and 2. We also describe in more detail our key dependent and independent variables.

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Variables

Dependent Variable

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Stage 1) Entering into a World Bank Structural Adjustment Agreement

Entering into an World Bank SAP is a dependent variable in the first stage of the analysis and an independent variable in the second stage. It is a dichotomous measure that indicates whether a country received a World Bank SAP or not in a particular year. It is

coded "1" in the year(s) an agreement was made and "0" for all other years. The measure comes from Abouharb and Cingranelli (2007).

Stage 2) Economic Growth

Our measure of economic growth comes from World Bank World Development Indicators (WDI). It is the annual percentage change in economic growth. We log this measure to limit the impact of outlying cases on our analysis.

Key Independent Variables

Implementation of a World Bank Structural Adjustment Program

Variant 1) Running Number of Years Under a World Bank SAP

The measure of implementation of a World Bank SAP, an independent variable in the second stage, was generated by the authors (it is also the dependent variable in the first stage equations in some of our models). The first variant we discuss is a running count of the number of years under a World Bank SAP. Proponents of structural adjustment argue that these programs enact the necessary reforms to generate high-quality economic growth. If this is true then those countries that have restructured their economies the most should have fared the best. Their economies will have removed more of the barriers to economic growth than those that restructured little. From this perspective the approach taken is a conservative one that provides a best-case scenario for defenders of these programs, especially since many of the neoliberal defenders of structural adjustment argue that the first few years a country undertakes these programs will necessitate difficult choices which mean things will be tough for a while (Rogoff 2003). However, after this period of adjustment the economy will benefit and economic growth will be generated. The expectation is that the greater the periods of

time these countries have been liberalizing their economies the more beneficial will be the outcome of structural adjustment.

Since most adjustment packages last for three years and research has determined that on average it takes eighteen months for implementation to affect the economy, the results of the adjustment process should appear in years two, three, and four of the loan period (Jayarajah et al. 1996). For this reason, the three years after loan after loan receipt were coded as "one." The year of negotiation was coded as "0" unless a previously negotiated World Bank SAP still was being implemented that year. To provide a best case scenario for defenders of structural adjustment we generated a running count of the numbers of years under World Bank structural adjustment Programs countries have spent during the period 1981-2000. Thus the number can range from 0-20. A value of '20' indicates that a country has been under structural adjustment for the entire period. The assumption used is that the longer a country has been under structural adjustment, the more structural adjustment provisions have been implemented. This assumption is one followed by other work on this topic (Przeworski and Vreeland 2000; Vreeland 2003). The limitation of this measurement strategy ignores the argument that many developing countries have not implemented the conditions associated with their SAPs (Dollar and Svensson 2000; Van de Walle 2001; Eiras 2003). Research sponsored by the Heritage Foundation showed that the countries that received the most funds from the World Bank and IMF still had not fully liberalized their economies (Eiras 2003). The study also shows that 22 countries with more liberal economies had higher per capita incomes (Eiras 2003). There are good reasons to doubt these claims. Countries with the highest per capita incomes such as the United States or Finland are not the most liberalized. They retain a substantial role for the state in their economies.

An ideal test of the main hypothesis of this study would measure the degree to which the provisions of SAPs were implemented for each country year of the study. That would require that the investigator know the provisions of each structural adjustment for each country for each year. It would also require that the investigator know which of those provisions were implemented and to what extent for each year. This might be possible for single-country studies or even a study of a few countries, but it would require tremendous resources to collect such information for all developing countries annually for a long time period.

In his study of structural adjustment in Africa, Van de Walle (2001) illustrated the difficulty of assessing the degree of implementation even for a region. He identified several common provisions in SAPs, which he divided into two main categories –stabilization and adjustment. Ten economic policies were classified as being part of each main category. He then evaluated the degree to which each of the ten policies had been implemented, on average, for all countries in Africa between 1979–1999 (Van de Walle 2001: 90). He did not attempt to do this for each country in the region for each year of his study. Except for civil service reform, where he rated the degree of implementation as "poor," he concluded that every policy had been implemented to some extent even in Africa, where the average quality of governance is poor. The question then becomes "how much implementation is required before we agree that the agreement was implemented?" Killick (1996) has conducted the most thorough and comprehensive studies of implementation of SAPs. He defined a structural adjustment program as incomplete if a country had implemented less than 81 percent of its program conditions. He surveyed 305 IMF programs in less developed countries, and found that 53 percent had not been completed during the loan period. Though both Van de Walle and Killick criticize developing countries for not fully

implementing the provisions of their SAPs, both provide ample evidence that the governments of most less developed countries implement many, if not most, of the provisions of their programs.

Variant 2) Dichotomous Indicator Under a World Bank SAP

We also use an alternate measure of World Bank SAP implementation. This version closely resembles that used by Vreeland (2003) in his work examining the impact of IMF structural adjustment on economic growth. In this variant we simply use a dichotomous indicator of the periods under adjustment. Following the discussion above years 2,3, and 4 of any SAP loan period are given a value of '1' and '0' otherwise. The major difference between this version and our cumulative measure is that this indicator reflects the short-term effects of conditionality. Nevertheless it is designed to capture what effects these programs have since they would normally take a year at least to filter through to the economy as a whole.

Control Variables

Table 1 contains an overview of the variables we have selected for the first stage of our analyses examining the factors that affect when countries go under World Bank SAPs. Table 2 contains an overview of the variables we have selected for the first stage of our analyses examining the factors that affect second stage economic growth stage of our study. At the growth stage, we investigate whether entering into a SAP with the World Bank in a particular year or the implementation of those loan conditions in subsequent years have an impact on economic growth, which we measure as annual growth rate of GDP per capita. The reader will notice that entering into a World Bank SAP is both a dependent variable in

the first stage of the analysis and an independent variable in the second stage. This allows us to parse out the real impact of a SAP on economic growth from other salient factors.

(Insert Table 1 & Table 2 About Here)

To evaluate the impact of SAPs on economic development of recipient countries, we use a conceptual framework similar to one utilized by Abouharb and Cingranelli (2007), Dreher (2006), and Vreeland (2004). This research indicates that a variety of economic, international and domestic political factors as well as international financial institutional factors impact both entering into SAPs and their subsequent effects on economic growth.[7]

Accounting for Selection Biases

Rather than an in-depth case study approach, this manuscript concentrates on the possibility of selection biases and sample attrition. Accounting for these situations, either of both of which may confront the investigator, four possibilities emerge (See Figure 1): 1) No sample attrition[8] and random assignment to treatment and control, 2) Sample attrition and random assignment to treatment and control 3) Sample attrition and selection into treatment and control and 4) No sample attrition and selection into treatment and control. Cell #1 characterizes the ideal situation. This represents a case where the decision to grant a loan to a recipient country (First stage) is not correlated with its subsequent economic growth (Second Stage) and we can observe economic growth for all countries included in the sample. If this

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[7] For a good discussion see Abouharb and Cingranelli (2007).

[8] Sample attrition means that data have been systematically censored or truncated in the second stage of the equation. This could occur in several hypothetical situations. For instance, we could interview potential candidates for a job training program and request information on a series of individual characteristics (Age, marital status, parents' education level, etc.). We would like to use this information to determine the characteristics that are most likely to lead a candidate to join a job training program. In addition, we would also like to test the impact of the program on wages. This would require that we interview all potential candidates post facto to parse out the impact of the program from other factors on wages. However, if it were to happen that a large majority of non-respondents are those who have joined the job training program, there would be

were the case, an Ordinary Least Squares equation –or any one stage equation- would yield a consistent estimate. Cell #2 corresponds to a situation that is similar to that of Cell 1, but in this second situation there are missing information regarding the economic performance of a large number of countries included in the data set. If the pattern of missing information is random, this does not constitute a problem. However, if the pattern of missing information is systematic, for instance if the missing information is associated with non-recipient countries, a bias would be introduced in the analysis. This is obviously not our situation, considering that our data set contains economic growth information for recipients as well as non-recipients of World Bank loans. Cell #3 represents a typical "Heckman selection effect" bias. Not only are the errors terms of the two stage equation correlated, but we lose some information on the on the economic performance of some countries included in the sample in the second stage. This is, again, not the situation we are facing. Moreover, economic growth or decline is not conditional upon receipt of a World Bank structural adjustment program. Therefore, the situation we analyze in this research note is associated with Cell #4 of Figure 1. We suspect that there is indeed a correlation between World Bank selection criteria and subsequent economic growth, but we there are no systematic missing information for the outcome variable (Economic Growth). We explain the econometric impact of such situations in the next paragraph.

Figure 1: Four Program Evaluation Situations

Selection Instead of
Random Assignment
No   Yes

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systematic sample attrition. The underlying cause could be that those who joined the program have been so successful that they chose to relocate to gain hire wages.

Some Missing Observations For the Outcome Variable	No	1	4
	Yes	2	3

The two-step nature of the treatment effect econometric model means that initially we have to define what factors determine whether or not a country receives a SAP. The second part of the equation applies to all those cases that remain once the model accounts for selection. In this section, we investigate what mediates the marginal impact of SAPs on the dependent variable in question (Economic Growth). The functional form of the analysis is as follows:

$$\text{GDP Per Capita}_t = \alpha + \beta_i(\text{GDP Per capita}_{t-1}) + \beta_j(\text{SAA}_{t-1}) + \beta_k(\text{Controls}) + \varepsilon$$

Receipt of SAPs is an endogenous variable whereby SAPs receipt is assumed to be a linear function of a matrix of covariates C and a random component μ:[9]

$$\text{SAA}^* = \beta_i(C) + \mu_i$$

$$\text{SAA} = 1 \text{ if SAA}^* > 0 \text{ and } 0 \text{ otherwise}$$

This allows us to generate a selection-corrected estimate of SAP receptions on economic growth.[10] Our model is similar to the situation described by Maddala (1983, 263-264). There are in reality two selection biases at play: 1) A self-selection effect, that is, the decision by state leaders to request a loan and 2) The administrator's selection, that is, the World Bank selection criteria. It would require a much more complicated statistical model,

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[9] Both ε and μ are bivariate normal with mean zero.

one difficult to interpret, to account for both biases. In this study, we concentrate on the World Bank selection criteria. Another complication is that of attrition of dropout from World Bank programmes. Some recipients do not follow up on the conditions associated with the loans, thus creating a compliance problem. To account for this second problem, we would need to use a dynamic rather than a static treatment effect model. In order to do so, we would need data on compliance with the terms of the World Bank loans. Unfortunately, such data are not available at the moment. We therefore make the optimistic, yet unrealistic, assumption that all loan recipients are compliant (See our variable "Implementation of SAP). This assumption has the side effect of over-emphasizing the impact of SAPs on economic growth. If we consider that our main hypothesis is that SAPs have very little impact on economic growth, we will be even more confident about our claim, shall the results show that SAA do indeed have little or no impact on economic growth.

Results

Numbers of Years Under/ Receipt of World Bank SAA Programs

Table 3 displays the results estimating the factors that affect time spent under World Bank SAPs and their receipt. The results indicate the importance of economic and political factors, both international and domestic, affecting the length of time countries spent under World Bank programs. Results that were significant at the .05 level of confidence or higher using two tailed tests of significance in three or more of the four 'numbers of years under' models presented in columns I-IV were considered as having 'consistent effects'. When examining the economic factors we see that countries consistently spent more time under World Bank programs if they had a lower GDP per capita. There was also some weaker

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[10] For more details on treatment effect models see Barnow, Cain and Goldberger (1980), Stromsdorfer and Farkas (1980), Maddala (1983), Heckman (1988), Winship and Mare (1992), and Heckman, Ichimura and Todd (1997).

evidence that countries with an over-valued exchange rate also spent longer under World Bank programs, significant in one of the four models presented. The results concerning international political factors indicated that countries, which were temporary members of the UN Security Council spent consistently longer under World Bank SAPs as did those countries that voted in line with the G7 in the UN Security Council. There was also evidence that countries which had a dependent or colonial relationship with the U.S. and France (these results were slightly weaker) spent longer under World Bank SAPs. Domestic political factors also proved to be significant predictors of involvement with the World Bank. There was some evidence that the Bank prefers loaning to Democracies, but this was significant in only two of the models (and at only .10 in one of these). Indicative of this preference for democracies there was some evidence that the Bank was less likely to lend to military regimes, although this was only significant in one of the models presented. Next there was some evidence that the Bank loans to countries with better levels of respect for workers rights, although this was only significant at the .10 level of significance in two of the models presented. There was also some indication that more populous countries tend to get noticed more in the international system with consistent evidence that they spent more time under these programs. Finally, International Financial Institutional factors affected the amount of time countries spent under these programs. As there were more countries under an SAP in any given year this increased the time other countries spent under these programs as the perceived sovereignty costs of going under were lower.

We also ran a model where we examined the likelihood of going under a program in a particular year. These results provided more support for the economic arguments about the importance of foreign currency reserves and trade on the likelihood of entering into World Bank SAPs. Countries with higher levels of currency reserves and more trade were

less likely to enter into these programs. The results also indicated more support for domestic political factors indicating that countries, which respected the rights of their workers and had larger populations were more likely to enter into these programs. Finally, the results continued to provide support for the domestic sovereignty arguments that it is easier for countries to enter into these programs when more countries are already involved with the World Bank during that year.

(Insert Table 3 About Here)

Impact of World Bank SAPs on Economic Growth

Table 4 displays the results estimating the impact of World Bank SAPs on economic growth. What is striking from these results is the lack of evidence that World Bank SAPs have a positive impact on economic growth. Only one of the six models presented provided any support for the argument that the World Bank had a positive impact on economic growth. None of the three different models which used the numbers of years under a World Bank SAP provided any evidence that that these programs increased economic growth. Only one of the three models which used a dichotomous measure of whether a country was under program conditions in a particular year indicated support for the argument that the Bank had a positive effect on economic growth.

The control variables when significant provided some support for existing arguments about their impact on economic growth. The growth in Capital Stock was found to increase economic growth in four of the six models at the .10 level of significance or higher. There was also evidence that countries with a British colonial heritage had a positive impact on economic growth at the .10 level of confidence or higher in two of the models presented. A number of control variables had mixed effects on economic growth and deserve further investigation. The level of GDP per capita had a positive impact on economic growth in two

of models and a negative impact on economic growth in two other of the models presented. Likewise there was an intriguing result indicating that military regimes had a positive impact on economic growth in two of the models presented. The results for the impact of population were similarly mixed with larger populations having significant negative effects on economic growth in two of the models and a positive effect in one of the models presented.

<div align="center">(Insert Table 4 About Here)</div>

Conclusion

The intent of this project is to examine the effects of SAPs on economic growth. This is a profoundly important topic. Millions of people from several countries have seen their governments' undertake these Loans in the hope that these structural adjustments will have a beneficial impact on their citizens' economic wellbeing.

There is considerable controversy surrounding the effects of these Loans. The recent protests at the World Bank's meeting in Washington D.C. is just one example of the furor surrounding this topic on American soil (Lewis 2000). Indeed, recent articles suggest that protests against the World Bank are not confined to American soil but have taken place in other countries including the Czech Republic (Erlanger 2000). Advocates for the poor from developing countries and commentators from groups in developed countries regularly appear in the press extolling the positive and negative effects of these Loans. Indeed, much academic heat has been generated regarding the possible consequences of structural adjustment programs. However, all the previous literature leaves the reader wanting for an analytical, scientific, and replicable method that isolates the real effects of these Loans from surrounding conditions. Much of the existing work leaves us with a question: Was it really

the effect of the loan or something else? Perhaps it was due to the world wide economic recession in the 1980s? What about the effect of democracy on these indicators?

The work by Harrigan and Mosley (1991) is probably the best example of a scientific method devised to assess the impact of structural adjustment programs. However, unlike Przeworski and Vreeland (2000) or Jensen (2004) who examined the effects of IMF loans on economic growth and controlled for selection effects, Harrigan and Mosley (1991) did not control for selection. This study by contrast has controlled for the effects of selection. We used a variety of different methods to assess the effect of World Bank SAPs on economic growth.

The results from this research indicate no support for the long term benefits of these programs for economic growth. One of the results indicated that the Bank has a short term positive impact on economic growth. These results indicate that the hardship imposed on many by the cuts governments have had to make have on the whole not been made up for by substantial long term economic growth and dovetails with other research indicating the negative impacts of these cuts on peoples human rights (Abouharb and Cingranelli 2007).

The importance of this paper lies in the method we have used and its inclusion of some non-economic indicators to explain the impact of World Bank loans on growth. This paper provides the students of structural adjustment with an accessible template to test the effect of structural adjustment programs. There are a number of possible avenues for future research. One such possibility is to extend this research into the arena of social indicators providing for a comprehensive examination of SAPs and their effects. We could easily make the argument that what matters are not macroeconomic growth factors, but how the World bank or, for a lesser extent the IMF, affect day to day lives in recipient countries. Another possibility is to test Nelson's (1991) arguments concerning the male bias in structural

adjustment. Harrigan and Mosley's (1991) framework together with Przeworski and Vreeland's method (2000) can lead to answers with increased confidence concerning the effects of SAPs on women. This future research orientation may be examined by using some of the United Nations and World Bank's existing statistics concerning women. Finally, future studies must account for compliance with the terms of structural adjustment loans by recipient countries. Our study is deficient in that it accounts for the factors that lead a country to receive an SAP and its subsequent economic growth, but it fails to consider the level of compliance with the terms associated with the disbursement of the loans. On this we agree with Dreher (2006) and we suggest that future studies of World Bank loans attempt to mimic Dreher's assessment of recipients compliance with the conditions associated with IMF loans.

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Table 1 Operationalization of First Stage Equation Variables Predicting Receipt of Structural Adjustment Receipt

Dependent Variable	Indicator	Source
World Bank SAA Receipt	Dichotomous Coded 1 in Year of SAA Receipt & 0 Otherwise	Abouharb and Cingranelli (2007)
Independent Variable		
Economic		
Log GDP Per Capita	Log GDP Per Capita Current U.S. $ (purchasing power parity)	World Bank: WDI (2009)
Growth in GDP Per Capita	% Change in GDP Per Capita Current U.S. $ (purchasing power parity)	World Bank: WDI (2009)
Largest Foreign Currency Reserves	Average Government Foreign Reserves to reflect Monthly Imports	World Bank: WDI (2009)
Highest Exchange Rate Value	Average Annual Official exchange rate Local Currency Unit per US $	World Bank: WDI (2009)
Extent of International Trade	Trade Percentage of GDP	World Bank: WDI
Political		
Temporary UN Security Council Membership	Dichotomous "1" If Country was a temporary Member of UN Security Council; "0" If Not	Dreher and Vreeland (2008; 2009)
Voting in Line with the G7 in UN General Assembly	Voting in Line with the G7 Countries, Thacker Model.	Dreher and Sturm (2006)
Highest Level of Democracy	Level of Democracy-Autocracy Measure	POLITY IV
Military Regimes	Dichotomous Indicator whether a country was a military regime coded '1' and '0' otherwise	CIA Factbook
Larger Populations	Logged Midyear Country Population	U.S. Government Census: I.D.B
Conflict Proneness		
Highest Levels of Interstate Conflict	Ordinal Level of Interstate Conflict	Strand et. al (2002)
Highest Levels of Domestic Unrest	Riots: Any violent demonstration or clash of more than 100 citizens involving the use of physical force.	Banks (2002)
Human Rights		
Most Respect for Workers Rights	0=Not protected by Govt. 1= Somewhat protected Govt. 2=Protected by Govt.	Cingranelli (2002)
France, UK, USA, & Japanese Dependent/Colonial Experience	The rule of the most recent possessor identifies the relationships under examination.	ICOW data-set (Hensel 1999)
Temporal Dependence		
Number of Years Since Previous SAA	Number of Years Since Previous SAA	Beck Katz Tucker (1998) BTCS Method
Number of Years Since Previous SAA Squared	Number of Years Since Previous SAA Squared	Beck Katz Tucker (1998) BTCS Method
Splines		Beck Katz Tucker (1998) BTCS Method

Table 2: Operationalization of Economic Growth (Second Stage) Equation Variables

Dependent Variable	Indicator	Source
Logged percentage change in GDP Per Capita	Logged Percentage change in GDP Per Capita Current U.S. $ (PPP)	World Bank: World Development Indicators (WDI) (2009)

Independent Variables

Number of Years Under World Bank Structural Adjustment Agreement (SAP)	Running Count of years a country has been implementing World Bank SAPs	Abouharb and Cingranelli (2007)
Under World Bank Structural Adjustment Agreement (SAP)	Dichotomous Indicator whether a country was under a World Bank SAP caded '1' and '0' otherwise	Abouharb and Cingranelli (2007)

Control Variables
Economic

Log of GDP Per Capita	GDP Per Capita Current U.S. $ (PPP)	World Bank: WDI
Capital Stock Growth	Annual change in capital stock	Penn World Tables (5.1)
Labor Force Growth	Annual change in labor force size	Penn World Tables (5.1)

Domestic Political

Level of Democracy	0-10 Democracy Measure	POLITY IVd Dataset (Marshall & Jaggers 2006)
Military Regimes	Dichotomous Indicator whether a country was a military regime coded '1' and '0' otherwise	CIA Factbook
UK Dependent/Colonial Experience	The decision rule of the most recent possessor is used to identify the relationships under examination.	Issues COW Colonial History Dataset v0.1 (Hensel 1999)
Log of Population	Logged Midyear Country Population	U.S. Census: International Data Base (USIDB) (2005)

Conflict Proneness

Interstate Conflict	0=No Interstate Conflict 1=1000 Battle Deaths or More	Gleditsch et al. (2002) Strand et al. (2005)
Rebellion	0=No Civil War 1=1000 Battle Deaths or More	Gleditsch et al. (2002) Strand et al. (2005)

Table 3: Number of years Under & Receipt of World Bank SAP Programs 1981-2007, All Developing Countries[1]

	Number of years Under World Bank SAP Programs				Receipt of World Bank SAP Program
	OLS With Robust Std Error	**OLS With Year Dummies**	**Negative Binomial Regression**	**Generalised Least Squares**	**Logit**
Economic Factors					
Log of GDP Per Capita	-.874**	-.878**	-.290**	-.767***	.0007
Change in GDP Per Capita	.023	-.007	.014^	.019	.002
Exchange Rate Value	.00009	-.00003	.00002	.0002***	-.00007
Average Foreign Currency Reserves	-.024	-.100	-.033	-.021	-.054*
Trade as a Proportion of GDP	-.002	-.009	-.001	.003^	-.006*
International Political Factors					
Temporary UN Security Council Membership	.750*	.761*	.129	.488*	-.357
Voting with the G7 in UN General Assembly	15.182***	8.819*	3.689***	16.323***	-.190
USA Dependent/Colonial Relationship	5.944***	5.807***	.754***	6.186***	.482
UK Dependent/Colonial Relationship	1.269	1.219	.323	.946***	-.110
French Dependent/Colonial Relationship	1.654*	1.393^	.450^	1.648***	.050
Japanese Dependent/Colonial Relationship	-.390	.614	-.043	-.477	-.576
Domestic Political Factors					
Level of Democracy	.125	.114	.056^	.122***	-.028
Military Regime	-.980	-.897	-.177	-.766***	.135
Workers Rights	.081	.409^	.131^	.026	.277**
Log of Population	.617*	.483^	.195*	.630***	.153**
IFI Factors					
Annual Number of Countries Under SAP	.080***	-.109***	.051***	.057***	.018***
Constant	-10.613^	-4.623	-4.377**	-11.658***	-3.586***
N	2125	2125	2125	2125	2125

P>|z .1^, .05*, .01**, .001*** [1]Models were estimated with two-tailed significant tests. GLS models estimated with heteroskedastic panels

Table 4: Three Stage Least Squares & Treatment Regression Economic Growth: 1981-2000 (Only Second Stage Results Displayed)

	Three Stage Least Squares		Treatment Regression		Instrument Regression Fixed Effects & Year Dummies	
Independent Variables						
Number of Years Under SAP	-.0375 (.0504)	--	.0317 (.0297)	--	.0612 (.0458)	
Under SAP Or Not	--	-.1681 (.1159)	--	.3299* (.1484)	--	.0091 (.1953
Control Variables						
Economic						
Level of GDP Per Capita$_{(t-1)}$	.1304* (.0623)	.1287* (.0616)	.0888 (.0694)	.0949 (.0698)	-2.1210*** (.6271)	-2.3451*** (.6950)
Labor Force Growth	.0191 (.0321)	.0186 (.0311)	.0037 (.0191)	.0035 (.0189)	-.0143 (.0409)	-.0433 (.0463)
Capital Stock Growth	.0221*** (.0063)	.0217*** (.0063)	.0105^ (.0060)	.0110^ (.0056)	.0056 (.0063)	.0044 (.0070)
Political						
Level of Democracy$_{(t-1)}$	-.0253 (.0177)	-.0254 (.0167)	-.0228 (.0182)	-.0260 (.0184)	.0053 (.0429)	-.0912 (.0601)
Military Regime	.1277 (.1421)	.1392 (.1420)	.3312* (.1516)	.3070* (.1525)	-.1792 (.2686)	-.0761 (.2967)
Demographic						
Population (Log)	.0193 (.0402)	.0226 (.0391)	.0631^ (.0372)	.0541 (.0376)	-3.7416* (1.4706)	-6.1128*** (1.8880)
Conf. Proneness						
Interstate Conflict	.3942 (.4765)	.3519 (.4681)	.0426 (.1311)	.0660 (.1378)	.0959 (.4921)	.3274 (.5451)
Domestic Conflict	-.0069 (.1425)	-.0299 (.1428)	.0176 (.0995)	.0524 (.1046)	-.0198 (.2471)	.0441 (.2711)
UK Dependent/ Col. Experience	.2329* (.1112)	.2144^ (.1106)	.1419 (.1193)	.1615 (.1233)	-- --	-- --
Constant	-.6185 (.8179)	-.6238 (.8115)	-.5788 (.9140)	-.5450 (.9201)	77.9096** (24.7439)	117.383*** (31.7570)
Rho	--	--	.9369 (.0122)	.9416 (.0103)	.9733 --	.9869 --
N	429	429	429	429	533	533