Subtle Signals, Limited Device: International Institutions and Credible Commitment of Nondemocracies*

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Abstract

How do non-democratic countries credibly commit to policies in front of domestic and international audiences? Unlike democracies, nondemocracies do not have functioning electoral systems and free presses to make their commitment costly thus credible. Yet, the need to credibly commit to a policy arises for nondemocracies as well. In particular, when non-democratic leaders push for economic reforms, they need to coordinate the beliefs of domestic groups and attract international resources. How do nondemocracies solve the commitment problem and succeed in achieving their policy goals? In this study, we argue that international institutions provide an important mechanism through which non-democratic countries could credibly signal their commitment to open economic policies. We test the argument with the involvement of IMF programs by post-communist countries from 1989 to 2005. We find that while IMF status is used as a credible commitment device for all countries, the effect is more significant for nondemocracies.

1 Introduction

Can international institutions change the behavior of non-democratic countries? If so, how? Studies on the influence of international institutions on state behavior have focused largely on democracies and democratizing countries (Cortell & Davis 1996, Dai 2005, Pevehouse 2002*a*, Li & Resnick 2003). Specifically, it has been shown that international institutions can change the behavior of democratic leaders by revealing information to their voters thus influencing their electoral prospects (Mansfield, Milner & Rosendorff 2002). Such an electoral control mechanism does not exist for nondemocracies, yet empirically, we observe that nondemocracies pursue the memberships of prominent international institutions and often abide by their principles and rules. What explains such behavior? In this study, we argue that international economic institutions serve as a costly device by which non-democratic countries can credibly signal their commitment to an open economic policy to domestic and international audiences.

The need to credibly commit to a policy arises for all governments, including nondemocracies. In particular, when non-democratic leaders push for economic reforms, they need to coordinate the beliefs of domestic groups and attract international resources by demonstrating their resolve to enact reforms. The importance of domestic political institutions in lending credibility to a government's economic policies has long been recognized (North & Thomas 1976, North & Weingast 1989). Free media and the electoral process can generate significant costs for a democratic government when it defects from declared policies, thus making its commitment credible. Lacking a similar device domestically, non-democratic regimes are presented with the challenge of making their policy commitment credible through other means.

An important feature of an agreement made with an international institution is that it creates international audiences for the subsequent compliance behavior. Lohmann (2003)

argues that an institutional commitment has bite only if it is made vis-*à*-vis an audience that can and will punish institutional defections. While the domestic audiences of a nondemocracy may not be able to punish their leaders for reneging on a policy, the audience costs incurred at the international level for such behavior could be significant for the leaders (Fearon 1994). International economic institutions, such as the World Bank and the IMF, are known to take advantage of the public nature of their interactions with states by adopting "naming and shaming" strategies to further expose countries that fail to live up to their institutional commitments (Mansfield, Milner & Rosendorff 2002). Bad publicity resulting from a country's inability to uphold its agreement with an international economic institution could have a long-term negative effect on the country's ability to forge trade agreements and attract foreign investment. Both other governments and private actors on the international market will have less incentive to establish economic relationships with a country whose government cannot be trusted to honor international agreements. Additionally, a poor track record with one international economic institution may reduce a country's ability to secure economic assistance from other international institutions. These consequences taken together could do direct damage to a country's social and economic development and strengthen domestic political opposition, both of which are significant costs for a leader who wishes to stay in power.

Significant costs associated with non-compliance behavior could deter non-committed governments — the ones that have no incentive to abide by or do not have the capacity to fulfill the agreements — from making them in the first place. In other words, the costs have the effect of separating the committed governments from non-committed ones. Thus, a policy commitment made through an international institution acquires the credibility that a non-democratic government may need to implement its policy. While such a mechanism is also available to democracies, its importance to nondemocracies is likely to be larger for

the reason that there are no good alternatives. Using the involvement of IMF programs by post-communist countries from 1989 to 2005, we test the logic of the argument in the context of economic reforms, where the credibility of a government's commitment is critical to elicit desired responses from domestic and international actors. Indeed, we find that while IMF status is used as a credible commitment device for all countries, the effect is more significant for nondemocracies.

The paper contributes to the study of international institutions as well as the literature on international relations more broadly. First, while there is a growing literature that identifies electoral control in democracies as an impetus for their leaders to cooperate with international institutions, virtually no study exists that explores the motivation for nondemocracies to join and comply with such institutions. The paper helps fill the gap by offering a plausible causal mechanism for such decisions. That is, the informational role of international institutions, combined with the ability of international audiences to punish revealed bad behavior, provides a credible commitment device for nondemocracies when they need one. Second, the amount of theoretical and empirical studies of the behavior of nondemocracies are pale in comparison to those of democracies. Yet, the need to understand the logic of decision making in nondemocracies has become increasingly important as interactions among all countries have exploded in the last few decades, particularly in the economic arena. Our study tackles a slice of the puzzle by examining the role of international institutions in providing the ability for nondemocratic governments to make credible commitments in the eyes of international audiences. Such a role can be of enormous importance in international politics if it leads to more cooperative behavior and more economic prosperity in these countries, which may ultimately lead to positive political changes.

2 International Institutions and Credible Commitment

Commitments are often necessary in international politics to convince an audience that a government intends to carry out certain actions. A commitment, however, is not automatically believed if circumstances may arise in the future that gives the government an incentive to renege. How do countries solve the problem of making a commitment credible? Fearon (1994, 1997) argues that a commitment may be credible if it creates the possibility that leaders will become locked into their position and will not be able to back down due to significant costs associated with reneging. In other words, for a governments to credibly commit to a policy in front of domestic and international audiences, its ability to generate costs associated with reneging is critical.

Developed in a different strand of literature, international institutions are said to serve as a commitment device for states (Keohane 1984). Implicit in the view is the idea that an institutional commitment is binding to some degree and that a defection incurs costs. Consequently, entering an agreement with an international institution can help "lock-in" policies and aid in the implementation of unpopular reforms. For example, Vreeland (2003) argues that "governments want IMF agreements to help push through policies that face opposition" (134). Furthermore, Mansfield & Pevehouse (2006) argue that membership in an international organization can create costs for impeding the consolidation of democracy thus help democratizing countries credibly commit to political liberalization.

Why does entering an international agreement make it costly for a government to renege? Intuitively, it seems to result from paying the costs of participating in such institutions, or the ability of the institutions to impose direct costs on countries for non-compliant behavior such as those stemming from the IMF conditionality. Pevehouse (2002*b*) argues that states that join an institution are likely committed because they are willing to endure the membership conditionality. But under many circumstances it is difficult for international institutions to

impose direct costs on countries when they defect, especially with regard to large countries that wield significant political clout (Stone 2002). Moreover, in the case of the IMF, failing to complete one program does not appear to rule out negotiating another one (Bird 2002). In other words, the penalty from an institution itself for noncompliance behavior does not seem to be large enough to deter countries from behaving badly after entering an institutional agreement.

We argue that the more important costs of reneging on international commitments stem from the negative publicity of such behavior in the eyes of international audiences. International economic institutions are known to provide public reports on their members' standings in the institutions. Such information may alert voters of their leaders' activities and bring electoral consequences (Edward Mansfield & Rosendorff 2002). But the receivers of the information are not limited to domestic audiences; some international actors may also pay attention to the information. For example, it is expensive for investors to collect information about a country, so they can take cues from the IMF and take advantage of the information published by the IMF. Indeed, evidence from speeches by government and IMF officials from a variety of countries suggests that governments use this line of reasoning when considering participation in IMF programs. For example, when in June 2007, Mozambique was approved for a Policy Support Instrument (PSI), Takatoshi Kato, the Deputy Managing Direct and Acting Chair stated that "the authorities' graduation to a PSI sends a strong signal to donors and private investors regarding the favorable economic environment".[1] A PSI is a voluntary instrument for use by countries that may not need the IMF's financial assistance but desire the IMF's advice, monitoring, and endorsement of its policies.

In general, there are three types of audiences at the international level that will pay close attention to the information disseminated by prominent international economic institutions

[1]IMF Press Release No. 07/135.

such as the IMF. First, market actors use the information regarding a country's compliance behavior to guide their investment decisions and governments are aware of this. Through extensive empirical studies, Tomz (2007) shows that reputational concerns are central in sovereign lending by private creditors and correspondingly, governments often use a reputational rational for repaying their loans. International institutions such as the IMF can lend credibility to governments that plays a similar role as reputation. Vreeland (2003) finds that IMF programs undertaken as a means of tying ones hands in order to implement unpopular reforms can lead to increase in investment. Edwards (2005) finds that noncompliance with an IMF program leads to significant capital flight, even greater capital flight than occurs in the absence of an IMF program. This suggests that market actors pay attention to not only economic fundamentals, but also signals from the IMF. Simmons (2000) goes so far as to argue that competitive market forces are a more likely mechanism of enforcement than IMF policy pressure.

It is worth noting that some empirical studies have found mixed effects of IMF lending on capital flows. A closer look seems to suggest that the catalytic effect of IMF lending depends greatly on a variety of factors, including the income-level of the country. The relationship between lending and indicators of capital flows differs between low and middle income countries. Although some suggest that IMF lending actually discourages capital inflows from private sectors because these lenders may perceive IMF involvement as a signal of the weakness in a countries' fundamentals, Bird and Rowlands (2002) find that Extended Fund Facility agreements,[2] which entail reform conditions, lead to an increase in investment flows to middle income, but not poor countries. This fits with the findings of Mody and

[2]Programs about three years in length that are aimed at overcoming balance of payment difficulties resulting from macroeconomic and structural problems. EFF programs should be distinguished from Stand-by arrangements (SBA) that are designed to help countries address short term balance of payments problems.

Saravia (2003), which suggest that IMF programs have positive effects when they are viewed as likely to lead to economic reform. For example, Ukraine's decision to sign an IMF agreement in 1998 was undertaken in a time of dire financial conditions such that the response of investors depended "on whether foreign investors see the IMF programme as a milestone, signaling the beginning of Ukraine's economic recovery, or as a buffer on the country's foreign currency reserves..." (Cloverin & Tkach 1998). Indeed, if there is a possibility that IMF lending deters foreign investments due to concerns of a country's fundamentals, it is all the more remarkable that a country would choose to enter an IMF agreement; it suggests that the country is resolved to signal its intention to reform, even at the risk of a negative reaction.

Second, other states may take into account the information revealed by major international economic institutions when making decision regarding bilateral cooperation or financial assistance. In other words, the community of other states can be considered an audience that can impose costs on a state for reneging an international agreement. For example, Bird & Rowlands (2007) find strong evidence of a historically positive association between IMF involvement and bilateral foreign aid inflows. A possible explanation for the relationship is that states view the IMF endorsement of a program as show of confidence in the country's ability to fulfill its agreement with the institution.

Third, a poor track record with one international economic institution may reduce a country's ability to secure economic assistance from other international institutions. Countries generally have ongoing relationships in multiple spheres (Lawrence 2003, 92); other international institutions can join the efforts to punish a country's unruly behavior by linking issues. Economic assistance from the Group of Seven, Paris and London Clubs and others has been linked to IMF programs. For instance, Ukraine's 1994 IMF program was expected to "pave the way for Ukraine to receive 4 billion dollars in financial assistance offered at the Group

of Seven meeting" (abd Chrystia Freeland 1994). Similarly, Egyptian officials hoped that a new standby credit agreement with the IMF would lead to the release of a final tranche of debt relief by the Paris Club creditors that had been delayed (Whittington 1996).

These international audiences of an institutional commitment provide a mechanism through which a government could credibly commit to an economic reform policy in the absence of a corresponding domestic mechanism. Key to a successful economic reform is the convergence of expectations from all relevant actors so that the risk associated with investment and production is minimized. A commitment made to an international institution not only coordinates the expectations of international actors, but also domestic actors whose long term investment in material and human resources are critical to a successful reform. While the logic of the argument applies to any government that seeks to make its commitment credible, the mechanism could be particularly valuable for nondemocracies. Unlike democracies, nondemocracies do not have functioning electoral systems and free presses to make their commitments costly thus credible. Therefore, nondemocracies have to rely on external sources more than democracies to generate costs necessary for a credible commitment.

3 Research Design

To test our theory that international institutions are a credible commitment device, we use a dataset of 25 post-communist countries for the years from 1989 to 2005. Specifically, we examine the effects of economic reforms and the regime type on these countries' involvement in IMF programs. The post-communist countries provide an excellent sample on which to test our hypotheses for two reasons. First, these countries have undergone significant economic reforms in a fairly short period of time, while their political institutions have not made a full transition to democracy. So there is a good mixture of democracies and nondemocracies

in the dataset to test our hypotheses. Second, the international capital market was not truly international until the fall of the Soviet Union and the rise of the internet, which fits well with the time span of the study. We chose the IMF as a representative international institution to test our signaling theory, because the theory highlights the importance of the publicity at the international level in generating audience costs, and such capacity is more naturally associated with prominent economic institutions. The IMF is particularly suitable for our analysis in that IMF makes it part of its strategy to inform market actors about a country's status. In other words, the IMF actively disseminates information to international audiences.

We test two hypotheses implied by our theory. The most straightforward implication of our theory is that countries that undergo serious economic reforms will have an incentive to participate in IMF programs to signal their resolve. This incentive, however, may not grow monotonically as the level of reform deepens. A country not only needs to make a credible commitment in order to launch a successful reform, it also needs to distinguish itself as a successful reformer after a certain period of time in order to continue to attract international resources. Countries that are able to successfully implement reforms are likely to not need IMF programs well into the future. Therefore, there could be a countervailing incentive for countries to signal a clear forward trajectory of their reforms by *graduating* from IMF programs as the reforms make significant progress. Additionally, evidence suggests that the effects of IMF programs on capital flows and other indicators depends on the income level of the participant country, as well as the type of agreement. For example, Bird and Rowlands (2002) find that Extended Fund Facilities have a positive correlation with FDI inflows for middle income countries and a negative correlation with low income countries. Portfolio flows are also associated with higher inflows for middle income countries with Stand-by Arrangements or Extended Fund Facilities. (These agreements have more conditions than

do those typically made with low income countries.) Such effects provide further incentive for countries to signal that they are not bogged down in the reform process by moving out of IMF programs.

How do these two incentives add up? We hypothesize that at lower levels of reforms the incentive to signal commitment dominates the incentive to signal the progress of the reforms, while the opposite is true for higher levels of reforms. These arguments lead to two closely related hypotheses to be tested empirically in the remainder of the study. The first hypothesis identifies a behavioral pattern of all countries undergoing economic reforms:

Hypothesis 1. *As the depth of its economic reform increases, a country is more likely to enter a higher phase of IMF programs to signal to international audiences its commitment to reform and the success it has achieved.*

Furthermore, given that democracies have other costly mechanisms available to credibly commit to economic reforms, we have a second hypothesis that suggests a comparison between democracies and nondemocracies:

Hypothesis 2. *Nondemocracies are more likely to be a participant of IMF programs than democracies at a given level of economic reforms.*

3.1 Dependent Variable

Our dependent variable, IMF status, is an ordered categorical variable that measures the level of involvement in the IMF programs for a country. It is coded as follows: 0 if a country is an applicant, 1 if a country is a participant in an IMF program and 2 if a country has graduated from the IMF.[3] A country is an applicant for an IMF program if it has not yet

[3]The variable is coded using information from the IMF webpage for each country (http://www.imf.org/external/country/index.htm)

participated in an IMF program. This suggests that a country is not willing to meet the conditions required by the IMF to even get an initial loan. Countries are also coded as applicants when they are between programs, that is, they may have in the past participated in an IMF program but are not currently. This may indicate that they have not met the conditions to qualify for another loan. Countries are participants in IMF programs during the years when they have programs in place. Finally, a country is a "graduate" of IMF programs when it is no longer applying or participating in programs.[4] We argue that this is a signal of reaching a higher level of economic reforms by the countries.

3.2 Independent Variables

The main independent variable is the level of structural economic reform. There is a great volume of theoretical work on economic reform, however, empirical work has been impeded by a lack of quantitative measures of the level of reform that has broad coverage across time and across countries.There are two broad categories of economic reform identified in the literature: those intended to address macroeconomic imbalances, and structural reforms intended to strengthen weak institutions. "Stabilization consists of short-term measures designed to slow down inflation, reduce the balance-of-payments deficit and cut the government deficit," while structural adjustments and privatization are meant to make the economy more competitive (Przeworski 1991, 144). Referring to the former as macroeconomic reform and the latter microeconomic reform, we can distinguish between the two as follows: Macroeconomic reforms are those which are intended to restore stability through fiscal, monetary and ex-

[4]If by the end of the sample (2005), a country had not participated in another IMF program after its most recent one, we coded it as a 'graduate' from just after it's previous program through the end of the sample. In doing so, we follow Przeworski et. al (2000) in using information retroactively to make coding decisions (24). A country can only be considered a graduate if has been at least five years since it last participated in a program.

change rate policies, while microeconomic reforms consist of liberalization policies aimed at structural and institutional reform and growth — for example, the removal of relative-price distortions and the reduction of state intervention (Rodrik 1996). Because we are interested in states' long-term commitment to economic policies, we choose to use measures of structural reforms.

However, it is inherently difficult to measure both the depth and breadth of structural economic reforms. More specifically, the passage of a reform package does not mean that all of the reforms are implemented. Therefore, evaluating the implementation of reforms, especially structural, often requires expertise in a particular country or region. As a result, many reform indexes tend to be subjective, and thus difficult to replicate and extend through time or to other countries. Accepting that there is no perfect measure of economic reform, we decide to use the EBRD Transition Indicators which covers the post-communist countries of Central and Eastern Europe (CEE) and the former Soviet Union (FSU). It is based on a weighted average of scores in the areas of price liberalization and competition policy, trade and foreign exchange liberalization, and privatization and banking reform. They have been used in other studies including Dethier et. al (1999) and Fidrmuc (2003), which both look at the relationship between democracy and economic reform.

A few descriptive statistics about our measure of economic reform are helpful. The EBRD index is a cumulative index of structural reform created from the individual components listed below for the period 1989-2005. The scores for each component range from 1 to 4.33. There are eight composite indicators of economic reform. We sum the indicators for the following: large and small scale privatization, enterprise restructuring, price liberalization, trade and foreign exchange system, competition policy, banking reform and interest rate liberalization, and securities and non-bank financial institutions. Therefore, the minimum possible score is 8.00 and the maximum possible score is 34.64. We then rescale the variable to so that it

ranges from 0 to 26.64. The lagged value of this variable is included to reduce problems of endogeneity.[5] A breakdown of the IMF status according to tertiles of *Economic Reform* can be found in Table 1. A cursory examination of the table suggests that a country is more likely to be an applicant at a lower of level of economic reform, and more likely to be a participant or a graduate at a higher level of reform. Another important independent variable for our

	Level of Reform			
IMF status	Low	Medium	High	Total
0	20	15	0	35
	26.67	20.27	0.00	15.91
1	52	50	8	110
	69.33	67.57	11.27	50.00
2	3	9	63	75
	4.00	12.16	88.73	34.09
Total	75	74	71	220
	100.00	100.00	100.00	100.00

Table 1: Cross Tabulation of IMF status and level of reform (in number and percentage).

hypotheses is regime type. We define a nondemocracy as a country with a Polity score less than or equal to 6. We then interact the dummy variable with the reform variable to create an interaction term in order to capture the conditional nature of Hypothesis 2.

[5]We do not expect that endogeneity is a major problem. Evidence on program compliance and implementation suggests that a majority of structural benchmarks are not implemented. Mercer-Blackman & Unigovskaya (2004) find that only 17 of 33 transition economies implemented more than 50 percent of the structural benchmarks included in programs between 1993 and 1997. Thus, we might expect that it is not IMF programs in and of themselves leading to economic reform.

3.3 Control Variables

In order to look at the political reasons a country has for participating in IMF programs, we include the lagged values of several economic variables to take account of economic factors that may affect its participation in IMF programs. We should note at the outset that the the literature on the effects of these variables has produced mixed evidence, with many studies find that the variables do not have any significant effect on the decision to participate in IMF programs.

The first plausible candidate for economic variables is balance of payments. The long-held mandate of the IMF is to promote international financial stability; thus, when a country is having balance of payments problems, they may be more likely to participate in an IMF program. We control for balance of payments problems by including the balance of payments as a percent of GDP. Additionally, we control for foreign reserve and the level of debt. It is argued that countries are more likely to seek IMF help when they have low levels of reserves, which we measure with the ratio of the level of reserves to monthly imports. Countries that have higher levels of debt are more vulnerable to decisions by creditors (Vreeland 2003, Dreher 2006, Edwards 2006); as a result, when levels of debt are high, countries may be more likely to seek an agreement with the IMF. The level of debt is measured as a percentage of exports of goods, services and income. Finally, we control for the level of development by including GDP per capita. All other things equal, poorer countries are more likely to need an IMF program, and more developed countries are likely to be graduates of the IMF. [6]

[6] All data for economic variables were taken from the World Development Indicators 2007.

4 Empirical Analysis

We examine the signaling effect of IMF involvement using an ordered probit model. An ordered probit model is appropriate for our study given the ordinal nature of our dependent variable, IMF status. We use panel-corrected standard errors (PCSEs) to adjust for correlation within each panel. In applying an ordered probit analysis, it is assumed that the government has an unobservable continuous utility function that affects the government's decision to commit to economic reform through involvement in the IMF. That is,

$$Y^* = \beta_1 \text{REFORM}_{\text{t}-1} + \beta_2 \text{NONDEMOCRACY}_{\text{t}-1} + \beta_3 \text{REFORM}_{\text{t}-1} \times \text{NONDEM}_{\text{t}-1}$$
$$+\beta_4 \text{DEBT}_{\text{t}-1} + \beta_5 \text{BOP}_{\text{t}-1} + \beta_6 \text{RESERVES}_{\text{t}-1} + \beta_7 \text{GDPPC}_{\text{t}-1} + \epsilon$$

where $\epsilon \sim N(0, \sigma^2)$. As researchers, instead of observing the utility function, we observe a categorial variable, the level of involvement in the IMF. Define threshold parameters $\tau_j (j = 1, 2)$, such that $\tau_1 < \tau_2$. These two parameters group Y^* into three categories. Although the realization, y_i^*, is unobserved, we do know which of the three categories that y_i^* belongs to by observing $\text{IMFstatus}_{\text{i}}$. That is,

$$\text{IMFstatus}_{\text{i}} = \begin{cases} 0 & \text{if} \quad y_i^* \leq \tau_1 \\ 1 & \text{if} \quad \tau_1 < y_i^* \leq \tau_2 \\ 2 & \text{if} \quad y_i^* > \tau_2 \end{cases}$$

for $i = 1, \cdots, n$ observations. Thus, the random utility model suggests that nondemocracies will signal commitment to economic reform through costly involvement only when the utility to do so is greater than the utility of not taking that action, which is represented by a threshold, $\tau_j (j = 1, 2)$.

The results of the ordered probit model are presented in Table 2. The model correctly predicts 72.7% of IMF status, which amounts to 45% improvement over modal prediction. Our first hypothesis, that there is a positive relationship between the level of economic reform

Independent Variables	Model 1
Reform_{t-1}	0.181*
	(0.048)
$\text{Non-democracy}_{t-1}$	0.092
	(1.094)
$\text{Reform-nondem}_{t-1}$	-0.059
	(0.073)
$\text{Debt Service}_{t-1}$	-0.019
	(0.016)
$\text{Balance of Payments}_{t-1}$	0.864
	(2.291)
Reserves_{t-1}	-0.031
	(0.099)
$\text{GDP per capita}_{t-1}$	0.0005*
	(0.0001)
Threshold 1	1.307
Threshold 2	3.658
χ^2	114.77
Log likelihood	-136.65
N	220
Correctly Predicted	72.7%
Modal Prediction	50.0%
Reduction of Error	45%
PCSEs in parentheses. $^*p < 0.05$	

Table 2: The maximum likelihood estimates of the ordered probit model of all countries.

and IMF status, is supported — economic reform has a positive and significant effect. That is, as the level of economic reform increases, a country is more likely to be at an advanced phase of IMF status. In line with the mixed findings in the literature on IMF program participation, most of our economic controls do not achieve statistical significance. While some studies have found that economic factors, such as large balance of payments imbalances and low levels of reserves, lead to an increase in the likelihood of participating in an IMF program, others find no such effect. In our model, other than GDP per capita, the balance of payments, level of reserves, and level of debt have no significant effect on IMF status. This lends further support to the argument that countries seek participation in the IMF for reasons that are not economic in general, and our argument in particular.

While the regression coefficients are informative of the direction and the overall significance level of the effects of the independent variables, it does not tell us how the changes in the independent variables affect the probabilities of countries transition from one IMF status to another. Additionally, it is well-known that the interpretation of the size of the effects in non-linear models is not straightforward. In particular, even though the nondemocracy variable and the interaction term do not achieve overall statistical significance, it is possible that for certain ranges of reform variable the effects are significant, and it is substantively interesting to know what the patterns are in those ranges. We therefore use first differences and graphs to investigate in more detail the effects of our main independent variables.

Figures 1 and 2 show how the predicted probability of being in each category of IMF status changes as the level of economic reform (lagged one year) increases for nondemocracies and democracies, respectively. First, for both types of regimes, as the level of economic reform increases, the probability of remaining an applicant decreases. This suggests that countries increasingly move on to higher phases of IMF status as the reforms deepen. Second, as the level of economic reform increases, the probability of participating in an IMF program

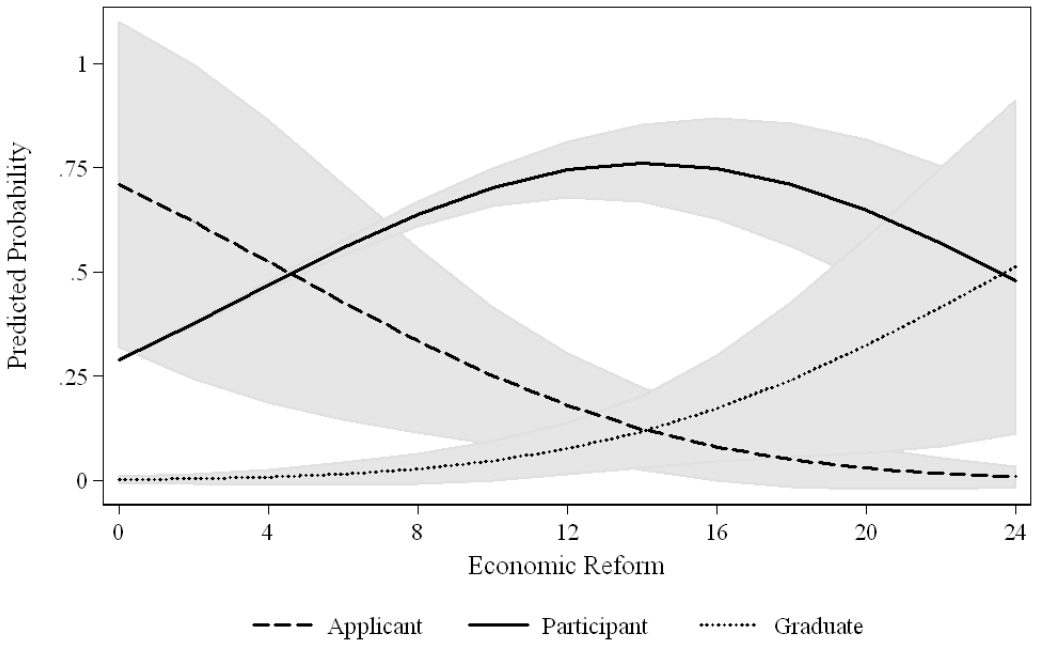

Figure 1: Predicted Probability (with 95% confidence interval) of IMF status for nondemocracies as a function of the level of economic reforms.

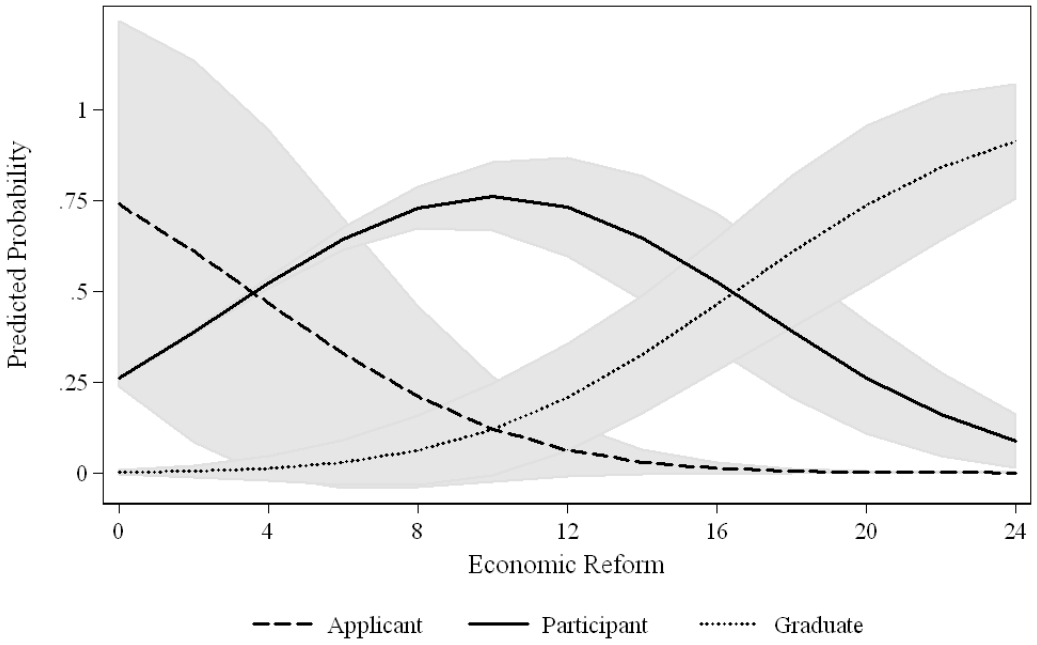

Figure 2: Predicted Probability (with 95% confidence interval) of IMF status for democracies as a function of the level of economic reforms.

increases initially, and then the probability decreases. This implies that there is a threshold level of reforms after which countries are more likely to be graduates. We argue that this is because the incentive to signal the success of the reforms starts to dominate the incentive to signal commitment to the reforms. Finally, as the level of economic reforms increases, the probability of being a graduate increases monotonically. These patterns are consistent with our first hypothesis regarding the signaling effect of different phases of IMF status as a country going through different levels of economic reforms. All the effects are statistically significant.

We next examine our second hypothesis that predicts differential effects of regime types on the choice of IMF status. Table 3 presents the predictive probabilities for a change in regime type. A change from democracy to nondemocracy, while holding all other variables at their means, increases the probability of being a participant by 15.8 percent. In the meantime, the change in regime type decreases the probability of being a graduate by 24.1 percent. Both effects are statistically significant. The first effect provides direct support to our second hypothesis that nondemocracies are more likely to participate in IMF programs. The second effects suggests that the incentive to signal commitment to reforms is more important for nondemocracies than democracies, and as a result, nondemocracies are more willing to remain participants at higher levels of reforms than democracies. The finding is consistent with the logic that nondemocracies have fewer alternative means to convey their commitment, so they rely more heavily on the institutional mechanism than democracies to signal their resolve to stay on the reform path, even at the cost of suppressing the incentive to signal the success of the reforms. The result thus provides indirect support to our second hypothesis.

To see if the effects of regime types in Table 3 are conditional on the mean level of reform we use to calculate the probabilities, it is useful to examine the figures that capture

	Applicant	Participant	Graduate
Democracy to	0.084	0.158^{*}	-0.241^{*}
Nodemocracy	[-0.003,0.170]	[0.082,0.2334]	[-0.426,-0.057]

Table 3: Changes in predicted probabilities for a change in regime type ($^{*}p < 0.05$).

the effects at all levels of economic reform. In Figures 3 and 4, we present side by side, respectively, the predicted probabilities of being a participant and a graduate for democracies and nondemocracies. The comparison allows us to discern if the different patterns for the two regime types predicted by our second hypothesis hold more generally across all levels of reform. The same dynamics found in Table 3 emerge in these figures — at higher levels of economic reforms, nondemocracies are more likely to be participants than democracies and less likely to be graduates than democracies. The different patterns seem to manifest themselves more clearly as the reform variable approaches its maximum value. Our second hypothesis about a stronger incentive for nondemocracies to participate in the IMF thus appears to receive support. A critical question remains, however, as to whether these effects are statistically significant.

Recall that in Table 2, the coefficients for the nondemocracy variable and the interaction term between reform and nondemocracy do not achieve statistical significance, which means that the differential effects of regime types on the choice of IMF status are not meaningful for all values of the reform variable. But it is also clear from Figures 3 and 4 that when the level of economic reform increases, there is an increasing gap in the probabilities that nondemocracies and democracies would choose to be participants and graduates, suggesting that for some ranges of the reform variable, the effects are indeed significant. We test the possibility by calculating the significance levels of the differences in predicted probabilities for at all levels of reform and present them in Figure 5. Figure 5 shows that while at the lower

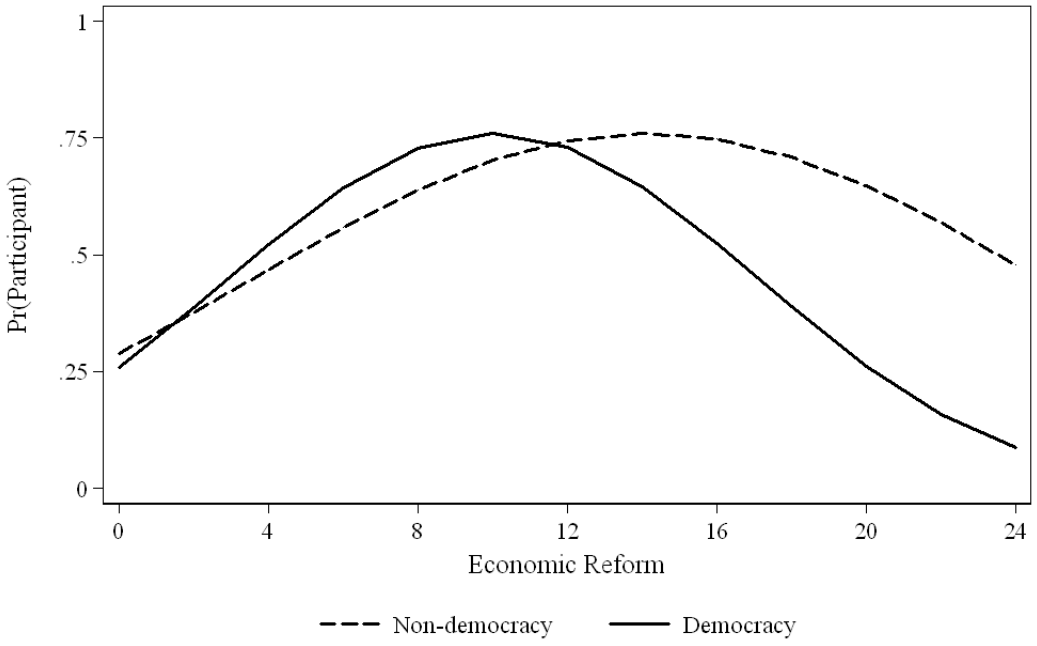

Figure 3: Predicted probability of participant status for nondemocracies and democracies.

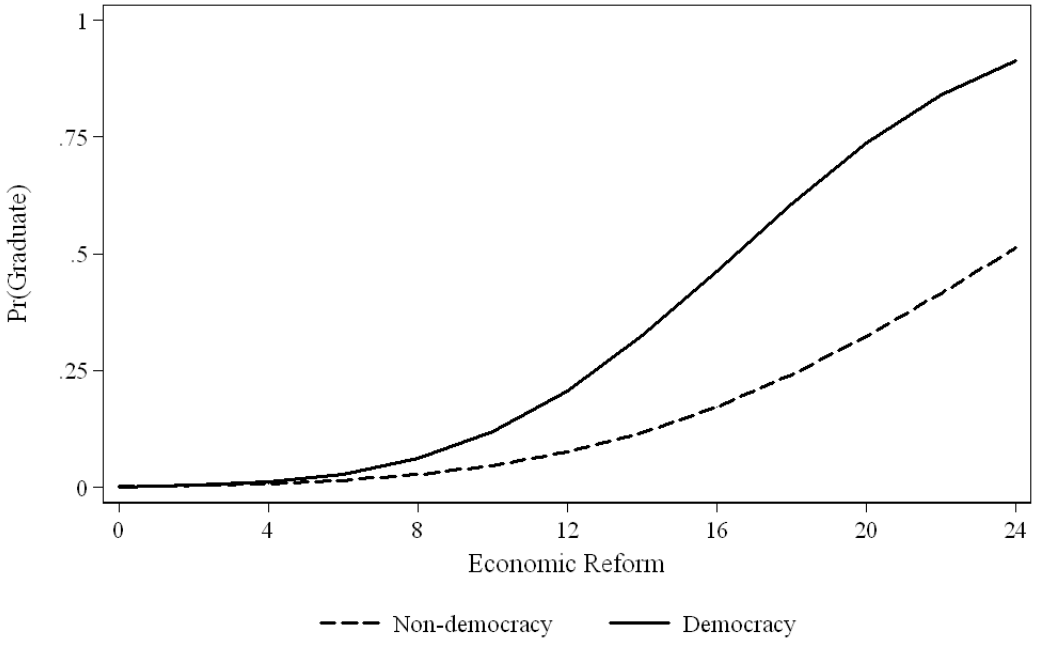

Figure 4: Predicted probabilities of graduate status for nondemocracies and democracies.

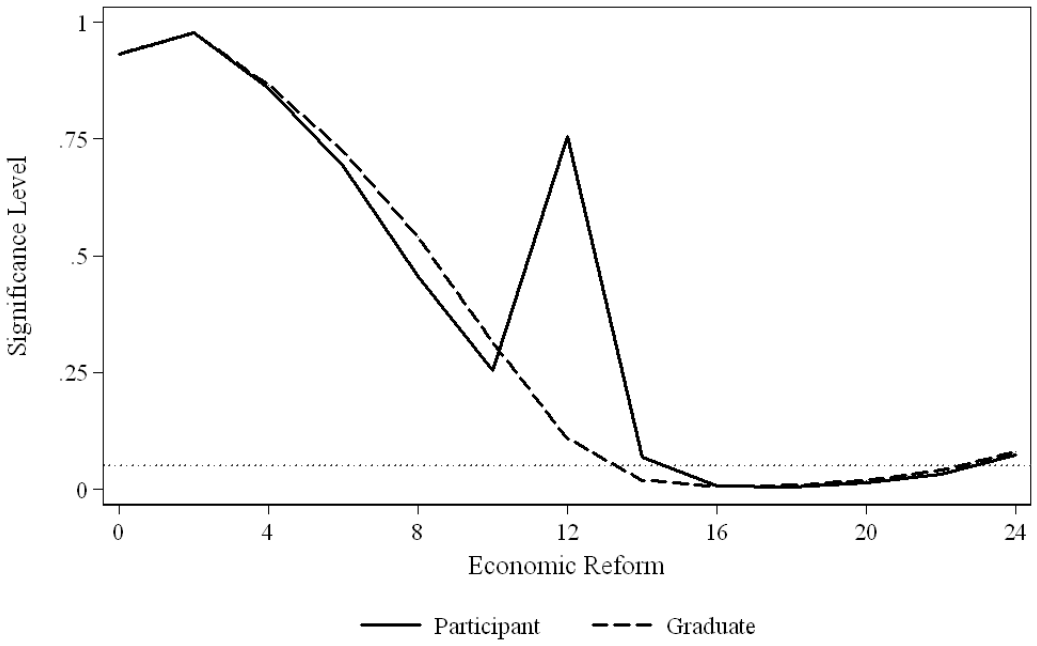

Figure 5: The the significance levels of the difference between predicted probabilities for nondemocracies and democracies. The dotted horizontal line is drawn at 5% significance level. The intersections between the significant levels and the 5% line are around 14 for both participant and graduate status.

levels of reform the differences are not statistically significant, the gaps in the probabilities are meaningful for the values that are greater than 14, both for the participants and graduates. These figures thus provide further evidence supporting our second hypothesis.

Robustness of the Results

We conducted a robustness test by using a different measure of polity. The countries in our dataset all begin as nondemocracies and some then undergo political liberalization. For emerging democracies, their ability to credibly commit is not well established because the mechanisms through which democracies normally generate domestic audience costs are new and untested. It is likely, then, that their incentives to make credible commitment through

an external mechanism, namely, international institutions, have not changed dramatically from their previous regime. Thus, it makes sense to consider using a more nuanced measurement to capture the policy dimension, instead of a dichotomous variable that highlights the qualitative difference in the regime types. The alternative measure we use is Polity IV index, which ranges from -10 for full autocracies to +10 for full democracies.

Because the polity score measures polity in a continuous fashion, in this model we can only test our first hypothesis about a monotonic relationship between the level of economic reforms and IMF status for all countries undergoing economic reforms. The results are presented in Table 4. The overall pattern of the coefficients in Table 4 resembles that of Table 2. Further analysis shows that all our previous findings with respect to the first hypothesis are obtained in this model. Specifically, as the level of economic reform increases, the probability of being an applicant decreases and the probability of being a graduate increases. Additionally, the probability of being a participant increases initially and then decreases, suggesting that the countries move on to the graduate status as the level of reforms achieves the highest levels. These patterns are shown in Figure 6.

5 Conclusions

In international politics, it is commonplace that countries express their intentions to carry out challenging policy tasks. However, the announcements are often met with skepticisms because all governments have an incentive to claim that their commitments are credible when they are not held accountable for their words later on. Yet, making a commitment credible in the eyes of international audiences can be a precondition for the success of the policies, whether they are peace agreements or economic reforms. Countries that are sincere about their policy announcements, therefore, are confronted with the dilemma that, on the

Independent Variables	Model 2
Reform_{t-1}	0.120*
Polity_{t-1}	0.039
Reform $\times$ Polity $_{t-1}$	0.003
$\text{Debt Service}_{t-1}$	-0.015
$\text{Balance of Payments}_{t-1}$	-0.962
Reserves_{t-1}	-0.0005
$\text{GDP per capita}_{t-1}$	0.0004*
Threshold 1	1.144
Threshold 2	3.456
χ^2	117.21
Log likelihood	-135.81
N	217
Correctly Predicted	73.3%
Modal Prediction	50.0%
Reduction of Error	47.2%
PCSEs in parentheses. $^*p < 0.05$	

Table 4: The maximum likelihood estimates of the ordered probit model using polity score.

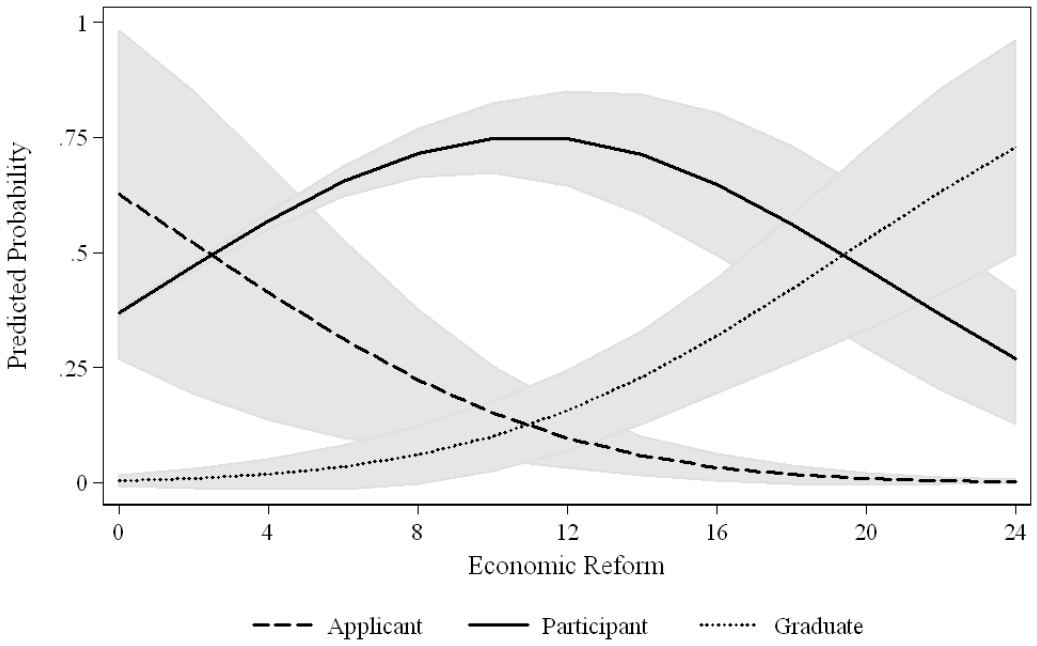

Figure 6: Predicted probability (with 95% confidence interval) of IMF status as a function of the level of economic reform using policy score.

one hand, their pledges may not be believed; on the other hand, without the trust and cooperation of the intended audiences, the policies indeed cannot be implemented successfully. How do countries break the vicious cycle when they must?

Drawing on the finding in economics literature that costly actions can be informative (Spence 1973), international relations scholars have explored costly mechanisms that allow countries to establish credibility of their commitment, particularly in the context of international crisis. The idea of audience costs first emerged in this literature (Fearon 1994), with the source of the costs identified to be electoral competition in democracies. In the international political economy literature, on the other hand, while the need for countries to make credible commitment is recognized, it is often argued that the legal nature of international agreements is the primary source of the constraints on countries' subsequent behavior. There

are a few exceptions, such as Mansfield, Milner & Rosendorff (2002) and Dai (2005). In line with the conflict literature, these studies argue that the audiences of such agreements are the primary source of credible commitment; however, as in the conflict literature, these studies focus on the audiences in democracies. Building on the literature, but extending the logic to a broader set of actors, we argue in this study that international institutions provide a credible commitment device for countries because of the international audiences they command that can and will punish defections from pronounced policies. Furthermore, although it is a well-known argument that international institutions are a commitment device, no existing study has examined whether the importance of the device differs for democracies and nondemocracies. We argue that this is the case. While enjoying more freedom in choosing policies due to the lacking of domestic constraints, nondemocratic governments also have more difficulty making their commitment credible as a result. International institutions are therefore a more central commitment device for nondemocracies, and nondemocracies are more likely to make institutional commitments than democracies.

Our theoretical arguments are tested with a dataset of countries going through economic reforms, a task that will require credible commitments by these countries in order to generate favorable responses from international economic players. Specifically, we examine whether these countries signal their intentions to stay on the reform path by participating in IMF programs, and then signal their success by graduating from the programs. We also examine whether nondemocracies display stronger incentives to participate in IMF programs because they have fewer domestic mechanisms to effectively signal their resolves. Our empirical findings provide clear support to our two hypotheses.

First, we find that all countries undergoing economic reforms use their IMF status to signal their commitment to the reforms, and then as the reforms deepen, signal the progress they have achieved by becoming graduates. Signaling reform success, however, requires

leaving IMF programs behind, thus free of institutional constraints, which could undermine the need to signal continued commitment to reforms. Given the incentive to convey two messages that entail two contradictory actions through one device, countries are forced to choose one action over the other. We have conjectured that at this juncture nondemocracies will make a different choice than democracies. Indeed, our second main finding is that as the level of economic reforms increases, nondemocracies are more likely than democracies to signal their continued commitment to the reforms by remaining as participants rather than becoming graduates. That is, because nondemocracies have fewer domestic mechanisms to generate costs for credible commitments, the incentive to signal commitment dominates the incentive to signal success for nondemocracies.

What does the theory imply about countries' compliance behavior after joining an international agreement? First, the theory suggests that the incentive for a country to join an agreement would play a significant role in determining its compliance behavior later on. If there is a strong incentive for a country to make a credible commitment to international audiences in a related issue area, then it is more likely that the country will join the agreement and subsequently abide by the agreement. Second, high noncompliance costs associated with an agreement could deter non-resolved type from joining the agreement in the first, thus lead to a high level of compliance subsequently. In other words, higher noncompliance costs can lead to higher levels of compliance through affecting the calculation of a country to join an agreement. Both factors point to a selection effect in the countries that join an agreement — these are the countries that seek to achieve a signaling effect through willingly subjecting themselves to the risk of incurring significant noncompliance costs down the road. They have a strong incentive to abide by the agreements, *ex ante*, therefore, are more likely to comply, *ex post*. Consequently, when the two conditions are met, we should observe relatively high levels of compliance with international agreements, particularly with those that are made

with prominent international institutions that are capable of generating high noncompliance costs. We leave the testing of these predictions to our future research.

Appendix

Table 1. Data Summary

Country	Years in sample
Albania	1989-2005
Armenia	1992-2005
Azerbaijan	1992-2005
Belarus	1992-2005
Bosnia and Herzegovina	1993-2005
Bulgaria	1989-2005
Croatia	1992-2005
Czech Republic	1989-2005
Estonia	1992-2005
Macedonia, FYR	1994-2005
Georgia	1992-2005
Hungary	1989-2005
Kazakhstan	1992-2005
Kyrgyz Republic	1992-2005
Latvia	1992-2005
Lithuania	1992-2005
Moldova	1992-2005
Poland	1989-2005
Romania	1989-2005
Russia	1989-2005
Serbia and Montenegro	1989-2005
Slovak Republic	1993-2005
Slovenia	1992-2005
Tajikistan	1992-2005
Turkmenistan	1992-2005
Ukraine	1992-2005
Uzbekistan	1992-2005

Table 2. Descriptive Statistics of Independent Variables

	Mean	Std. Dev.	Minimum	Maximum
Economic reform	11.390	7.001	0	23.66
Democracy	3.062	6.403	-9	10
Debt service	14.560	13.602	0.028	78.446
Balance of payments as percent GDP	0.046	0.076	-0.013	0.739
Reserves-to-imports	3.200	1.623	0.375	10.900
GDP per capita	2203.4	2019.6	139.26	11382.4

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