The Politics of Compliance in World Bank Funding

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Executive Summary

While international development is generally in the mutual interests of the World Bank Group, developing states, and the donor states to the World Bank, politics can diverge the interests of these three actors. Each of the actors have their own preferences for funding and development outcomes. The World Bank prefers to fund states that adopt specific policies or implement particular development projects. The developing states prefer to maintain access to development funds, though they do not always prefer to comply with funding agreements. The major donor states, most especially the United States, prefers that funds be disbursed to their political allies. In this dissertation, I find that despite these different preferences, each of the actors find something to gain from cooperation.

In Article I, I provide a formal model to theorize that the World Bank is able to induce compliance in recipient states which are otherwise not willing to comply with the terms of a funding agreement. The tools available to the Bank are to offer more attractive agreements in the future contingent on compliance with current funds, and reduce future funding offers if the recipient state does not comply. The results suggest that the World Bank can productively influence the policies of developing states despite short-term shirking of funding conditions by recipient states.

In Article II, I test the implications of the formal model in Article I regarding the funding decisions of the World Bank. Using project data from the World Bank and project evaluation data from the Independent Evaluation Group (IEG), I test a hypothesis regarding the World Bank's decision of whether or not to provide funding to developing states. The statistical results support the formal theory for World Bank funding decisions.

Article III extends the formal theory to political considerations of donors to the Bank and provides a statistical test of the implications of the theory. The US is the largest donor to the World Bank, is the only state that wields veto power in funding decisions, and is far

more involved in the daily affairs of the Bank than any other state. This means that the US has the capacity to singlehandedly guide funding decisions. But this does not mean that the US simply approves of funds to states in which it has political ties. Rather, it presents an opportunity for the US to reward political allies while it also places pressure on the US to maintain the support of other donor states and the World Bank. The result is that the US must be sensitive to whether or not their political allies are compliant with funding agreements. A statistical model provides empirical evidence for this assertion.

This dissertation is organized by the three article format. The dissertation proposal contains working drafts of each of the three articles. Each article begins with an abstract and concludes with remarks for possible additions to the paper. The rest of the dissertation proposal is organized as follows. The first section establishes the research questions to be answered. The following three sections are the working drafts of the three articles. After the three articles, alternative article ideas are provided. The last section contains a timetable for the dissertation project.

Contents

The Puzzle

This dissertation seeks to understand the relationship between World Bank funding decisions and developing states' compliance. As the main developmental international financial institution, the World Bank oversees billions of dollars in development aid on an annual basis. The Bank, like the International Monetary Fund, has conditionality requirements on projects which are intended to reform domestic policies into alignment with neoliberal economics and finance as a means of economic growth. This policy orthodoxy includes structural adjustment, especially austerity, privatization, and capital account liberalization. Individual funding projects also have programmatic requirements which may include reporting, generating plans, and implementing projects. However, recipients of World Bank funding are not always complicit with funding conditions.

The World Bank and the recipient states have their own preferences and strategies in dealing with one another. The World Bank must consider the risk in giving or lending which may end in recipient states not implementing the intended programs or reforms, as well as not paying back the loan. On the other side, the recipient may or may not have incentive to comply with the terms of an agreement once the funds are dispersed. This in return, could impact the way in which the World Bank approves projects or disburses funds. For instance, the World Bank might approve more projects and increase funding amounts for compliant states.

However, the World Bank is a political institution despite the Bank's primary goal of being a technical agency for international development. Article IV Section 10 of the World Bank's Articles of Agreement states that the Bank may not take into account the political characteristics of a country, and that only economic characteristics are to be considered. The Bank's Executive Board consists of states which donate to the Bank and determine what funding proposals are accepted or rejected. This means that the politics of the donor

states may impact World Bank funding. Such political considerations could undermine the effectiveness of the Bank as a developmental institution.

In my review of the literature, I have found no published articles which consider the strategic interaction of the World Bank and recipient states in funding and compliance relations. This dissertation will contribute to the literatures on World Bank politics, international institutions, and cooperation by expounding formal theories of how the World Bank makes decisions to fund developing states. The dissertation also provides statistical tests of the implications of the formal theories. The dissertation answers the questions of how compliance with funding agreements impacts World Bank funding decisions, and how the politics of the donors to the World Bank influence the Bank's funding policies of compliant and non compliant states.

Article One

A Stochastic Game of World Bank Funding and Compliance

Abstract

As the largest international development institution, the World Bank has considerable leverage in pressuring states to change domestic policies or implement development projects. This paper provides a game theoretic analysis of the interaction of the funding decisions of the World Bank and compliance decisions of developing states. The theory suggests that the World Bank is able to induce compliance in recipient states which are otherwise not willing to comply with the terms of a funding agreement. The tools available to the Bank are to offer more attractive agreements in the future contingent on compliance with current funds, and reduce future funding offers if the recipient state does not comply. The results suggest that the World Bank can productively influence the policies of developing states despite short-term shirking of funding conditions by recipient states.

World Bank funding conditionality may come in the form of ex ante policy requirements but not all requirements can be fulfilled before the project funds are disbursed. If project planning and implementation is dependent upon the World Bank's funding, then these requirements may only be met after disbursement. This means that the World Bank grants projects with some uncertainty as to how well the conditions will be upheld. This suggests that the World Bank should be a strategic actor who manages risk, and may revise project making policies after observing recipient actions.

The World Bank has goals for international development, and conditions on funding projects are set by agreement contracts that are intended to protect the World Bank's

intentions for the funding. There are many types of developmental projects within the different institutions of the World Bank Group, and compliance with the terms of the agreements depend on the funding conditions and the recipient state's performance. For instance, the International Development Association (IDA) provides investment capital for development of mining and energy activities which may require the installation of a hydroelectric dam as well as adjustments to electricity tariffs. Compliance with the funding depends on both the installation of the dam as well as adjusting tariffs. Another example, the International Bank for Reconstruction and Development (IBRD) may provide funds to develop the private sector which requires that a government privatize public industries.

Though the two institutions have different agendas, the World Bank and the International Monetary Fund (IMF) coordinate ideological strategies for international finance. Both international financial institutions require structural adjustment prior to providing funding (Dreher and Gassebner 2012) and are a main driver of reforms in many developing states (Jones, Morrissey and Nelson 2011). These structural requirements are neoliberal economic orthodoxy and include reducing government spending, privatization, removing tariffs and other protectionist policies, stricter monetary policy to encourage investment, and currency devaluation to boost exports. The purpose of structural adjustment is economic growth, and this approach is not accepted as by many economists as the most effective growth policies (Harrigan and El-Said 2010; Marchesi and Sirtori 2011).

During the political transitions of the 1990s, the IFIs took on a stronger role in using conditions as a tool to encourage economic reforms (Dreher 2004). At the turn of the century, epistemic circles were discussing the effectiveness of the structural adjustment conditions, and whether an alternative approach to conditions could yield better project effectiveness (Koeberle 2003; Collier 2005; Standing 2000; Stiglitz 1998; Woods 2001; Woods and Narlikar 2001). The discussions concerned how well the recipient states were willing to participate in the requirements of the project, since the requirements were unilaterally

imposed by the IFIs. The alternative was to find true middle ground in which the IFI and the recipient states could agree so that the states find ownership in project goals and requirements. Ownership is the catch word regarding this policy view, and it was meant to create better compliance.

Regarding compliance, it would seem reasonable to expect that the World Bank would want to reward governments that comply with project conditions. The World Bank would maximize investments and potentially deter noncompliance by offering the carrot of access to future funds to compliant states (Svensson 2000). States that do not comply would receive the stick of withholding, delaying, or minimizing the amount of funds. However, the World Bank may be willing to overlook noncompliance on humanitarian grounds because the funds are meant for development assistance to help raise people out of poverty. Additionally, since the World Bank is managing donor's contributions rather than their own fund, the Bank group has greater incentive to put the money to work by opening new projects (Dreher 2004). These two complications, humanitarian concerns and managing donor's funds, may provide the World Bank with disincentives to uphold conditionality.

Recipient Costs of Reform

Project requirements pose costs to domestic officials through multiple channels. Economic reforms limit the powers of the state, remove preferential treatment to specific sectors or interests in the domestic economy, and impose (hopefully short term) hardship on lower income populations through limiting wages, monetary policy, and public spending. Enacting reforms also presents incumbent officials with an increased risk of being replaced in office (Dreher and Gassebner 2012). Public outcry and also loss of support from special interest constituents can end the career of a politician

Costs of reforms may be mitigated by at least two factors: the quality of public administration and the political environment of the domestic official. The quality of the

public administration should reduce the costs associated with project compliance, since the agencies are already functional and professional (Buntaine and Parks 2013; Denizer, Kaufmann and Kraay 2013). Getting a low quality bureaucratic agency to perform tasks in an intended manner will cost more in terms of resources due to lower productivity, lower quality products, and agency shirking. Good Weberian bureaucracies should reduce the economic, and possibly political, costs to the political officials because the bureaucratic staff have a general competence to execute projects successfully. Further, the quality of bureaucratic institutions serves as a buffer against corruption infecting the development project. Bureaucratic staff hired based on merit and paid a wage to discourage taking rents increases the attractiveness of the public management profession to bright and capable individuals who are less likely to take bribes that might cost them the gainful and secure employment they worked hard to obtain (Rose-Ackerman 1999; Weber 1946).

A second factor in the officials' costs of reforms is the political environment in which politicians operate. This consists of both the political institutions that determine the power concentrations of government and also the political competitiveness in the state's political system. Centralization in a legislature presents a hurdle to economic liberalization policies because the opposition can more easily coordinate (Brooks and Kurtz 2007). A popular notion, though one that has not received major empirical support, is that more autocratic states are better able to implement the terms of projects (Haggard and Webb 1993). Initially the logic seems clear. Executives that are institutionally unconstrained in making policy changes face less opposition than officials in democratic states in which policies are subject to greater collective action problems in the legislature, executive implementation, and judicial oversight. However there are reasons why autocrats may be just as constrained, or more so than elected officials. Autocrats also require supporting coalitions, and such coalitions may be smaller groups than in popularly elected governments (Bueno de Mesquita et al.

1999). This suggests that autocratic coalitions may provide a de facto veto over specific policy changes, especially removal of protective policies to specific economic sectors.

Recipient Benefits of Reform

The developing state official may believe that despite the short term economic costs of reforms, the long term prospects of economic growth are better than current policies - or her politics just represent interests that would benefit from neoliberal reforms. Either way, the official may view the reforms themselves as providing benefits in addition to the project funds, and must be considered in her decision about project compliance. The official may believe that the requirements of the project are good policy but that she does not have the domestic support to implement the reforms (Mansfield and Jon 2006). Neoliberal-minded officials in developing states face strong opposition to austerity and removal of protections because these policies are often viewed as benefiting the wealthy at the expense of the poor.

The intended benefits of economic reform include eliminating corruption and promoting growth, but project conditions may also require policy changes that benefit public management that are not economic in nature. Economic reforms combat corruption by reducing the role of the state in the economy, eliminating dysfunctional or bloated public programs, and privatizing government companies. The structural adjustment reforms are also aimed at increasing economic performance by creating conditions in which investment in unhindered, the most competitive sectors succeed, less efficient sectors are forced to improve, and exports grow.

But not all benefits are strictly economic in nature. Developmental funding may improve government services, increase public welfare, or promote environmental conservation. For instance, a public sector project may require an agency to formalize an implementation plan for carrying out a portion of a project, or a project may require standardizing operating procedures to ensure policy predictability (Skogly 2001). A water supply project may

improve access to clean water as well as create sewage infrastructure. The state official must consider these non-economic benefits in addition to the potential economic benefits of reform in deciding how to implement projects.

The Formal Model

The following game is a stochastic game of World Bank funding and recipient state compliance. Stochastic games combine Markov decision processes and repeated games. A stochastic game involves different states of play in which the payoffs differ. Nature and/or the players actions determine the state of play. Player's preferences are determined not only by the current state of play, but also how the outcome in the current state of play will affect all future states of play and payoffs.

In this game there are two states of play trust (T) and distrust (D). There are also two players, the World Bank (WB) and a Recipient country (R). By assumption play beings in a state of trust. In both states of the game, the players have the same set of choices, but with different payoffs. In any round, the World Bank's choice is whether or not to fund the Recipient, and the Recipient decides whether or not to comply with the funding. The World Bank knows the Recipient will comply with probability, ρ and not comply with probability $(1 - \rho)$. When the World Bank decides to not fund the Recipient then payoffs (WB, R) are (0, 0). In the trust state (T), if the World Bank does not offer funding, then the state of the game becomes distrust. In the distrust state (D), if the World Bank does not offer funding, then the game continues to another distrust round.

When the World Bank provides funding to a Recipient state, the World Bank has conditions on how the funding is to be used. These conditions are specified by the funding agreement. After obtaining funds, the Recipient state may comply with the terms of the agreement or may decide to not comply. When the state complies with the funding,

the World Bank gains the benefit of the Recipient's change in policy or program. This benefit to the World Bank is denoted by $b \in (0, \infty)$. However, providing funding is not costless. The cost of the funding for the World Bank represents the funding amount and any administrative overhead required to implement the funding. This cost term is $c \in (-\infty, 0)$.

By assumption, the Recipient prefers to be awarded funding, regardless of the compliance decision. This assumption eliminates any complications of debt policy or macroeconomic concerns of inflation due to the influx of capital. When funding is awarded, the Recipient enjoys the amount of funding, denoted F $\in (0, \infty)$. Compliance is a discrete choice, which is either comply or not comply. If the Recipient complies with the terms of the agreement, then the state receives a benefit of β. In each round, a Recipient may be one of two types, a high benefit type or a low benefit type. The benefit of compliance (β) is a discrete parameter which may equal $\bar{\beta}$ for high benefits and $\underline{\beta}$ for low benefits. However, compliance is not costless and the Recipient incurs cost K $\in (-\infty, 0)$ for complying with the funding agreement. The benefits of compliance relate to the costs by $\underline{\beta} < K \leq \bar{\beta}$.

At the beginning of each round, Nature chooses the Recipient's benefit of compliance, where $\pi = Pr(\beta = \bar{\beta})$ is the probability that the Recipient state receives high benefits and $(1 - \pi) = Pr(\beta = \underline{\beta})$ is the probability that the state receives low benefits. This probability is variable in each round, and can be thought of as the result of changes in domestic politics, World Bank program goals, or anything else that could alter the incentives of the Recipient. Though this probability is known to the World Bank, the Recipient's type is not known, *ex ante*.

The Recipient's decision to comply depends upon the benefits of the funding, β, but also the state of play because the payoffs differ in each state. In the trust state, the World Bank offers a full funding package. If the World Bank provides funding in the trust state, and the Recipient complies, then the game remains in the trust state (T) and the payoffs are

$(b - c, F + \beta - K)$. However, if the Recipient does not comply in the trust state, then the payoffs are $(-c, F)$, and the state of play becomes distrust (D).

In the distrust state the funding package is reduced by γ, where $\gamma \in (0, 1)$. All payoffs to both the World Bank and the Recipient are proportionally reduced by γ. The parameter, γ, represents the World Bank's avoidance of risk. If the World Bank offers funding in the distrust state and the Recipient complies, then the payoffs are $(\gamma(b - c), \gamma(F + \beta - K))$, and the game returns to the trust state. But if the Recipient does not comply in the distrust state, the payoffs are $(-\gamma c, \gamma F)$, and the game ends.

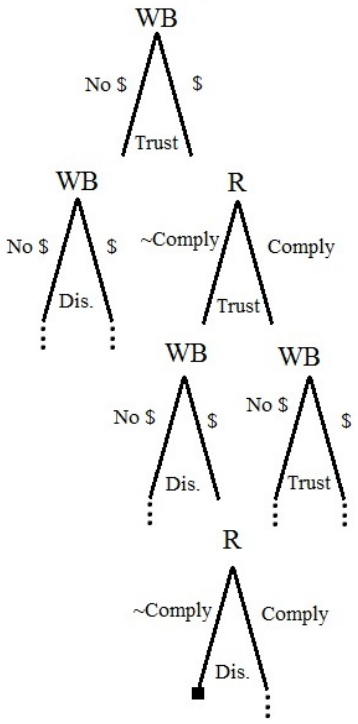
TABLE 1.1: Terms

General Terms	
T	Trust state
D	Distrust state
WB	World Bank player
R	Recipient player
γ	Proportion of package in distrust state
V	Utility of a player's choice
World Bank	
b	Benefit of Recipient's compliance
c	Cost of the funding
ρ	Probability of Recipient compliance
Recipient	
F	Funding amount
$\bar{\beta}$	Benefit of compliance, high
$\underline{\beta}$	Benefit of compliance, low
$\overline{\pi} = Pr(\beta = \bar{\beta})$	Probability of high benefits
$(1 - \pi) = Pr(\beta = \underline{\beta})$	Probability low benefits
K	Cost of compliance

Inducing Compliance in the State of Distrust

The candidate equilibrium is a Markov perfect equilibrium in which during state T the World Bank provides funds and the Recipient complies with probability, $\pi_T = \rho_T$. In state

FIGURE 1.1: Game Tree



D, the World Bank provides funds at an amount reduced by γ, and the Recipient complies regardless of type. This equilibrium is of interest because it would show that the World Bank is able to induce compliance in the Recipient state when compliance is not within the Recipient's short term interest.

Evaluating a perfect Markov equilibrium requires checking the incentive compatibility for each player. This means that the utility of the player's choices in equilibrium must be checked against their alternative choices. Bellman equations represent each player's utility for making an equilibrium decision in a given state of play, which incorporates the potential payoffs from future rounds and changes to the state of play. The utility for an individual round is denoted as V and the discount rate is $\delta \in (0, 1)$.

The Bellman equations are:

$$V_T^{WB} = \rho_T(b-c) + (1-\rho_T)(-c) + \rho_T \delta V_T^{WB} + (1-\rho_T)\delta V_D^{WB}$$

$$V_D^{WB} = \rho_D \gamma(b-c) + (1-\rho_D)(-\gamma c) + \rho_D \delta V_T^{WB} + (1-\rho_D)0$$

$$V_T^{R} = \pi_T(F+\beta-K) + (1-\pi_T)F + \pi_T \delta V_T^{R} + (1-\pi_T)\delta V_D^{R}$$

$$V_D^{R} = \gamma(F+\beta-K) + \delta V_T^{R}$$

As the equations show, the utilities for each player in each state include the direct payoffs for the round as well as the future payoffs. For instance, the World Bank in the trust state will receive $b - c + \delta V_T^{WB}$ if the Recipient complies, and $(-c) + \delta V_D^{WB}$ if the Recipient does not comply. Here, δV_T^{WB} and δV_D^{WB} are the discounted utilities of future payoffs in the trust and distrust state, respectively. A similar process is occurring for the World Bank in the distrust state, with the exception that if the Recipient does not comply, then the game ends. This is why the World Bank would only receive $(-\gamma c)$ for noncompliance in the distrust state; there is no future payoff to be had.

The Recipient's payoff in the trust round follows a similar logic as the World Bank, but the distrust payoffs differ. In the trust round, the Recipient will comply if $\beta = \bar{\beta}$. The probability that $\beta = \bar{\beta}$ is π. This means that π_T represents the probability of $\bar{\beta}$ and the probability of compliance. In the distrust round, both types of the Recipient choose to comply. Therefore, the Recipient obtains the compliance payoff, $\gamma(F+\beta-K)$, and a future trust round payoff, δV_T^R.

In order for the equilibrium to hold, each player must not have incentive to deviate from their strategies. Since the World Bank always provides funding in the trust state,

then the alternative choice is to not offer funding and allow the next round to enter the distrust state. The resulting payoff is $V_T^{'WB}$. In the distrust state, the alternative is also to not award funding. The game does not end if the World Bank does not provide funding in the distrust state, it merely proceeds to another round in the distrust state. The World Bank's alternative payoff in the distrust state is $V_D^{'WB}$.

The Recipient will comply with probability π_T in the trust state and π_D in the distrust state. Therefore, the alternative choices for the Recipient in both states is to not comply. This results in $V_T^{'R}$ where the Recipient takes the funding and proceeds to the distrust state, and $V_D^{'R}$ where the recipient takes the funding and exits the game.

The alternative payoffs are:

$$V_T^{'WB} = \delta V_D^{WB}$$

$$V_D^{'WB} = \delta V_D^{WB}$$

$$V_T^{'R} = F + \delta V_D^R$$

$$V_D^{'R} = \gamma F$$

Evaluating the equilibrium requires that each of the Bellman equations be equal to or greater than the alternative payoffs. For the World Bank, this means that $V_T^{WB} \geq V_T^{'WB}$ and $V_D^{WB} \geq V_D^{'WB}$ must be true. There exists cutpoints for the probability of Recipient compliance (ρ) for both the trust and distrust states, below which offering funding is no longer preferred. In the trust state, the probability must exceed $\rho_T^* \equiv \frac{c}{b + \delta V_T^{WB} - \delta V_D^{WB}}$.

In the distrust state, the probability must be above $\rho_D^* \equiv \frac{\gamma c + \delta V_D^{WB}}{\gamma b + \delta V_T^{WB}}$. For the World Bank, both of these cutpoints are increasing in the benefits of compliance and the discounted utility of the trust round, and decreasing in the costs of the funding and the discounted utility of the distrust round.

For the equilibrium to exist, it must also be true that the Recipient values $V_T^R \geq V_T^{'R}$ and $V_D^R \geq V_D^{'R}$. Each of these inequalities are trivially true since $\pi \geq 0$. This is because the Recipient always gains something by defection, and gains more from compliance when it is beneficial.

Lemma 1 *Recipients always have something to gain in the trust round* $(V_T^R > 0)$*, How much is to be gained depends on the value of* β*.*

The Recipient's positive valuation in the trust round (V_T^R) is set by assumption in the model. Since $F \in (0, \infty)$, the Recipient will always gain from at least non-compliance in a single trust round. What's more, if the Recipient does not comply in the trust round, the Recipient knows that another distrust round will follow in which it can simply not comply again. The resulting payoff of non-compliance in both the trust and distrust rounds are $2F$ and the game would end, but $2F > 0$. Therefore, $V_T^R \geq 2F > 0$. Further, if $\beta = \bar{\beta}$ in either T or D, then V_T^R would be even greater.

Proposition 1 (Inducing compliance). *In a perfect Markov equilibrium of the World Bank funding and compliance game,*

$\beta_T^* \equiv K$,
$\beta_D^* \equiv K - \frac{\delta V_T^R}{\gamma}$,
and $\beta_T^* > \beta_D^*$.

Recipients that are non-compliant in the trust state may be compliant in the distrust state, at equal levels of β because $V_T^R > 0$. In other words, the threshold by which the benefits of compliance must exceed for compliance to occur are lower in the distrust round. In the trust state, only the high benefit Recipient is compliant because $\underline{\beta} < K \leq \bar{\beta}$. However, in the distrust state, it is possible that $\beta_D^* \leq \underline{\beta}$. This means that the World Bank may induce compliance in the recipient in the distrust round when compliance is not in the Recipient's short term interest (since $\underline{\beta} < K$). There are two mechanisms that make this work, each of which are controlled by the World Bank.

Proposition 2 (World Bank punishment). *The World Bank is able to induce compliance in the Recipient state by reducing the size of the funding package in the distrust round,* (γ)*.*

The reduction in the size of the funding in the distrust round serves to increase the relative value of the Recipient's payoff in the trust round. The smaller the funding package that the World Bank can make, the more willing the Recipient will be to comply in order to return to the trust state.

Proposition 3 (Attractiveness of future funding). *The World Bank's second tool to induce compliance in the Recipient during the distrust round is to offer more attractive funding packages in the trust round,* (V_T^R)*.*

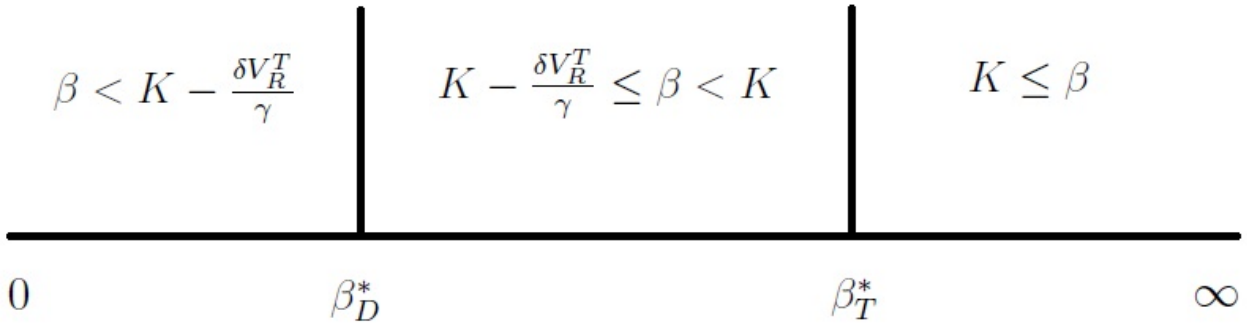
Increasing the potential future payoffs for the Recipient is the World Bank's carrot to the stick of reducing funding. If the World Bank can adapt to the preferences of the Recipient in future agreements, then this would have a positive impact on compliance in the distrust round. The World Bank could make promises or begin negotiations on new funding agreements which pressure the Recipient to comply with a current agreement. Essen-

tially, this is increasing V_T^R during the distrust round. By making future agreements more attractive, the World Bank can make compliance in the contemporary round more attractive.

Proposition 4 (Compliance by regime type) *The World Bank is less able to induce compliance in democracies than autocracies in the distrust round because democratic leaders face shorter time horizons.*

This is a tangential extension of the model which requires an assumption about the preferences of democratic and autocratic leaders. Because the discount value, δ, reduces the attractiveness of compliance in the distrust round, Recipients with lower discount values are less likely to be induced into compliance. As the discount value tends towards zero, then $\underline{\beta} < \beta_D^*$. Democratic leaders have incentive to discount future payoffs more heavily than autocratic leaders because of their shorter expected time in office. If the World Bank provides equivalent funding packages to democracies and autocracies, then democracies may comply less often.

FIGURE 1.2: Compliance Thresholds



Additions

I have established the game using discrete parameters for β but I would like to also setup the game using continuous parameters.

I would like to add a statistical analysis to this model which tests whether states that were non-compliant in the past become compliant with later projects. I would conduct a basic autoregressive distributive lag model to test the hypothesis. However, to conduct this test, I must reformat the data so that the project is the unit of analysis.

Article Two

A Statistical Test of World Bank Funding and Compliance

Abstract

The World Bank is an ideological institution of unparalleled influence in international development. How the World Bank maintains this influence is an important question in development research. This paper tests the hypothesis that the Bank uses conditionality in how it approves of project proposals. Data from 1974-2014 on World Bank projects and recipient compliance suggest that the Bank awards more projects to states which comply with the terms of agreements. The results support the conclusion that the Bank funds states which uphold their international obligations, rather than simply rewarding the political allies of the West.

This paper empirically investigates whether compliance impacts World Bank funding policies. The statistical analysis is motivated by the stochastic game in Article One. In the formal theory, the World Bank is able to induce compliance in the Recipient with a current agreement by a) increasing future funding for compliance and b) reducing future funding for noncompliance or not providing future funding to non-compliant states. This leads to a simple expectation about the relationship of World Bank funding and recipient compliance:

Hypothesis: Recipient state compliance is positively associated with receiving World Bank project approvals.

Data and Methods

The statistical test uses a dataset of World Bank projects (World Bank 2014*a*) and project compliance from the Independent Evaluation Group (IEG) at the World Bank, in years 1975-2012 (Independent Evaluation Group 2014). The IEG assesses the extent to which recipient governments, implementing agencies, and both governments and agencies comply with the terms of World Bank projects. The IEG evaluations cover approximately 25% of all approved World Bank projects. The evaluations are predominately for the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD). The data includes both grants and loans.

Evaluations are derived of various instruments such as Enterprise Surveys and Progress Completion Reports, and there is considerable overlap between the different instruments. The following statistical analysis is based on Enterprise Surveys.[1] Enterprise Surveys collect data from private businesses' experience with government actions and economy. An analysis of compliance based on Enterprise Surveys may be beneficial because data are derived of third party observers, however analyses from multiple instruments will be useful to check robustness.

A logit model tests the impact of compliance on World Bank funding approvals. The dependent variable for this question is a dummy variable of whether or not a state received at least one project in a given month. If a state receives a project in a month, it is typically the only project awarded but a state may receive as many as ten in one month. The average number of projects, given that a state receives at least one project in a month is 1.5 projects.

The main explanatory variable in the model is a monthly moving average of the compliance outcomes of previous evaluations. This moving average reflects a state's prior project compliance. An important control variable is a moving proportion of a state's prior

[1] I think they are Enterprise Surveys. I have not been able to verify this with the IEG.

evaluated projects to all of a state's prior projects. This control variable moderates the impact of having more or less evaluated projects. A second control variable is the total number of projects each state was awarded in the prior five years.

To obtain these explanatory and control variables, the data are transformed to contain a unit of analysis which is the state-month, however multiple projects may occur in a month and this information is necessary to calculate the variables. Once these variables are calculated, the redundant state-months are dropped, so that individual projects are not the unit of analysis but rather the data reflect monthly averages or proportions. The closing date of a project identifies the month and year of a project. Using the closing date is preferable to the opening date because the state's compliance score (dichotomous, 0 noncompliance, 1=compliant) for a particular project more accurately describes the state's performance on a project that is complete rather than a project which has not occurred yet.

The monthly moving average of prior compliance outcomes is the fraction of a state's sum of transformed compliance scores divided by all the state's prior projects. The numerator is the sum of compliance outcomes within the previous five years , where the individual project compliance score is transformed into a compliance outcome which equals (-) 1 if the state is noncompliant in a project, 0 if a state does not receive a project or received a project which was not evaluated, and (+) 1 if the state was compliant in the project. Additionally, compliance outcomes are weighted by project amounts. Weighting compliance outcomes constrains the impact of smaller projects since compliance with larger projects is arguably more important than compliance with smaller projects. The weight is a fraction representing the project's total amount divided by the largest project in the dataset. This fraction is multiplied by the compliance outcome. Project amounts include all projects, credits, and grants from World Bank Group institutions.

Formally, each state's weighted moving average of compliance outcomes is:

$$X_1 = \frac{\sum_{m=1}^{60} (c_{t-m} \frac{A_{t-m}}{M})}{\sum_{m=1}^{60} (P_{t-m})}, \text{ where}[2]$$

X_1 = weighted moving average of compliance outcomes for a state

t = country month

m = month lag up to five years (60 months)

C = compliance outcomes

A = total amount of a project

M = the state's maximum project amount in the data

P = number of projects

The control variable of the proportion of prior evaluated projects for each state is:

$$X_2 = \frac{\sum_{m=1}^{60} (E_{t-m})}{\sum_{m=1}^{60} (P_{t-m})}$$

X_2 = proportion of prior evaluated projects

t = country month

m = month lag up to five years (60 months)

E = count of evaluated projects

P = count of all prior projects

Additional variables control for state circumstances that may explain compliance and World Bank decisions to approve new projects. The Polity IV project provides interval data for regime type on a -10 to 10 scale with autocracies represented by low values and

[2]Notation indicating each state is suppressed. All the values in this metric are state specific.

democracies as high values (Marshall, Gurr and Jaggers 2012). Various indicators from the World Bank control for level of development and population (World Bank 2014*b*). Development variables include log of gross domestic product per capita (GDPpc), GDPpc growth, foreign direct investment (FDI) inflows, the number of telephone lines per hundred people, and total natural resource rents. Two more dummy variables control for changes in geopolitics which represent shifts in World Bank policies after 1990 and 2000.

Since the outcome variable regards whether or not a state received at least one project in a month, the data must converted into country-months. The moving average of prior project compliance, the moving proportion of evaluated projects, and total number prior projects awarded per state are calculated at the monthly level. The control variables from Polity and World Bank data are each yearly variables.

The logit model for funding awards is:

$$Reciept\ of\ award = \beta_0 + \beta_1 Prior\ compliance + \beta_2 Prior\ evaluations + \beta_3 Prior\ pojects + \beta_4 Regime + \beta_5 GDPpc\,(log) + \beta_6 GDPpc\,growth + \beta_7 FDI + \beta_8 Telephone\,lines + \beta_9 Resources + \beta_{10} Population\ (log) + \beta_{11} Post\ 1990 + \beta_{12} Post\ 2000 + \mu$$

Results

The results are promising evidence in support of the theory that the World Bank is a strategic actor in regard to risk. The results of the logit model for World Bank decisions to award new projects are in Table 2.1, below.[3] The main independent variable, *Prior compliance*, is positive as expected, and statistically significant at 99%. This is good news for proponents of conditionality because it means that the World Bank is sending positive signals to prospective recipient states.

[3]The model results are robust to fixed effects models.

TABLE 2.1: Logit regression of World Bank funding on recipient compliance

	Receipt of award
Receipt of award	
Prior compliance (5 yr ave)	0.328***
	(0.061)
Number of evaluations (5 yr ave)	0.747***
	(0.079)
Number of previous projects (5 yr)	0.035***
	(0.002)
Regime	0.009***
	(0.003)
GDP per capita (log)	-0.066***
	(0.022)
GDP per capita growth	0.241**
	(0.107)
FDI	0.011***
	(0.003)
Telephone lines	-0.026***
	(0.003)
Resources	-0.004***
	(0.001)
Population (log)	0.075***
	(0.014)
Post 1990	-0.099**
	(0.043)
Post 2000	-0.327***
	(0.063)
Constant	-3.250***
	(0.263)
Observations	51,516
Number of groups	
Chi^2	2880.018
Degrees of freedom	12

Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The model suggests that compliance is positively associated with project approvals. The observations are monthly. The results are robust to fixed effects.

Figure 2.1 and Table 2.2 provide the predictive probability of prior compliance with other variables held at their means. States that are fully non-compliant with projects in the previous five years are approved of new projects at a probability of 7.2% in a given

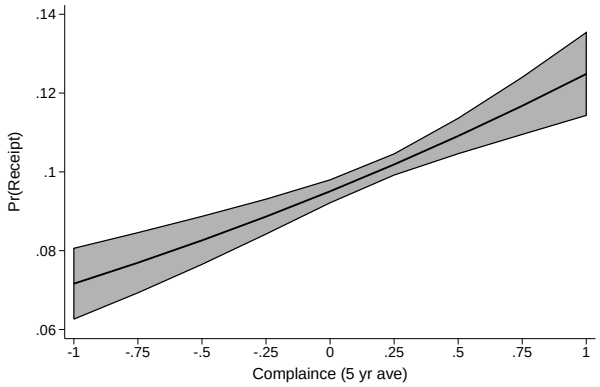
month. States in which data are not available or are equally compliant and non-compliant receive projects with probability of 9.5%. States that have been fully compliant receive projects with a probability of about 12.5%. A fully non-compliant state that becomes fully compliant increases the probability of receiving a new project by about 74%, which is about a five percentage point change.

TABLE 2.2: Predictive probabilities

Compliance	*Pr(Receipt)*	*Confidence Interval*
Non-compliance	0.072	[0.063, 0.081]
Mixed/no data	0.095	[0.092, 0.098]
Compliance	0.125	[0.114, 0.135]

The table above provides predicted probabilities for values of compliance. Full noncompliance and compliance correspond to states with only observed noncompliance or compliance in the past five years, respectively. Mixed/no data represents either states that have been equally compliant and noncompliant, or states in which evaluation data is not available. The confidence interval is at the 95% level.

FIGURE 2.1: Probability of receiving an award by compliance history



Discussion

The results of the statistical analysis support the notion that the World Bank will reward compliant states with more projects, and that non-compliant states will receive less. This

use of conditionality by the World Bank is a tool to ensure that funds are not being invested in programs that do not get implemented, causing the recipient states to go into debt to which they cannot repay. Conditionality also provides the World Bank with leverage to pressure states into changing developmental policies or implementing particular programs.

Though the World Bank is the largest developmental institution in the world, it has limited funds in which it can lend developing states. Further, the concessionary loans provided by the IDA and donor states to the least developed states are not repaid, and so do not replenish without new contributions by donor states. This scarcity of resources forces the Bank to be shrewd in how it lends. Since the Bank has preferences for how funds are to be spent, it must consider the expectation that a state will comply with an agreement. In reviewing funding proposals, the Bank administration and the Executive Board must consider the probability that a state will actually implement the programmatic requirements in the terms of agreement.

One reason that the Bank has preferences for how developmental funds are spent is that the Bank is lending scarce resources which recipient states are supposed to pay back. The IBRD typically lends to middle income and emergent developing states that are more able to pay back their debts than are less developed states. The Bank approves projects that are meant to be help encourage growth in the recipient economy, thereby making the recipient more able to pay back the loan. However, if the recipient state does not implement a project or policy required in an agreement, then the funding will not be given a chance to create economic growth and the recipient state may be less able to repay the loan. When states cannot repay their loans, the Bank loses funds.

Conditionality is also a means of maintaining policy leverage in international development. By using the carrot and stick of rewarding compliant states with more projects and withholding projects from non-compliant states, the Bank is maximizing this policy leverage. The Bank is ideologically driven, and maintains a significant research department

to test and develop theories about effective development policies. In the Bank's early years, the dominant thought about development was simple capital accumulation but was replaced by end of the 20th century by the importance of institutions for economic growth (North 1990; Bueno de Mesquita and Root 2000; Easterly 1999, 2001). This change in ideology came about in part from academics who have also been World Bank research fellows during their careers. By approving projects that are within this ideology, and for states which are more likely to comply with the funding conditions, the Bank ensures that it is influencing international development guided by institutional economics.

Additions

I could extend this study to include a selection model or matching to determine the impact on the size of loans for compliant and non-compliant states. However, the parametric approach requires a good instrument, and I have been unable to think of a good instrument for the selection model. I could also use a probit random utility model in place of the logit model to test World Bank decision making, since it is theoretically a more direct test of utility maximization. Additionally, I will run robustness checks for different IEG evaluations and differences between IBRD and IDA funding.

Article Three

Political Ties and Compliance with World Bank Funding

Abstract

This paper assesses how political ties between major donors and recipient states influence the effect of compliance on World Bank funding practices. The priority of World Bank managers is singularly in international economic development. However, major donor states, particularly the US, attempt to influence how their capital is spent, as a means of gaining foreign policy benefits through multilateral funding. Where political considerations are able to crowd out purely developmental concerns, the effectiveness of developmental funds is compromised by rewarding states that are non-compliant with funding agreements. This paper provides a theory for the interaction of political ties and compliance, and tests the hypotheses using a dataset from the Independent Evaluation Group at the World Bank. The results have important implications for the understanding of effectiveness and historical trajectory of international developmental assistance.

There are two ideas which are generally accepted in World Bank donor politics: 1) the US maintains the greatest amount of leverage over the Bank and 2) no other state seeks to maintain oversight and political control of the Bank as the US does (Gwin 1997). This political influence may impact the World Bank's compliance requirements if states with political ties to the US receive preferential treatment (Harrigan, Wang and El-Said 2006; Hayman 2011; Kilby 2013*a*). Political ties are defined here as similarity of preferences in international politics. Recent empirical work has shown that such political ties expedite the

project approval process (Kilby 2013*b*), and recipients reciprocate with political cooperation (Dreher and Sturm 2012).

How US influence impacts the effectiveness of the World Bank is an important question for the politics of international development. US influence may mean that the World Bank will deal differentially with states that have political ties to the US. Knowing that political ties improve their chances of receiving World Bank funding, the leaders of recipient states may understand that they will continue to obtain funding without implementing costly programs in oder to comply with the terms of a project. This logic suggests that US influence has a negative impact on the effectiveness of Bank projects because recipient states are less likely to comply.

Alternatively, the US may be more interested in the compliance of the recipients to which they have strong political ties. Rather than spending international political capital by pressuring international institutions to give away funds that are not used for their intended purpose, the US may be more inclined to only support those states that implement the projects and reforms within funding agreements. Being that the US has greater political leverage in the Bank than any other state, the US is likely to take steps to conserve this source of international influence. The US's support of states in which it has political ties which are also willing to meet the conditions of Bank funding, is a means of making US influence acceptable to the Bank and development proponents.

Donor Politics at Inception

When the World Bank was established, the United States sought to create an autonomous institution that would promote development globally. Despite having kept a sufficient share of votes to maintain a veto, and the informal rule that the US appoints the Bank president and upper management, the US made choices that initially created an organization with independent motivations and policymaking. Article IV Section 10 of the World

Bank's Articles of Agreement states that the Bank may not take into account the political characteristics of a country, and that only economic characteristics are to be considered.

However, over time the United States has increasingly sought to control World Bank policies. The decline of the US position in the international economy and executive actions of Presidents Johnson and Nixon in Vietnam created deep skepticism of US foreign policy in the 1970's. Congress reacted to this by increasing oversight of how US funds were being used in multilateral organizations. Since the US economy was not as strong as during the post-war era, policymakers looked to increase the value of foreign assistance. Bilateral aid declined at this time because of the Agency for International Development's role in the Vietnam war. This incentivized Congress to seek stronger control of how US dollars were being used in the World Bank (Gwin 1997). The creation of the IDA brought Congress leverage because the World Bank become dependent on this source of funding since it is based on grants or concessional loans.

Further, the US approach to the World Bank has always had some element of political intervention. President Eisenhower required the Bank to conform to Executive Order No. 10422 which required US citizens working in multilateral agencies be reviewed for allegiance to the US. The World Bank acceded to the demands of the Eisenhower administration, and this practice continued until the Executive Order was struck down as unconstitutional in 1986 (Kapur, Lewis and Webb 1997).

Staffing Policies

The staffing policies at the Bank allows for autonomy, although the director is chosen by the Executive Board according to informal an norm which may privilege certain interests. Informally, the head of the IMF is from Europe and the head of the World Bank is from the US. These directors control all hiring which allows the organizations to hire based on merit rather than politics (Woods 2006). Although in selecting the organizational heads,

the Executive Board may be able to delegate policymaking, it is not always the case. In the early 1970's, the US appointment to the World Bank presidency, Robert MCNamara, was not a conduit of US influence (Clark 1981).

However, a common practice at the World Bank is that staff often make decisions in consultation with the US, and proposals to the Executive Board are frequently vetted by the US prior to Board votes. The US reviews World Bank actions much more than any other donor state. This is partly due to the Bank's location in Washington, DC, and partly due to US foreign policy. Additionally, since the US is the largest shareholder of votes, and the Executive Board tends to operate by consensus, US influence impacts policy outcomes prior to final votes. This means that the US veto is used less often because proposals have been crafted to be acceptable to the US, and the other major shareholders do not challenge US positions (Gwin 1997).

Funding Influence

In the early years, the Bank (and the IMF) was relatively free of the funding influence found in the United Nations (UN). This is because the UN is dependent on the contributions of member states, and most notably, US funding allocations to the UN are required to be approved by the US Congress. This gives Congress considerable leverage over the UN. The Bank however, raises funds by borrowing at low rates on international markets and lending to states at higher rates. This gave the organizations autonomy until new financing practices began in the 1960s (Woods 2006).

More recently, the Bank has come under greater influence from the governments of donor countries, especially the US. In 1960, the Bank created the International Development Association (IDA). The IDA provides grants to the world's least developed states. Since the IDA cannot recoup their investments through interest rates, this organization is dependent on funding from donor countries. The US has forcefully used this leverage to pressure

the IDA into policy changes. Additionally, the Bank has increasingly used trust funds as a means of growing the Bank's activities. Donor countries contribute directly to trust funds which then co-finance Bank projects. Although the US is not the largest donor to trust funds, these funds represent another leverage point for donor countries into World Bank policymaking (Woods 2006)

The US Veto

The US allotted itself the largest voting share in a scheme in which no state individually held a majority of the voter. Rather than allot itself a majority, the US took only enough to maintain a veto. The rationale for this decision was that the Bank was to be an international organization, and if a single country held the majority vote then no other countries would want to participate. However, the US alone maintains sufficient votes to weld veto power for votes requiring a special majority, and the special majority votes have been increasing as a proportion of total votes over time. A few European states could coalesce to block certain special votes but do not in practice. Developing states could also band together to form a veto but the quantity of states required to form such a coalition makes this power impractical. This means that the US has maintained an abundance of influence by vote shares, compared to the other donor states (Woods 2006). Further, as more states joined the Bank over time, the proportion of vote shares of the major donors decreased. Despite this, the vote shares required for a majority increased in 1989 in order to maintain the US veto (Kapur, Lewis and Webb 1997).

An Extension of the Stochastic Game

This section provides an extension of the game between World Bank funding and recipient state compliance. However in this game, the players are the US and the Recipient state,

rather than the World Bank and the Recipient state. The US is now the other player because the US is singly capable of determining whether or not a project will be approved in the Executive Board. Moreover, the US spends more resources reviewing project proposals and outcomes than any other state. This increased attention along with formal voting power causes US preferences to be highly important in both the project planning and proposal stages.

Most of the components of the original game are kept in this extension. Recall that in the stochastic game, there are two states of play trust (T) and distrust (D). There are also two players, who are now the United States (US) and a Recipient country (R). By assumption play beings in a state of trust. In both states of the game, the players have the same set of choices, but with different payoffs. In any round, the US's choice is whether or not to fund the Recipient, and the Recipient decides whether or not to comply with the funding. The US knows the Recipient will comply with probability, ϕ, and not comply with probability $(1-\phi)$. When the US decides to not fund the Recipient then payoffs (US, R) are (0, 0). In the trust state (T), if the US does approve funding, then the state of the game becomes distrust. In the distrust state (D), if the US does not approve funding, then the game continues to another distrust round.

The main difference in the model for having the US as the first player rather than the World Bank is that political ties between the US and the Recipient are taken into account. A term, $\lambda \in [0, 1]$, increases as as the US value for political ties between the US and the Recipient increases. The value of these ties are known to the US. How political ties inform the US decision to support a project proposal are an important nuance of the model. The US decision is not to simply fund states in which it has political ties.

While the US does prefer to provide funding to states in which it has ties, it is also costly to provide political support to individual states. When the state complies with the funding, the US gains the benefit of the Recipient's change in policy or program. This benefit to

the US is denoted by $\alpha \in (0, \inf)$ but is now modified by $\alpha\lambda$. The US's cost of approving a project represents the funding amount, costs of planning and oversight with the World Bank, and political costs. The political costs are due to the World Bank, other donor states, and development constituents which prefer to not fund an individual state. The cost term is $\epsilon \in (-\infty, 0)$ and is modified by ϵ^{λ}. The benefits are modified multiplicatively by political ties while the costs are modified exponentially. The US calculus of approving a project is more sensitive to changes in the cost term than the benefits. These modifications of the costs and benefits reflect that the US may gain increased benefits by funding a tied state but the costs rise more rapidly.

The Recipient's decision to comply with a project is no different than in the original model. By assumption, the Recipient prefers to be awarded funding, regardless of the compliance decision or political ties to the US. This assumption eliminates any complications of debt policy or macroeconomic concerns of inflation due to the influx of capital. When funding is awarded, the Recipient enjoys the amount of funding, denoted F $\in (0, \infty)$. Compliance is a discrete choice, which is either comply or not comply. If the Recipient complies with the terms of the agreement, then the state receives a benefit of β. In each round, a Recipient may be one of two types, a high benefit type or a low benefit type. The benefit of compliance (β) is a discrete parameter which may equal $\bar{\beta}$ for high benefits and $\underline{\beta}$ for low benefits. However, compliance is not costless and the Recipient incurs cost K $\in (-\infty, 0)$ for complying with the funding agreement. The benefits of compliance relate to the costs by $\underline{\beta} < K \leq \bar{\beta}$.

At the beginning of each round, Nature chooses the Recipient's benefit of compliance, where $\pi = Pr(\beta = \bar{\beta})$ is the probability that the Recipient state receives high benefits and $(1 - \pi) = Pr(\beta = \underline{\beta})$ is the probability that the state receives low benefits. This probability is variable in each round, and can be thought of as the result of changes in domestic politics,

World Bank program goals, or anything else that could alter the incentives of the Recipient. Though this probability is known to the US, the Recipient's type is not known, *ex ante*.

The Recipient's decision to comply depends upon the benefits of the funding, β, but also the state of play because the payoffs differ in each state. In the trust state, the US may approve a full funding package. If the US approves funding in the trust state, and the Recipient complies, then the game remains in the trust state (T) and the payoffs are $(\alpha\lambda - \epsilon^{\lambda}, F + \beta - K)$. However, if the Recipient does not comply in the trust state, then the payoffs are $(-c, F)$, and the state of play becomes distrust (D).

In the distrust state the funding package is reduced by γ, where $\gamma \in (0, 1)$. All payoffs to both the US and the Recipient are proportionally reduced by γ. The parameter, γ, represents the US's avoidance of risk. If the US approves funding in the distrust state and the Recipient complies, then the payoffs are $(\gamma(\alpha\lambda - \epsilon^{\lambda}), \gamma(F + \beta - K))$, and the game returns to the trust state. But if the Recipient does not comply in the distrust state, the payoffs are $(-\gamma c, \gamma F)$, and the game ends.

Political Ties Create Compliance Salience

The candidate equilibrium is a Markov perfect equilibrium in which during state T the US provides funds and the Recipient complies with probability, $\pi_T = \phi_T$. In state D, the US provides funds at an amount reduced by γ, and the Recipient complies regardless of type. This equilibrium is of interest because it maintains that the US/World Bank is able to induce compliance in the Recipient state when compliance is not within the Recipient's short term interest, but has the added characteristic that political ties modify the US payoffs so that compliance becomes more salient in US preferences as political ties increase.

To evaluate the perfect Markov equilibrium, the incentive compatibility for each player must be checked. The utility for an individual round is denoted as V and the discount rate is $\delta \in (0, 1)$.

The Bellman equations are:

$$V_T^{US} = \phi_T(\alpha\lambda - \epsilon^\lambda) + (1 - \phi_T)(-\epsilon^\lambda) + \phi_T\delta V_T^{US} + (1 - \phi_T)\delta V_D^{US}$$

$$V_D^{US} = \phi_D\gamma(\alpha\lambda - \epsilon^\lambda) + (1 - \phi_D)(-\gamma\epsilon^\lambda) + \phi_D\delta V_T^{US} + (1 - \phi_D)0$$

$$V_T^{R} = \pi_T(F + \beta - K) + (1 - \pi_T)F + \pi_T\delta V_T^{R} + (1 - \pi_T)\delta V_D^{R}$$

$$V_D^{R} = \gamma(F + \beta - K) + \delta V_T^{R}$$

The utilities for each player in each state include the direct payoffs for the round as well as the future payoffs. The US in the trust state will receive $\alpha\lambda - \epsilon^\lambda + \delta V_T^{US}$ if the Recipient complies, and $(-c) + \delta V_D^{US}$ if the Recipient does not comply. Here, δV_T^{US} and δV_D^{US} are the discounted utilities of future payoffs in the trust and distrust state, respectively. A similar process is occurring for the US in the distrust state, with the exception that if the Recipient does not comply, then the game ends. This is why the US would only receive $(-\gamma c)$ for noncompliance in the distrust state; there is no future payoff to be had.

The Recipient's payoff in the trust round follows a similar logic as the US, but there are no political ties considerations and the distrust payoffs differ. In the trust round, the Recipient will comply if $\beta = \bar{\beta}$. The probability that $\beta = \bar{\beta}$ is π. This means that π_T represents the probability of $\bar{\beta}$ and the probability of compliance. In the distrust round, both

types of the Recipient choose to comply. Therefore, the Recipient obtains the compliance payoff, $\gamma(F + \beta - K)$, and a future trust round payoff, δV_T^R.

In order for the equilibrium to hold, each player must not have incentive to deviate from their strategies. Since the US always approves of funding in the trust state, then the alternative choice is to not approve funding and allow the next round to enter the distrust state. The resulting payoff is $V_T^{'US}$. In the distrust state, the alternative is also to not award funding. The game does not end if the US does not provide funding in the distrust state, it merely proceeds to another round in the distrust state. The World Bank's alternative payoff in the distrust state is $V_D^{'US}$.

The Recipient will comply with probability π_T in the trust state and π_D in the distrust state. Therefore, the alternative choices for the Recipient in both states is to not comply. This results in $V_T^{'R}$ where the Recipient takes the funding and proceeds to the distrust state, and $V_D^{'R}$ where the recipient takes the funding and exits the game.

The alternative payoffs are:

$$V_T^{'US} = \delta V_D^{US}$$

$$V_D^{'US} = \delta V_D^{US}$$

$$V_T^{'R} = F + \delta V_D^R$$

$$V_D^{'R} = \gamma F$$

For the Markov perfect equilibrium to exist, each of the players must value their equilibrium choice over the alternative choice. The equilibrium requires that the Recipient values

$V_T^R \geq V_T'^R$ and $V_D^R \geq V_D'^R$. Each of these inequalities are trivially true since $\pi \geq 0$. This is because the Recipient always gains something by defection, and gains more from compliance when it is beneficial. The equilibrium also requires that US utilities are $V_T^{US} \geq V_T'^{US}$ and $V_D^{US} \geq V_D'^{US}$. This will mean that there exists a probability of Recipient compliance, ϕ, below which the US will not approve projects.

Lemma 1 *The US only considers projects in which the Recipient has sufficiently high political ties, where*

$\lambda \geq \lambda^*$,
λ_T^* solves for $\min\left(\frac{\epsilon^\lambda}{\alpha\lambda + T - D}\right)$, and
λ_D^* solves for $\min\left(\frac{\epsilon^\lambda}{\gamma\alpha\lambda + T - D}\right)$

The assumption sets a lower bound for US political ties, and eliminates game situations in which increasing the probability of compliance decreases the chance the US will decide to approve of a project proposal. This assumption alone does not allow the equilibrium to occur.

Lemma 2 *The US values the trust round more than the distrust round, $T > D$.*

The potential payoffs in the trust stage exceed those in the distrust stage, because the project amount is reduced in the distrust stage. Limiting the funding amount in the distrust stage has the advantage of limiting the risk of the investment, but it also has the disadvantage that the potential benefits will be lesser. Although ϕ_T and ϕ_D are independent, setting $\phi_T = \phi_D$ allows the US to value $T > D$ if $\gamma < 1$, which is true by definition.

Combining Lemma 1 and Lemma 2 forces the exclusion of situations in which low political ties and/or the probability of noncompliance would actually improve the Recipient's chance of the US approving a project. These assumptions enable the equilibrium.

Proposition 1 (Project Approval). *In a perfect Markov equilibrium of the World Bank funding and compliance game,*

$\phi_T^* = \frac{\epsilon^\lambda}{\alpha\lambda+T-D}$

and

$\phi_D^* = \frac{\gamma\epsilon^\lambda}{\gamma\alpha\lambda+T-D}$.

The thresholds, ϕ_T^* and ϕ_D^* are the points below which the US will not approve of a project proposal. Since $T > D$, it must be true that ϕ^* is positive (Lemma 2). Very simply, as ϵ rises, so does the threshold, and as α rises, the threshold decreases. However, increases in the costs and benefits of funding do not linearly impact the probability threshold. The impact of the costs increase the threshold more quickly than the benefits decrease the threshold.

Proposition 2 (Politics guide funding). *As λ increases, the compliance threshold for project approvals increases.*

Since political ties must be greater than the local minimum of ϕ^* w.r.t λ (Lemma 1), increasing political ties puts greater pressure on the US to ensure the Recipient will comply. This is because rising costs impact the compliance threshold more quickly than do rising benefits.

The result is that even though the US prefers to fund states in which it has political ties, the accountability pressure on the US forces it to be more sensitive to the Recipient's probability of compliance. In this way, political ties with the US not only encourage funding, but also increase the salience of compliance. Since the US is a strategic leader, it regards the compliance of those states to which it has stronger ties as more important than the compliance of states with lesser ties.

Statistical Analysis: Political Ties and Compliance

This section provides a statistical test of the implication of the formal model which suggests that the US will accept proposals from states in which it has political ties if the state is more likely to comply with the agreement.

Hypothesis: The positive effect of US political ties will be greater (less) for states that have been compliant (non-compliant) in previous World Bank agreements.

The data for the statistical test builds on the data from Article 2 by including a variable which represents US political ties. United Nations General Assembly (UNGA) voting data (Strezhnev and Voeten 2013) measures the similarity of US voting preferences with other states by UNGA roll call votes (no, abstain, yes). This data is on a continuous scale, in [0, 1].

The statistical model is a logit regression, and contains the same variables as the model in Article 2, with the addition of the UNGA data and an interaction term:

$$Reciept\ of\ award = \beta_0 + \beta_1 Prior\ compliance + \beta_2 US\ political\ ties +$$
$$\beta_3 Prior\ compliance * US\ political\ ties + controls + error$$

TABLE 3.1: Logit regression of World Bank funding on recipient compliance and political ties

	Receipt of award
Receipt of award	
Prior compliance (5 yr ave)	-0.467***
	(0.117)
US political ties	-0.178
	(0.167)
Prior compliance * US political ties	3.049***
	(0.384)
Number of evaluations (5 yr ave)	0.618***
	(0.081)
Number of previous projects (5 yr)	0.033***
	(0.002)
Regime	0.009***
	(0.003)
GDP per capita (log)	-0.069***
	(0.022)
GDP per capita growth	0.277**
	(0.109)
FDI	0.012***
	(0.003)
Telephone lines	-0.030***
	(0.003)
Resources	-0.003**
	(0.001)
Population (log)	0.095***
	(0.014)
Post 1990	-0.091**
	(0.043)
Post 2000	-0.235***
	(0.066)
Constant	-3.461***
	(0.270)
Observations	50592
N_g	
chi2	2909.097
df_m	14.000

Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The model suggests that states with political ties to the US are more likely to receive a project approved if compliance is high. The observations are monthly. The results are robust to fixed effects.

The results of the statistical model provided in Table 3.1. The interaction term is positive and statistically significant at the 99% level. This suggests that as both the political ties between the US and the recipient state increase, and as the recipient state's compliance record increases, the likelihood of the World Bank approving a new project increases. This evidence is consistent with the expectations derived of the game theory.

The predicted probabilities are provided in Table 3.2 and Figure 3.1, below. When US political ties are low, a state that has been observed to be completely non-compliant has an 8.7% chance of obtaining a new project approval in any given month. This probability only increases by about two percentage points, to about 10.7 when the state has been fully compliant. Comparatively, when US political ties are high, a noncompliant state has a very low probability of obtaining a new project in a given month. Such states receive projects with a probability of 2.7%. However, states that have high US ties, and that have been fully compliant in the past five years have a 25.1% probability of receiving a project in any given month. This over a 20 percentage point increase.

Table 5: Predicted probabilities of project approvals

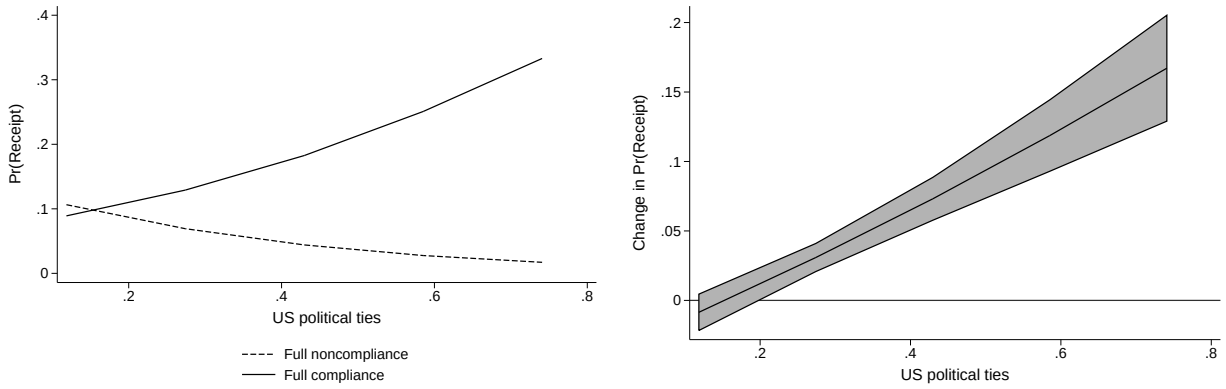
US political ties	*Prior compliance*	Pr(Receipt)	Confidence interval
Low	Noncompliance	0.0869	[0.0750, 0.0987]
Low	Compliance	0.1066	[0.0960, 0.1172]
High	Noncompliance	0.0277	[0.0191, 0.0362]
High	Compliance	0.2505	[0.2093, 0.2917]

The table above provides predicted probabilities for various values of the independent variables. US political ties low and high represent the 10th and 90th percentiles on the UNGA index, respectively. The low value is about 0.12 and the high value is about 0.80 on the UNGA index. Full noncompliance and compliance correspond to states with only observed noncompliance or compliance in the past five years, respectively. The confidence interval is at the 95% level.

Figure 3.1 below provides both predicted probabilities and changes to predicted probabilities. In subfigure A, the predicted probability for fully compliant and noncompliant states is shown. A fully compliant or noncompliant state is a state which is observed to comply or not comply with all agreements in the past five years. Since the IEG data does

not evaluation all projects, the measure contains some noise but such bias is towards conservative values and not extreme values. A state in full compliance dramatically increases the probability of receiving an award as US political ties increase. Alternatively, a state can generally increase the probability of receiving an award by complying with prior projects, and this effect becomes stronger as US political ties increase.

Subfigure B is the partial derivative of compliance across values of political ties. When political ties are low, the difference in compliance and noncompliance is approximately zero. The change in the predicted probability of receiving an award increases as US political ties increases, and this effect is statistically significant at the 95% level. In short, compliance matter more as US political ties increase.



(A) (B)

FIGURE 3.1: Effects of compliance across values of US political ties

Note: Subfigure A is the predicted probability of an award for being in full noncompliance or compliance. Full noncompliance and compliance correspond to states with only observed noncompliance or compliance in the past five years, respectively. Subfigure B is the change in the predicted probability of an award for the partial derivative of compliance. All other variables are held at their means.

Discussion

The results of the statistical analysis support the inference from the formal model. In the formal model, political ties between the US and the developing state do matter for both the benefits the US gains, as well as the costs the US incurs. However, the benefits and costs are not impacted in the same manner. Even though the US gains increased benefits from supporting World Bank funds to individual states, the costs of backing such states increases at a greater rate than the benefits. This places pressure on the US to support only those states that are going to comply with the terms of the agreement, because otherwise the US pays the greater costs without reaping the greater benefits.

Having political ties to the US may be beneficial to a developing state hoping to obtain a new project approved by the World Bank, if the state is compliant with the terms of prior funding. States that are tied to the US and comply, can expect that when they propose project to the World Bank, the Executive Board will more likely approve the project than if the state was either not tied to the US or not compliant. However, states tied to the US face greater scrutiny than other states, which places pressure on the recipient government to comply. States that are not compliant have a better chance of obtaining new project approvals if they do not have political ties to the US.

There is one reason to consider beyond political ties that states with similar foreign policies as the US would obtain World Bank loans more often than other states. Similar developmental preferences may be linked to foreign policies. Post 2000 World Bank policies emphasize ownership, which is a catch-term for the World Bank's attempt to encourage states to develop their own proposals. The idea is that if a state decides the terms of the project, then the state is more likely to abide by the terms and create better developmental outcomes. If it is the case that the policies in the projects being proposed are the true explanation of the strong support of the World Bank for states with similar foreign policies

as the US, then the impact of US political ties may be weaker than reported in the statistical models or possibly spurious correlation. Data on project proposals is not publicly available, but could be an important test of the robustness of the results in this paper.

Additions

While data on projects proposals is not a viable option to extend this study, I could possibly do case analyses of the domestic economic policies and World Bank projects for states with and without similar foreign policies as the US.

I could also extend this study to include a selection model or matching to determine the impact on the size of loans for states having US political ties and which are compliant. However, the parametric approach requires a good instrument, and I have been unable to think of a good instrument for the selection model. I could also use a probit random utility model in place of the logit model to test World Bank decision making. I will add robustness checks for different IEG evaluations and IBDR versus IDA funding.

Alternative Articles

These articles are relevant to the World Bank or conditional aid, and can either replace the proposed articles or serve as additional sections.

IEG Evaluations

Since IEG project evaluations represent a selection problem, an alternative empirical chapter could assess the IEG's decision of what projects to evaluate. This chapter could easily be inserted between the chapters on World Bank project approvals and the chapter on recipient compliance. Or this chapter could be an alternative third chapter if the recipient compliance question cannot be investigated. The IEG evaluation research question requires

matching or a selection model, where World Bank project approval is the first stage and IEG evaluation is the second stage.

World Bank Donor Politics by Decade

The literature is quite clear that the US maintains an over-representation of influence at the World Bank. A study which could contribute to the literature is to provide statistical models of the influence of the US over time. We know the history of the US - World Bank relations. For example, the US became more politically involved in the 70s, Reagan deemphasized the role of the World Bank in the 80's, and the US sought to aid the former Soviet states in the 90's.

Disaggregate IBRD and IDA Projects

I have combined all World Bank Group funding in the preliminary analyses but there are theoretical reasons to expect that donor politics are much stronger in IDA funding than IBRD. IDA projects are largely financed by donor states, while IBRD projects are financed by World Bank funds. Disaggregating these funds will be a robustness check of the results in dissertation, but the differences in these funds might also serve a one or more separate articles.

Disaggregate Projects by Sector

Each World Bank project is categorized by the sector it is impacting, for instance environment, finance, and health. The politics or compliance pressures may differ by sector. For instance the impact of US political ties may be more important for finance and economic projects because these sectors involve policies in which neoliberalism may reach.

Bilateral Aid and Political Conditionality

I have written a few papers on foreign aid and conditionality involving the Cotonou Agreement between the EU and the African, Caribbean, and Pacific Group of States. I have made various theories in these papers which apply separately to donor states and recipient states. I have investigated whether donors give aid to promote their exports or resource extraction. I researched recipients' political change, namely whether conditional aid improves democracy in practice or democracy on paper. I have also attempted to model the evidence of trust in cooperative relationships within the Agreement. I could incorporate this research into one or more chapters of the World Bank dissertation if need be.

Timetable

I anticipate completing this dissertation by May or August of 2016. This gives me 1.5 years to complete the project. I have completed much of the data management, and have syntax files to construct the datasets from raw data. I have also completed preliminary analyses for both of the empirical chapters. The preliminary analyses are promising, and I hope that this helps make for a smoother execution of the dissertation. This timetable also allows me to be on the job market in Fall of 2015.

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