When do IMF Agreements Serve as a Seal of Approval?

Molly Bauer, Cesi Cruz and Benjamin A.T. Graham

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Abstract

Conditional lending by the IMF is predicated, in part, by the belief that IMF programs should be associated with increased capital inflows to participating countries. This belief is generally consistent with theoretical arguments in the academic literature (e.g. Bird and Rowlands 1997, Bordo et al 2004) but the empirical literature finds otherwise (e.g. Jensen 2004). This paper argues that the ability of IMF conditionality to increase FDI inflows is limited to a subset of program participants, democracies. The power of negative signalling, which dampens investment to states that have signaled their weak macroeconomic prospects by applying for an IMF program, varies systematically across countries by regime type. This theory is empirically tested using a Markov transition model in a dataset covering 68 countries from 1970 to 1999. The results reconcile the theoretical and empirical literature show that autocracies are what is driving the negative relationship found in the empirical literature. While IMF agreements have no significant effect on FDI in democracies, they have a negative and strongly significant effect on FDI in autocracies.

1 Introduction

One of the central claims the IMF makes about its programs is that the conditional loans[1] it provides catalyze flows of private capital to the recipient countries. The rationale for the link between IMF participation and increased investment is that IMF lending provides both an influx of capital to alleviate the risk of government default and confers a "seal of approval" regarding the government's macroeconomic policies (Jensen 2004, Bird and Rowlands 1997, Bordo et al. 2004, Vreeland 2003).

However, empirical results have been mixed. Dhonte (1997) and Edwards (2005) both find support for the catalytic effect. Mody and Saravia (2006) find that this effect depends on the level of solvency and that only states at medium levels of solvency are associated with higher amounts of investment in capital bonds. On the other hand, Adji et al. (1997), Bird and Rowlands (1997, 2000), Hajivassiliou (1987), Rodrik (1995) and Rowlands (2001) find little empirical evidence to support the catalytic role of the Fund. Furthermore, the empirical literature in political science shows a negative relationship between IMF agreements and Foreign Direct Investment (FDI) inflows, even when selection into program participation is controlled for (Jensen 2004).

We suggest that one reason for the mixed empirical results is that the effect of IMF participation on FDI inflows is contingent on investor expectations regarding the implementation of structural adjustment, which differs systematically across countries. In other words, the mechanisms through which IMF program participation can catalyze investment are not, in fact, operable across all types of states. One important factor that needs to be taken into account is the type of macroeconomic policy environment. In particular, IMF

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[1]Throughout the paper we refer to the IMF as "lending" and to countries as "borrowing," however, technically the IMF does not "lend" money and countries do not "borrow" money. Officially, the countries can make purchases by exchanging their currency for the equivalent of another members' currency or Special Drawing Rights (SDR), and then the country repurchases its own currency over time. The IMF places charges on these purchases and thus the purchase and repurchase is equivalent to making a loan with interest (*IMF Survey*).

program participation increases FDI only in the context of effective macroeconomic policies and well-functioning democratic political institutions. We find that IMF participation only has a negative effect on FDI inflows in the context of an authoritarian political system.

We develop a set of theoretical expectations for the types of states in which IMF agreements will stimulate FDI inflows and then we test these expectations empirically in a panel of 68 countries from 1970 to 1999. Our analysis employs a Markov transition model, which allows us to model selection into new IMF programs separately from selection into program continuation. The paper is organized as follows: The first section briefly discusses the background of the IMF and the changing nature of IMF lending and conditionality. The second section provides a brief literature review and the third discusses the channels through which IMF programs catalyze FDI and lays out hypotheses regarding the subset of states in which these mechanisms are expected to operate. In the fourth section we test these hypotheses, using a Markov transition model. We then discuss the findings and end with a brief conclusion.

2 The IMF: From Short-Term Financier to Adjustment Agency

The IMF was originally conceived in Bretton Woods to assist countries experiencing short-run balance-of-payments (BOP) shocks under the gold standard. After the gold standard was dropped in 1971 (and ultimately the Bretton Woods system collapsed in 1973), the role of the Fund shifted from the stabilizer of the fixed exchange-rate system to the manager of the floating exchange-rate system. The nature of the Fund's lending has also shifted since its inception. Funding, which once took the form of short-term support to help governments correct fiscal shortfalls and balance-of-payments problems associated with an exogenous shock, is now often aimed at changing the structure of the participating country's economy. Such

restructuring is thought to be necessary if the IMF believes that the source of the country's economic problems is misguided government policies that have hampered the economy's ability to respond to market signals. In such instances, countries are required by the IMF to adopt structural adjustment programs in order to qualify for the financial aid and loans available from the institution as well as other governments and banks. Thus, the Fund's role has shifted from an institution solely concerned with providing finances to countries facing severe balance of payments problems, to having the dual role of a financier, as well as an adjustment agency. This shift from short-term to long-term focus of the IMF makes it more likely that participation in a Fund conditionality program would affect levels of FDI, which is generally considered a more long-term investment as it is illiquid ex post.

There are a variety of IMF programs, also called "facilities" or "structural adjustment agreements," that are different lengths and consists of slightly different objectives. Although structural adjustment programs are ostensibly individually tailored to each borrowing country, the conditions that the IMF requires in exchange for access to its resources tend to be quite similar.[2] Designed to correct balance of payments disequilibria and promote sustainable growth, these conditions or policies are based on the neo-classical model of international trade and finance, and generally include devaluation by a government of its domestic currency, trade liberalization, tight monetary policy, controls on wage increases, and fiscal austerity, with the latter taking the form of reduced government services and subsidies, privatization of state-owned enterprises, and higher taxes (Cardoso and Helwege, 1993). Because the implementation of these policies has generally lead to a recession in the short-run, critics of structural adjustment have come to refer to the IMF's programs as constituting a dose of "bitter medicine" (e.g. Bordo et al, 2004; Khan, 1990; Conway, 1994; Marchesi and

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[2]Despite the variety programs, we choose to follow the standard in the literature and treat the different programs equivalently (e.g. Vreeland 2003). We believe that future research should disaggregate agreements by type in order to fully parse out the effects of conditionality, but doing so is beyond the scope and focus of this paper.

Thomas, 1999). Equating IMF participation to a drug, this metaphor attempts to allude to a more prosperous, healthier future. Investment leads to growth, and as most (if not all) countries that engage in IMF programs are capital poor, one of the best ways to gain access to capital is foreign direct investment. As mentioned above, the longer time horizons of FDI, combined with the theorized long-term benefits of IMF participation indicate a likely positive relationship. In the following section we discuss previous research on the effects of IMF programs, both directly on FDI and indirectly on the macroeconomic effects that might influence or be influenced by levels of FDI.

3   The IMF and Investment: Findings in the Empirical Literature

The IMF and others often tout the IMF's ability to catalyze both private and public capital flows and investment (Fischer 1999, Kohler 2000, IMF 2001). By signing an IMF agreement states signal that their policy reforms are the "right" ones and get the IMF's Good Housekeeping Seal of Approval. According to the IMF's own website:

> In most cases, the IMF, when it lends, provides only a small portion of a country's external financing requirements. But because the approval of IMF lending signals that a country's economic policies are on the right track, it reassures investors and the official community and helps generate additional financing from these sources. Thus, IMF financing can act as an important lever, or catalyst, for attracting other funds. The IMF's ability to perform this catalytic role is based on the confidence that other lenders have in its operations and especially in the credibility of the policy conditionality attached to its lending. (http://www.imf.org/) (2002)

Although the theoretical "catalytic" role of the IMF is often "taken for granted" (Schadler et al., 1995, 968), the empirical support of such a role is mixed. Dhonte (1997) and Edwards (2005) both find support for the catalytic effect. In particular, Edwards (2005) examines

portfolio investment and finds evidence supporting the argument that IMF programs are an important signal to portfolio investors. However, what Edwards finds is that a breach in the IMF agreement leads to lower portfolio investment, not necessarily that signing an agreement stimulates such investment. Rodrik (1996), finds that the IMF had a positive catalytic effect on private flows of capital. Using investment in capital bonds as their dependent variable, Mody and Saravia (2006) also find support for the catalytic effect, although the relationship they find is non-monotonic. Mody and Saravia find that only states at medium levels of solvency are associated with higher amounts of investment in capital bonds. On the other hand, Adji et al. (1997), Bird and Rowlands (1997, 2000), Hajivassiliou (1987), Rodrik (1995) and Rowlands (2001) find little empirical evidence to support the catalytic role of the Fund. Each of these studies examined the effect of participation in an IMF program on aggregate measures of capital flows, lending, and public and private investment.

Bird and Rowlands (1997) found little evidence of a positive catalytic effect on FDI inflows, even after disaggregating the data in various ways. Similarly, Bird and Rowlands (2002) disaggregated the types of agreements and found that Structural Adjustment Facilities were associated with lower inflows of FDI across all countries, while Extended Fund Facilities were negatively associated with future FDI inflows in poorer countries and positively associated with FDI inflows in richer countries. Barro and Lee (2003) create instrumental variables to estimate the effects of IMF programs on investment and find that participation in a program lowers foreign direct investment (measured as the ratio of FDI to GDP). Adji et al. (1997) also find little support that signing an IMF agreement increases FDI, via the "catalytic" effect. Jensen (2004) examines the relationship between IMF programs and levels of FDI, as measured as the ratio of FDI to GDP, but without explicit reference to the "catalytic" role of the Fund. Although he theorizes a positive relationship, Jensen finds that states which sign IMF agreements attract less FDI inflows than states which do not.

The empirical studies of the impact of IMF programs investment discussed above are often difficult to compare because these studies use a variety of methodologies and cover different country samples and time periods (Haque and Khan, 1998). On the other hand, a good test of the robustness of any empirical finding is whether or not the results hold across different methodologies. The inherent difficult in empirically assessing the independent effects of IMF programs is constructing the "counterfactual:" how the participatory country's economy would have done had it not signed onto an IMF agreement. By constructing and comparing the counterfactual with what actually happened, the researcher can confidently assess the independent effects of participation in an IMF program. Different methodologies approach this problem in different ways (e.g. "before-after," "with-without," controlling for selection using statistical models), resulting in non-robust findings across methodologies. Furthermore, systematic sample selection bias (either resulting from non-random selection of countries and/or years into the sample) call into question many of the results. Previous studies have addressed the methodological issue in differing ways, and we hope to improve on these studies by employing a model that we believe better controls for the possible pitfalls: endogeneity; autocorrelation; measurement issues; and the dynamic nature of Fund lending. Before we discuss the model and method, we address the theoretical relationship between IMF participation and FDI inflows and the subset of states in which we effect IMF programs to serve as an effective catalyst for FDI.

4 Theoretical Expectations: IMF agreements and FDI inflows

Firms engage in foreign direct investment (FDI) for a variety of reasons. Foreign firms may have organizational, knowledge-based, or other advantages over domestic firms in the host state. There may also be internalization advantages from hierarchical control of cross-border

production. Or, there might be location-specific advantages in terms of either economic environment, such as labor costs and quality or natural resource availability, or in terms of government policies, such as favorable tax rates or oligopolistic opportunities (e.g Dunning 1993). By investing outside their home state, however, firms become vulnerable to political risks that vary with the characteristics of the host state, the type of investment being made and the type of investor. Because FDI is relatively illiquid ex-post, foreign direct investors generally have long time horizons and are vulnerable to obsolescing bargains with the host state. For these reasons, direct investors are subject to types of political risk that do not plague portfolio investors. The mechanisms through which IMF agreements are expected to affect FDI inflows operate primarily through adjusting investors perceptions of the future macro-economic health of the host country.

Unfortunately, not all the ways that IMF agreements affect investors' beliefs lead to positive results for participating countries. In fact, there is a simple and direct channel through which participation in an IMF program is expected to decrease FDI inflows: program participation signals macroeconomic distress (e.g. Mody and Savaria, 2006). Finance ministers presumably have private information about the health of their economy and the government's fiscal position. It is also reasonable to assume that governments facing less favorable macroeconomic prospects are more likely to be willing to pay the sovereignty costs associated with an IMF program than those who believe their positions to be strong. Under these conditions, when a country enters an program, particularly one with onerous conditions, investors can reasonably interpret this as a signal that the country is in poor macroeconomic health.[3] This negative signal is strongest for countries that will bear the highest sovereignty costs from signing an agreement, i.e. for those agreements in which the government's policy preferences deviate the most from the conditions in the agreement and for those states facing

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[3]This argument is consistent with Dreher (2006) who finds that, while the net effects of IMF agreements on growth are negative, successful completion of conditionality agreements mitigates this negative effect.

the most onerous conditions.

4.1 IMF Conditionality and Commitment to New Policies

The conditionality imposed by the IMF helps countries commit to a particular set of macro-economic policies, the aim of which is long-run macro-economic stability and growth. While structural adjustment is generally associated with short-term economic pain, the long-term payoffs should be favorable for investors, particularly direct investors whose long time horizons interest them in the long-run health of the economy. Structural adjustment programs, then, should be associated with increased FDI.

However, the ability of conditionality to catalyze investment is dependent on investors' beliefs that implementation will be successful. However, a number of scholars have noted that IMF conditionality is often not implemented (e.g. Haggard 1985; Dreher 2006), and we should expect IMF conditionality to catalyze FDI only in those states in which implementation is expected. Because both the nature of conditions included in an IMF agreement and the incentives governments face to implement those conditions vary systematically across types of countries, we should be able to predict which countries are able to use conditionality to signal their reform intentions to investors.[4]

4.1.1 Domestic Politics: Democracies versus Autocracies

Structural adjustment is generally viewed as something imposed on participating governments by the IMF. However, in some instances the executive (or other parts of the government) may actually prefer to enact structural adjustment policies that conform closely to the IMF's standard prescriptions. In fact, given the IMF's stated objective of promoting growth, we should not find such alignment of preferences surprising. In states where the

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[4]The following paragraphs draw on the work of James Vreeland on the selection of states into IMF agreements (2003: 12-16; 2005)

executive wishes to implement structural adjustment policies, signing an IMF conditionality agreement can aid the executive in overcoming resistance from domestic veto players (such as an opposition-controlled legislature) that may oppose its preferred policies. It also allows the executive to commit more credibly to continuing structural adjustment policies over time even if resistance from other veto players or from the public increases as short-term costs come into effect. Conversely, executives that favor IMF-style structural adjustment but face neither opposition by another veto player or accountability to the public are able to implement structural adjustment without involving the IMF.

The terms of IMF programs are generally negotiated and signed by the IMF and either the head of the central bank or finance minister – other branches of government are not involved. This allows the executive to bypass other domestic veto players and negotiate a conditionality agreement that reflects the executive's preferred set of structural adjustment policies. The conditionality agreement links disbursement of needed funds to execution of the policies in the conditionality agreement. If the legislature (or another domestic veto player) opposes implementing some of the policies called for in the conditionality agreement, they must choose between either implementing those policies or risking the cutoff of IMF funding (Drazen 2002) and the additional negative consequences of falling out of good standing (Vreeland 2003). In this way, the executive can use the IMF to gain leverage in pushing through its preferred structural adjustment policies.

The probability that there exists a domestic veto player opposed to these reforms is increasing in the number of veto players in the system (Vreeland 2005). We expect this dynamic only in states with more than 1 veto player and we expect it to be more common in states with more veto players.

As structural adjustment policies are implemented and begin to impose costs on the economy as a whole or on specific groups (such as labor), the executive may face increased opposition from affected groups. If this opposition grows too strong it can force the execu-

tive to abandon structural adjustment or force the executive from office, ending structural adjustment this way. However, the executive may be able to avoid these outcomes by blaming negative outcomes on conditions imposed the by IMF. Because the initial process of negotiating conditions is not transparent, the public cannot observe which conditions were sought by the executive and which were imposed against its will. By using the IMF as a scapegoat, the executive may be able to retain popularity and sustain the reform effort as a whole. This dynamic is expected to be most prevalent in states where the executive faces high public accountability: i.e. more prevalent in democracies than autocracies.[5]

A key feature of the scenarios outlined above is that the conditions negotiated with the IMF substantially reflect the policy preferences of the executive. An IMF agreement is sought BECAUSE of conditionality, not in spite of it. In these cases, where IMF conditionality serves to support reform rather than impose it, implementation of conditions is more likely.

Expectation 1: Executives entering IMF agreements to overcome domestic opposition to reform are more likely to implement agreed conditions executives entering agreements for other reasons.

Besides being more likely to implement structural adjustment policies, states entering IMF agreements to overcome domestic opposition to reform are also likely to enter into agreements even when the private information they hold about their own macroeconomic prospects is not dire. Consider this: in cases where the executive prefers NOT not to undergo the type of structural adjustment generally prescribed by the IMF, it will avoid entering into an

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[5]In addition to the above scenario, Vreeland (2003) raises an alternative one, which we find less plausible: if the IMF really can serve as an effective scapegoat for negative economic outcomes, one might expect that executives anticipating negative economic outcomes might rush into an IMF agreement to gain a scapegoat. This could drive a correlation between participation and a number of negative outcomes in democratic states.

agreement if at all possible. This produces a selection effect among executives who oppose structural adjustment: only those in dire need of IMF funds (i.e. those facing the worst macroeconomic prospects) enter an agreement. In cases where an executive **prefers** to implement macroeconomic adjustment policies, entry into an IMF agreement may occur even when prospects are passable.

Let us consider also the case of an executive that prefers to implement structural adjustment policies similar to those generally prescribed by the IMF but does not face opposition from any domestic veto players and is publicly unaccountable. Such an executive will pay lower sovereignty costs entering an agreement than an executive who prefers to avoid structural adjustment, but it faces costs nonetheless: even if the executive's preferences match the agreed conditions perfectly, the executive cannot unilaterally alter the conditions later if its preferences change. Hence, if a pro-adjustment executive does not face a domestic veto player opposed to structural adjustment and is not worried about public discontent, we expect them to pursue structural adjustment without the aid of the IMF if at all possible. Constrained, pro-adjustment executives may enter IMF programs even in conditions where they do not absolutely need financing; unconstrained pro-adjustment executives will enter IMF programs only when the need for capital is dire.

Expectation 2: On average, executives entering into agreements to overcome domestic opposition face less dire macroeconomic problems than executives entering agreements for other reasons.

We have shown that if investors can assess the probability that a government is seeking an IMF agreement to overcome domestic opposition to reform, they can revise their beliefs both about both the level of economic distress a program initiator is likely under, and the likelihood that the government will implement the agreed conditions. Hence, IMF agree-

ments reached with executives who prefer reform are expected to be associated with higher levels of FDI than other types of agreements. Unfortunately for investors, an executive's preference for structural adjustment cannot be observed directly. However, by observing the domestic constraints an executive faces and the decision to enter or forego an IMF program, investors can infer the likelihood of pro-adjustment preferences.

Conditional on observing entry into an IMF agreement, observing either 1). public accountability of the executive or 2). the presence of additional veto players increases the likelihood that the executive prefers adjustment. IMF agreements entered into by pro-adjustment executives are a class of agreement unusually able to encourage reform and catalyze FDI inflows, so we expect IMF agreements to be increasingly effective in catalyzing FDI in states where the executive is accountable to the public and in states with more veto players. In other words, countries that sign IMF agreements are more likely to experience an increase in FDI if they are democratic.

Hypothesis 1: Ceteris paribus, democratic countries which sign IMF agreements are more likely to experience an increase in FDI than democratic countries which do not sign IMF agreements.

Hypothesis 2: Ceteris paribus, autocratic countries which sign IMF agreements are more likely to experience a decrease in FDI than autocratic countries which do not sign IMF agreements.

Essentially, signing an IMF agreement sends a signal to investors, and whether that is a positive or negative signal depends on regime type. First, signing an agreement is a clear signal of poor macroeconomic performance. Once macroeconomic performance is controlled for, what other signal does signing an IMF agreement send? The answer to that depends on regime type. As discussed above, implementation of structural adjustment policies is left up to the domestic governments. Not only are some governments more likely to imple-

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ment the policies in general, but the specifics of the policies are also left up to the domestic governments. Democracies are more likely to implement the policies in such a way as to benefit the welfare of the entire state and improve macroeconomic performance in the long run, as opposed to autocracies which have a strong incentive to implement the policies in a way so as to impose the costs on certain groups or prevent the costs from inflicting certain groups. For example, when Mexico signed an IMF agreement, the Fund required that the government balance it's budget. One of the first budget cuts was to eliminate the policy of giving the destitute two free tortillas on a daily basis (Eckstein).[6] This does not suggest that democracies are likely to send a positive signal to investors by signing an IMF agreement, simply that autocracies which sign an IMF agreement are likely to send a negative signal. This suggests our third hypothesis:

Hypothesis 3: Democracies that sign onto IMF agreements are neither more nor less likely to experience an increase in FDI, ceteris paribus.

   In the quantitative analysis that follows, we use Alvarez et al.'s binary measure of regime type to divide our sample between democracies and autocracies. Because the number of veto players is markedly higher in democracies than autocracies, this measure divides our sample both between executives that face high and low levels of public accountability and between countries with high numbers of veto players and countries with low numbers of veto players. Using Keefer's (2006) measure of veto players, which ranges from 1 to 18 in the sample, democracies have an average of 3.83 checks, while autocracies have an average of 1.35. A score of 1 indicates that a single actor (generally the executive) faces no other

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[6]This was under the reign of the PRI, which though ostensibly a democracy, is not rated as such on measures of democracy because one party ruled with no competition for an extended period of time.

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veto players that could potentially block structural adjustment policies. Eighty percent of autocratic country-years receive a checks score of 1, compared to only 3.5% of democratic country-years.

4.2 Alternative Hypotheses

Stone (2008) finds that a one-standard-deviation increase in polity score (an increase of 5.5 on a 21 point scale) decreases the scope of conditions by 8%. He also finds that executives in parliamentary systems receive narrower conditions than those in presidential systems, and that additional coalition members and leftist governments lead to narrower conditions still. Stone presents these findings as running counter to "the hypothesis that presidents generally turn to the Fund to tie their hands vis--vis the legislature because they lack the legislative powers of prime ministers (614)." However, while Stone's findings are consistent with his theory that constrained executives are able to use the presence of domestic constraints to lobby the IMF for narrower conditionality, they are also consistent with the hypothesis Stone dismisses: that executives in political systems with more than one veto player sometimes employ IMF programs to overcome domestic resistance to reform.

We argue that executives that want to use the IMF to help pursue their preferred structural adjustment policies are not likely to seek broad conditionality, but rather narrow conditionality regarding the specific issues on which their preferences align with the IMF but diverge from the domestic opposition. Recall that any unnecessary conditions impose costs on the executive by limiting their future ability to change policies if conditions or their preferences change. Executives who have come to the IMF seeking conditions to use in overcoming domestic opposition are optimally positioned to do limit the conditions from spilling into areas where they are not desired. Marchesi and Sabana (2008, cited in Stone 2008) present a formal model that suggests that when the executive's policy preferences are relatively similar to the IMF, and particularly when the executive has valuable private information (such as

information regarding how to pilot reforms past skeptical veto players), increased ownership (i.e a narrower scope of conditions) is preferable. Indeed, Stone observes "a pattern in which the IMF imposes more conditions on reluctant borrowers and fewer on countries that are eager to participate."

5   Empirical Analysis

A main catalyst driving our research is the counterintuitive results in Jensen (2004). Jensen found that states which signed onto IMF agreements experienced decreased inflows of FDI. We begin by replicating Jensen's original standard ordinary least squares regression with panel corrected standard errors (OLS-PCSE). As the most robust statistical model, it is recommended that OLS-PCSE be run on cross-sectional time-series data first (Beck and Katz 1995). We do not include it here in the interest of space. In this section we first reproduce the treatment effects model from Jensen (2004) to illustrate the motivation for the paper. We then separate Jensen's sample by regime type to test our hypotheses. Next, we generate a Markov transition model of the data split between regime type to further control for endogeneity; autocorrelation; measurement issues; and the dynamic nature of Fund lending.

5.1   Treatment Effects Model

We again replicate Jensen and ran a treatment effects model with full observability on *FDI* (measured as FDI inflows as a percentage of GDP from the World Bank 1999) for a panel of 68 countries between 1970-1999. The main independent variable of interest is *IMF Participation*, a dichotomous variable coded "1" if a country is under an IMF agreement in a particular year and "0" otherwise. The *IMF Participation* variable was originally constructed

by Vreeland (2003).[7]

Treatment effects models are employed in many studies which examine the effects of participation in an IMF program because this relationship is likely to suffer from endogeneity bias. When at least one of the independent variables in the model is correlated with the error term, there is endogeneity bias.[8] If one of the independent variables (the regressors) is acting as a proxy for an unobserved factor in the error term, then one cannot interpret the effect of the regressor as the estimated coefficient since it is also capturing the effect of the unobserved variable. Endogeneity bias here likely arises because IMF participation is not randomly distributed across all countries. In other words, selection into the treatment group is not random because some countries likelihood of receiving the treatment is zero (for example, the US) and much higher for others (for example, sub-Sahara African countries). If the factors that affect Fund participation are not randomly distributed across the population of countries, then the error term in the IMF participation selection equation and the error term in the FDI inflows equation will be correlated. Highly correlated error terms suggests that the unobserved factors that influence selection into IMF programs also have an impact

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[7]Although we use the most commonly used construct for participation in an IMF program, it is problematic for several reasons. First, it is difficult to know, theoretically, at what point signing an IMF agreement sends a signal. Presumably, a government simply entering into talks with the IMF would send a signal. Or perhaps the signal is not sent until the policies are actually implemented (Edwards, 2005). Ultimately, how timing is specified in empirical models studying the effects of IMF programs has systematic effects on the findings (Dicks-Mireaux et al 2000). Furthermore, governments do not sign agreements on January 1. Agreements are signed throughout the year, and an agreement that is signed in January is coded the same as one signed in December. It is possible that it takes months or years for the effects to manifest, biasing the results toward 0. Also, as discussed above, the Fund has a variety of different facilities that is uses, which differ based on the structural problems of the participating country's economy. The traditional explanation given for ignoring these differences, that they have the same ultimate goal and hence similar effects, is inherently flawed. Different conditionality attached to these agreements is aimed at different problems and will have different effects. Different conditions will affect different sectors (export-oriented sectors, labor, etc.), and the mechanisms by which the conditions and facilities have an effect on macro-conditions will vary. Despite these drawbacks, we use the traditional dichotomous measure and leave addressing the above problems to future research.

[8]If there is reverse causality between an independent variable and a dependent variable, and the dependent variable is determined simultaneously with at least one of the regressors, endogeneity bias may also be a problem. For endogeneity bias, the dependent variable is observed for all observations in the data. In contrast, sample selection bias arises when the dependent variable is observed only for a restricted, nonrandom sample of observations.

on the levels of FDI inflows.

Treatment effects models are a series of two equations, which includes an endogenous treatment variables, in this case, *IMF Participation*. The econometric equations for the treatment model is:

$$Y_{it} = \alpha + \beta_i(Y_{i(t-1)}) + \beta_j(IMF_{t-1}) + \beta_k(Z_{it}) + \epsilon_{it} \tag{1}$$

$$IMF_t = \beta_i(C) + u_i \tag{2}$$

$$Cov[\epsilon, u_i] = \rho \tag{3}$$

Y_{it} is the FDI of country i in time t, which is a function of $Y_{i(t-1)}$, FDI of country i in time $t - 1$, IMF participation in time $t - 1$, a vector of observable variables, Z at time t, and some error, ϵ. IMF is an endogenous dummy variable that is a function of covariates C and some error term u_i. The covariance between ϵ and u_i suggests that there are unobserved factors that influence both selection into an IMF program and FDI.

One potential unobserved factor might be "political will" (e.g. Vreeland 2002). Countries with governments that have strong political will might be more likely to submit to the short-term costs and sovereignty costs associated with signing an IMF agreement in order to achieve the long-term benefits. Political will might also exercise an independent effect on amounts of FDI inflows. If governments that have more political will are less likely to submit to the temptation to engage in expropriation of FDI, then these states are likely to receive higher amounts of FDI inflows.

Thus, the model estimates two potentially correlated outcomes - the binary participation/non-participation in an IMF program and the continuous outcome of FDI inflows, with IMF as the endogenous dummy variable. The model assumes that the error terms in the two equa-

tions are correlated, implying the covariance of the random error terms equals a constant, p, rather than zero. If a correlation between the error term exists, than this implies that the effects of unobserved variables (such as political will) are not random, and the model corrects for it.

Table 1 displays the results for the treatment effects model, a replication of Jensen's (2004) original treatment effects model.

[Table 1 About Here]

Equation (2) is displayed in the bottom half of the table and shows the model of *IMF participation*. In this equation *IMF Participation* is the dependent variable, and all of the independent variables are lagged one year indicating that the likelihood of IMF participation is a function of economic indicators from the previous year. Of the independent variables, only four are statistically significant: *Lagged IMF Participation*, *Lagged Debt*, *Lagged Investment*, and *Lagged Foreign Reserves*. *Lagged IMF Participation* has the largest coefficient and suggests that the strongest predictor of IMF participation is participation in an IMF program in the previous year. This is not surprising as there is a high level of recidivism in IMF programs. Importantly, *Lagged Regime* does not have a statistically significant effect on *IMF Participation* - the existence of democracy does not affect whether or not a state pursues an IMF structural adjustment agreement.

The top half of Table 1 displays Equation (1), the model of *FDI* inflows. Similar to *IMF Participation*, *FDI* is largely determined by FDI in the previous year (*Lagged FDI*). The effect of *IMF Participation* on *FDI* is negative AND statistically significant. Even after controlling for selection into an IMF program, countries which sign IMF programs receive substantially less foreign direct investment than states which do not agree to an IMF program. A difference of an amount equal to 0.36% of GDP.

This is the main finding in Jensen's paper, a finding he presents as running counter

to theoretical expectations. Jensen offers several explanations of the finding, such as the possible negative distributional effects of IMF programs (Pastor 1987, Vreeland 2003), or possible long-term costs of program participation. We argue that the surprising results could be driven by the estimation method and/or a failure to allow for the possibility that the processes relating IMF participation and FDI inflows may be different in democracies than in autocracies.

5.2 Treatment Effects Model Separated By Regime

We contend that these strange results are being driven by the difference between autocracies and democracies. Although *Regime* is controlled for in each of the previous models, doing so does not reflect the argument that there are completely different processes going on in democracies than autocracies, as it relates to the state's ability to generate FDI inflows. Therefore, we separate the sample between democracies and autocracies. This suggests that signing an IMF agreement sends a different signal to investors depending on whether the country is autocratic or democratic.

There are a number of possible ways to divide states which may use IMF agreements as a means to commit to economic reforms and those that are unlikely to. We use the ACLP regime type variable (Alvarez et. al. 1996), which is a dummy variable coded "1" for dictatorships and "0" for democracies.[9]

We divide the sample in two by regime type, rather than including regime type as a dummy control in the second stage of the model, because regime type affects not only the effects of IMF agreements on FDI, but also initial process of selection in an IMF agreement. Autocracies are expected to enter IMF agreements strictly on the basis of their macroeconomic situation, while entry by democracies is expected to be determined by both

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[9]In the case of transition years, the value coded for the variable corresponds to the regime that emerged in that year.

macroeconomic conditions and the dynamics of domestic political competition. Table 2 and Table 3 display the results for democracies and autocracies, respectively.

[Tables 2 and 3 About Here]

The results displayed in Tables 2 and 3 indicate that there is a significant difference in the effects of signing an IMF agreement on FDI, depending on if the state is a democracy or an autocracy. In democracies, IMF agreements are associated with positive (though not statistically significant) increases in FDI inflows as a percent of GDP, supporting Hypothesis 3. On the other hand, in autocracies, IMF agreements are associated with a statistically significant decrease in FDI, which supports Hypothesis 2. Not only is IMF participation negatively and statistically significantly related to FDI in autocracies, but the effect is also more than twice as large as the effect in the unseparated sample.

Furthermore, consistent with theoretical expectations, the determinants of *IMF participation* are different for democracies and autocracies. For democracies, only *Lagged IMF participation* and *Lagged foreign reserves* were statistically significant. For autocracies, in addition to the *Lagged IMF participation*, *Lagged GDP growth*, *Lagged budget deficit*, and *Lagged inflation* were all statistically significant and negatively related to IMF participation, while *Lagged government debt* was positively related. These results show that macroeconomic conditions more accurately predict entry into IMF agreements for autocracies than for democracies - this is consistent with the theoretical expectation that the decision by autocracies to enter into IMF agreements is more purely driven by the need for capital. In democracies, where the decision to enter an IMF agreement is expected to be often driven by domestic politics, the ability of macroeconomic variables to accurately predict entry into an IMF programs is lower.

The mean FDI for democracies is 1.218 percent of GDP, while the mean FDI for autocracies in the sample is .999 percent of GDP. For autocratic states, the estimated difference

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between states under IMF agreements compared to those that not under IMF agreements is 0.71% of GDP - more than 50% of the mean value of the sample.

These results suggest that the underlying processes linking IMF participation to differences in FDI are different in democracies and autocracies, and that pooling all countries in a single sample may lead to misleading conclusions on the effect of regime type on the relationship between FDI and IMF participation. Again, for democracies, signing an IMF agreement is associated with a slight, but not statistically significant increase in FDI. On the other hand, autocracies that sign IMF agreements are associated with a large and statistically significant *decrease* in FDI. The puzzling results found in the empirical literature, and in particular in Jensen (2004) appear to be driven entirely by regime type.

In the following section we take a step back and explain the updated statistical model and then run the model on the sample separated by regime type.

5.3   Markov Transition Model

One theoretical explanation for the recidivism phenomenon found in Equation (2) of the treatment effects model above is the sovereignty costs governments pay when they sign IMF agreements (Vreeland 2003). According to this argument, governments pay sovereignty costs when they sign an agreement because they are giving up some of their rights to make policy in exchange for the loans. After the first time a country agrees to an IMF program, continuing that program has much lower sovereignty costs than the initial signing. However, these sovereignty costs are also how a government sends a credible signal to investors that their policies will change - this signaling effect is likely much less strong when continuing an agreement than when entering it for the first time.

While the treatment effects model does an excellent job of predicting when a state will be under an IMF agreement, it is far better at predicting the uninteresting cases; when a state is already under an IMF agreement. It performs more poorly in predicting a state's

initial entry into an IMF agreement. This is problematic, because if an IMF agreement is to act as a signal to catalyze lending, it is most likely to do so in the initial year of signing. IMF agreements can last several years, but even resigning an agreement after the initial one ended would not send as strong of a signal because the costs of signing the agreement have declined (for example, sovereignty costs) and because the policies the country is committing to have already proven somewhat ineffectual, given that the country needs another loan. Therefore, by only examining whether or not a country is under an IMF agreement in a particular year (rather than modeling the transition or continuation decisions), the model does not accurately reflect theoretical expectations for why IMF programs should impact FDI.

In this section we build on the treatment effects model by employing a dynamic model. We find similar results from the treatment effects model; autocratic governments that enter into IMF agreements are driving the negative relationship between IMF involvement and FDI.

We argue that a treatment effects model does not accurately capture the theoretical effect of IMF agreements. Simply modeling a static relationship (with a lagged dependent variable) to determine the likelihood of a state being in under an IMF agreement in a particular year is limited in that it assumes that the determinants of IMF participation in the current period are the same regardless of whether or not the country was under an IMF agreement in the previous year. By contrast, we argue that the underlying processes that determine the transition into an IMF agreement are different from the processes that determine the continuation of an agreement.

As a result, using a dynamic model will allow us to estimate the likelihood of a state signing an IMF agreement conditioned on whether or not they were under an agreement in the previous year. This type of set-up allows us to differentiate between the effect of an initial transition to IMF participation from the effect of continued participation in IMF

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programs. This more accurately reflects the theoretical impact of an IMF agreement: that IMF agreements send a signal to investors of sound economic policies. Thus, for the IMF selection model, we use a Markov transition model.[10]

We assume that participation in an IMF program in time t depends on participation at time $t-1$ following a first order Markov process. This can be denoted by:

(a) $d_{it} = 1$ if country i is under an IMF agreement at time t

(b) $d_{it} = 0$ if country i is not under an IMF agreement at time t

Let Y_{it} be the FDI of country i in time t, Y_{it} is the level of FDI if the country is not participating in an IMF program, and Δ is the impact of the IMF program on FDI, such that:

$$Y_{it} \quad \text{if } d_{it} = 0 \tag{4}$$

$$Y_{it} + d_{it}\Delta \quad \text{if } d_{it} = 1 \tag{5}$$

We estimate the following equation, where Z_{it} is the vector of observable variables affecting the level of FDI (Y_{it}), β is the vector of parameters and Δ is the impact of IMF participation on country i's level of FDI at time t.

$$Y_{it} = \beta Z_{it} + d_{it}\Delta + \epsilon_{it} \tag{6}$$

However, because assignment into IMF program participation is not random, we first estimate the following probit equation using the determinants of IMF program participation:

$$P(d_{it} = 1) = Probit(\beta_0 + \beta_1 X_{it-1} + \beta_2 d_{it-1} + \beta_3 d_{it-1} X_{it-1}) \tag{7}$$

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[10]This differs significantly from Jensen's original model which attempts to account for program continuation or renewal by including a lagged dependent variable.

The coefficients can be used to identify whether the processes that determine IMF program participation are different for transition into an IMF program vs. continuation of participation:

β_1: impact of vector of indicator variables X_{it-1} (determinants of IMF program participation) on the probability of going under an IMF agreement when a country is currently not under an agreement.

β_2: impact of being under an IMF agreement in time $t-1$ on the probability of continuing to remain under an agreement in t.

β_3: denotes the difference between the impact of the vector of indicator variables X_{it-1} when the country is already under an agreement compared to when the country is not already under an agreement.

Formally, the equations we estimate are:

$$d_{it} = \alpha X_{it-1} + \mu X_{it-1} d_{it-1} + \epsilon_{it}^d \tag{8}$$

$$Y_{it} = \beta Z_{it} + d_{it}\Delta + \epsilon_{it} \tag{9}$$

We use a treatment effects regression, in which all independent variables in the initial probit regression determining IMF program participation are interacted with the lagged value of the dependent dummy variable for IMF participation. This is because if there is correlation between the error terms of the two equations, such that $E(\epsilon_{it}\epsilon_{it}^d) \neq 0$, the expected value of the initial error term (determinants of IMF participation) into the second stage equation (FDI).[11]

The results from the Markov transition model are displayed for democracies in Table 4 and autocracies in Table 5. The regime difference result found in the treatment effects model

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[11]Correlation can also arise from the determinants of IMF program participation, in which case these variables simply need to be included in the second stage regression on FDI levels.

holds in the Markov transition model as well, IMF participation does not have a statistically significant effect on FDI in democracies, and has a negative and statistically significant effect on FDI.

There are some interesting results for autocracies. The interaction between *Lagged GDP Growth* and *Lagged IMF Participation* produces a positive and statistically significant effect on a state's likelihood of signing an IMF agreement. Autocratic states with a high GDP per capita in the previous year which were under an IMF agreement in the previous year are more likely to sign an IMF agreement.

For democracies, the only significant variable in equation (2), which models IMF participation is *Lagged Foreign Reserves*. Not even *Lagged IMF Participation* is statistically significant. Interestingly, *Lagged IMF Participation* is not significant for autocracies either. This is interesting because most models of IMF participation are strongly driven by previous IMF participation. Many indicators of poor macroeconomic performance are significant for predicting IMF participation in autocracies such as *Lagged GDP per capita*, *Lagged GDP Growth*, *Lagged Deficit*, *Lagged Reserves*, and *Lagged Investment*. These results further suggest that there are different mechanisms at work in democracies than in autocracies when in comes to selection into IMF programs and the effects IMF programs have on FDI.

In autocracies, FDI inflows are not only significantly related to *IMF Participation* and *Lagged FDI*, but also *GDP growth* and *Trade*.

[Tables 4 and 5 About Here]

6   Conclusion

These results indicate that signing on to an IMF agreement alone will not necessarily lead to increased FDI inflows, and that these agreements need to be implemented in a supportive macroeconomic policy environment. Although IMF agreements promote FDI by conferring

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a "seal of approval" for macroeconomic policies, it may also decrease FDI to the extent that it signals economic distress. Our results show that for autocracies, the effect of signaling economic distress may outweigh any positive benefit from IMF assistance and policies, leading to an overall negative effect between IMF participation and FDI inflows. Thus, the signal sent by autocracies is nothing more than a signal that the state's macroeconomic policies are in trouble. However, because of greater number of veto players and motivations to sign an IMF agreement beyond macroeconomic distress, loans to democracies send less negative signals to investors.

However, our findings are still troubling for the IMF in that, even though democracies are not associated with decreased levels of FDI if they agree to an IMF program, democracies are still not associated with increased levels of FDI. As discussed above, the IMF touts it's role as a catalyst of funds, however, it appears as though the IMF either decreases FDI (as in autocracies) or has no affect on FDI (as in democracies). So why do autocratic governments chose to sign onto IMF agreements if doing so decreases FDI? Politicians with short time horizons may be more interested in the access to capital in the short run and less concerned with the long term benefits of FDI. This makes sense if autocratic governments sole motivation for signing IMF agreements is macroeconomic distress, as theorized.

Autocracies which sign IMF agreements on average receive less FDI than autocracies which do not sign IMF agreements. On the other hand, democracies which sign IMF agreements receive neither more nor less FDI than democracies which do not. However, our study does not test the causal mechanisms themselves. Is it veto players? Implementation of the policies? The manner in which implementation is carried out? Future research should attempt to answer these questions.

7 Tables

Table 1: Jensen's Treatment Effects Model

Variable	Coefficient	(Std. Err.)
Equation 1 : FDI % of GDP		
Lagged FDI	0.540**	(0.030)
Market size	-0.050	(0.047)
GDP growth	0.042**	(0.011)
Trade	0.007**	(0.002)
Development level (GDP per capita)	0.177†	(0.093)
Regime	0.004	(0.008)
Budget deficit	-0.003	(0.012)
Government consumption	-0.017	(0.013)
Time dummies: decade 2	-0.222	(0.164)
Time dummies: decade 3	0.149	(0.190)
IMF Participation	-0.356*	(0.168)
Intercept	0.279	(1.064)
Equation 2 : IMF Participation		
Lagged IMF Participation	1.887**	(0.113)
Lagged Regime	0.010	(0.009)
Lagged GDP per capita	-0.013	(0.085)
Lagged GDP growth	-0.017	(0.012)
Lagged Budget Deficit	-0.010	(0.012)
Lagged Central Govt. Debt	0.015**	(0.005)
Lagged Market Size	-0.022	(0.041)
Lagged Inflation	0.000	(0.000)
Lagged Domestic Investment	-0.018*	(0.009)
Lagged foreign reserves	-0.076**	(0.023)
Intercept	-0.027	(0.991)
Equation 3 : athrho		
Intercept	0.169†	(0.091)
Equation 4 : lnsigma		
Intercept	0.400**	(0.025)
N	796	
Log-likelihood	-1764.867	
$\chi^2_{(11)}$	718.842	

Significance levels : $\dagger : 10\%$ $* : 5\%$ $** : 1\%$

Table 2: Effect of IMF Participation on FDI in Democracies

Variable	Coefficient	(Std. Err.)
Equation 1 : FDI as % of GDP		
Lagged FDI	0.652**	(0.046)
Market size	-0.075	(0.056)
GDP growth	0.018	(0.014)
Trade	0.002	(0.003)
Development level (GDP per capita)	0.215*	(0.092)
Budget deficit	0.007	(0.015)
Government consumption	-0.004	(0.018)
Time dummies: decade 2	-0.043	(0.207)
Time dummies: decade 3	0.373	(0.230)
IMF Participation	0.084	(0.221)
Intercept	0.391	(1.535)
Equation 2 : IMF Participation		
Lagged IMF Participation	1.734**	(0.203)
Lagged Regime	0.028	(0.026)
Lagged GDP per capita	0.035	(0.156)
Lagged GDP growth	-0.004	(0.026)
Lagged Budget Deficit	0.003	(0.021)
Lagged Central Govt. Debt	0.012	(0.008)
Lagged Market Size	-0.084	(0.070)
Lagged Inflation	0.000	(0.000)
Lagged Domestic Investment	-0.015	(0.019)
Lagged Foreign Reserves	-0.134**	(0.040)
Intercept	1.178	(2.045)
Equation 3 : athrho		
Intercept	0.064	(0.205)
Equation 4 : lnsigma		
Intercept	-0.113*	(0.045)
N	251	
Log-likelihood	-430.217	
$\chi^2_{(10)}$	449.818	

Significance levels :   † : 10%   ∗ : 5%   ∗∗ : 1%

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Table 3: Effect of IMF Participation on FDI in Autocracies

Variable	Coefficient	(Std. Err.)
Equation 1 : FDI as % of GDP		
Lagged FDI	0.456**	(0.040)
Market size	0.036	(0.071)
GDP growth	0.048**	(0.014)
Trade	0.013**	(0.003)
Development level (GDP per capita)	0.022	(0.151)
Budget deficit	0.000	(0.016)
Government consumption	-0.021	(0.017)
Time dummies: decade 2	-0.331	(0.218)
Time dummies: decade 3	-0.071	(0.268)
IMF Participation	-0.711**	(0.227)
Intercept	-0.516	(1.507)
Equation 2 : IMF Participation		
Lagged IMF Participation	1.956**	(0.149)
Lagged Regime	-0.013	(0.015)
Lagged GDP per capita	-0.129	(0.115)
Lagged GDP growth	$-0.028^{\dagger}$	(0.015)
Lagged Budget Deficit	$-0.033^{\dagger}$	(0.017)
Lagged Central Govt. Debt	0.015*	(0.007)
Lagged Market Size	0.030	(0.059)
Lagged Inflation	$-0.003^{\dagger}$	(0.002)
Lagged Domestic Investment	-0.018	(0.011)
Lagged Foreign Reserves	-0.028	(0.032)
Intercept	-0.430	(1.395)
Equation 3 : athrho		
Intercept	0.239*	(0.104)
Equation 4 : lnsigma		
Intercept	0.538**	(0.032)
N	505	
Log-likelihood	-1175.017	
$\chi^2_{(10)}$	397.999	

Significance levels : $\dagger : 10\%$ $* : 5\%$ $** : 1\%$

Table 4: Markov Transition Treatment Effects Model: Democracies

Variable	Coefficient	(Std. Err.)
Equation 1 : FDI as % of GDP		
Lagged FDI	0.652**	(0.047)
Market size	-0.076	(0.058)
GDP growth	0.018	(0.014)
Trade	0.002	(0.003)
Development level (GDP per capita)	0.214*	(0.092)
Budget deficit	0.006	(0.015)
Government consumption	-0.004	(0.019)
Time dummies: decade 2	-0.040	(0.212)
Time dummies: decade 3	0.377	(0.239)
IMF Participation	0.075	(0.308)
Intercept	0.419	(1.613)
Equation 2 : IMF Participation		
Lagged IMF Participation	3.251	(4.387)
Lagged Regime	0.027	(0.036)
Lagged GDP per capita	-0.187	(0.225)
Lagged GDP growth	0.016	(0.043)
Lagged Budget Deficit	0.001	(0.026)
Lagged Central Govt. Debt	0.017	(0.011)
Lagged Market Size	0.034	(0.109)
Lagged Inflation	0.000	(0.000)
Lagged Domestic Investment	-0.023	(0.031)
Lagged Foreign Reserves	-0.173**	(0.065)
Lagged Regime * Lagged IMF	-0.010	(0.059)
Lagged GDP per capita * Lagged IMF	0.457	(0.310)
Lagged GDP growth * Lagged IMF	-0.053	(0.060)
Lagged Budget Deficit * Lagged IMF	0.030	(0.049)
Lagged Central Govt. Debt * Lagged IMF	-0.016	(0.015)
Lagged Market Size * Lagged IMF	-0.174	(0.150)
Lagged Inflation * Lagged IMF	0.000	(0.000)
Lagged Domestic Investment * Lagged IMF	0.000	(0.043)
Lagged Foreign Reserves * Lagged IMF	0.049	(0.099)
Intercept	0.054	(3.263)
Equation 3 : athrho		
Intercept	0.076	(0.331)
Equation 4 : lnsigma		
Intercept	-0.113*	(0.045)
N	251	
Log-likelihood	-425.177	
$\chi^2_{(10)}$	449.616	

Significance levels :   † : 10%   ∗ : 5% 33** : 1%

Table 5: Markov Transition Treatment Effects Model: Autocracies

Variable	Coefficient	(Std. Err.)
Equation 1 : FDI as % of GDP		
Lagged FDI	0.452**	(0.040)
Market size	0.043	(0.071)
GDP growth	0.048**	(0.014)
Trade	0.013**	(0.003)
Development level (GDP per capita)	0.012	(0.151)
Budget deficit	-0.001	(0.016)
Government consumption	-0.018	(0.017)
Time dummies: decade 2	-0.332	(0.215)
Time dummies: decade 3	-0.088	(0.265)
IMF Participation	-0.866**	(0.214)
Intercept	-0.566	(1.510)
Equation 2 : IMF Participation		
Lagged IMF Participation	1.957	(3.240)
Lagged Regime	0.008	(0.023)
Lagged GDP per capita	-0.592**	(0.197)
Lagged GDP growth	-0.047*	(0.023)
Lagged Budget Deficit	-0.063**	(0.024)
Lagged Central Govt. Debt	0.029*	(0.012)
Lagged Market Size	0.125	(0.095)
Lagged Inflation	-0.023*	(0.009)
Lagged Domestic Investment	-0.038†	(0.020)
Lagged Foreign Reserves	-0.156*	(0.072)
Lagged Regime * Lagged IMF	-0.042	(0.033)
Lagged GDP per capita * Lagged IMF	0.761**	(0.252)
Lagged GDP growth * Lagged IMF	0.042	(0.032)
Lagged Budget Deficit * Lagged IMF	0.074*	(0.037)
Lagged Central Govt. Debt * Lagged IMF	-0.024	(0.015)
Lagged Market Size * Lagged IMF	-0.260†	(0.138)
Lagged Inflation * Lagged IMF	0.021*	(0.009)
Lagged Domestic Investment * Lagged IMF	0.033	(0.025)
Lagged Foreign Reserves * Lagged IMF	0.181*	(0.086)
Intercept	1.242	(2.317)
Equation 3 : athrho		
Intercept	0.386**	(0.107)
Equation 4 : lnsigma		
Intercept	0.544**	(0.033)
N		505
Log-likelihood		-1152.554
$\chi^2_{(10)}$		404.496

Significance levels : $\dagger$: 10% $*$: 5% 34$**$: 1%

Table 6: OLS-PCSE Replication Results

Variable	Coefficient	(Std. Err.)
Lagged FDI	$0.593^{\dagger}$	(0.081)
Market size	-0.057^{*}	(0.042)
GDP growth	0.022^{**}	(0.008)
Trade	0.007^{**}	(0.002)
Development level (GDP per capita)	$0.061^{\dagger}$	(0.070)
Budget deficit	0.005^{**}	(0.010)
Government consumption	-0.001^{**}	(0.010)
Time dummies: 1970s	0.000	(0.000)
Time dummies: 1980s	0.022	(0.142)
Time dummies: 1990s	0.379	(0.147)
IMF Participation	$-0.081^{\dagger}$	(0.095)
Intercept	0.845	(0.834)
N		1792
R^2		0.521
$\chi^2_{(10)}$		698.723

Significance levels : $\dagger : 10\%$ $* : 5\%$ $** : 1\%$

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