The Political Economy of Project Preparation: An Empirical Analysis of World Bank Projects

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Abstract:

In the last few years, numerous econometric studies have unearthed evidence of donor influence over the geographic distribution of funds from international financial institutions (IFIs). Scholars are now beginning to use quantitative methods to delve into the details of donor influence to understand better how IFIs function and to guide institutional reform. The evidence suggests that donors influence both the amount of funds committed (the number and size of loans) and the disbursement of committed funds. This paper advances the literature by applying stochastic frontier analysis to a novel data source to examine factors that affect how quickly World Bank projects proceed from identification to approval, i.e., how long it takes to prepare a project. Accelerated preparation is one explanation for how the World Bank might increase the number of project or program loans to a recipient member country within a fixed time frame, for example in response to that country siding with powerful donor countries on important UN votes or while that country occupies an elected seat on the UN Security Council or the World Bank Executive Board.

Key words: Donor Influence; Project Preparation; Stochastic Frontier Analysis; United States; UN voting; World Bank.

JEL codes: F35, F53, F55, O19

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I. Introduction

Over the past decade, the political economy of international financial institutions (IFIs) has emerged as an important area both for policy and for empirical research. A number of important empirical studies have reinforced anecdotal reports of the powerful donor countries (notably, the U.S.) intervening to overturn the technocratic decisions of these international organizations. This has been particularly well documented for the IMF where links have been found between access to Fund resources, on the one hand, and UN voting patterns and United Nations Security Council (UNSC) temporary membership, on the other hand (Andersen, Harr and Tarp, 2006; Barro and Lee, 2005; Dreher *et al*., 2009b; Dreher and Jensen, 2007; Stone, 2002, 2004; Thacker, 1999). Similar patterns, including links with trade and bilateral aid flows, have also been found for the World Bank (Andersen, Hansen and Markussen, 2006; Dreher *et al*., 2009a; Fleck and Kilby, 2006; Frey and Schneider, 1986; Kilby, 2009b; Weck-Hannemann and Schneider, 1991) and the Asian Development Bank (Kilby, 2006, 2011; Lim and Vreeland, 2010).

This paper is part of a project that builds on this literature to examine donor influence in IFIs at different stages in the resource transfer process. A better understanding of donor influence at each stage is critical to develop a complete picture of how donors impact the efficacy of IFIs. It is also essential for the design of appropriate policy reforms. The present paper focuses on the "upstream" process at the World Bank, the length of time between project identification by World Bank staff and project approval by the World Bank Executive Directors (EDs). This topic is important for numerous reasons. It may elucidate the mechanism by which politics influence the number of projects (Dreher *et al*., 2009a) or the volume of lending (Andersen, Hansen, and Markussen, 2006; Kaja and Werker, 2010). "Quality at entry" (the quality of preparation) has been identified repeatedly as an important determinant of project success (e.g., Kilby, 1994). Rushing a project to

the World Bank's board for approval could undermine quality by limiting consideration of alternatives and local needs during the identification process, leaving insufficient time to develop a full project plan, and creating a disincentive for a critical appraisal. If we can identify which projects were rushed, a more precise measure of the "cost of favoritism" (in terms of reduce aid effectiveness) is possible (Dreher *et al*., 2010).

To date, no one has tackled this issue because project identification dates (at the World Bank and elsewhere) are not publically available. I side-step this problem by using a stochastic frontier model to estimate the identification date from sequentially issued project identification numbers. This methodology, developed for studying productive efficiency at the firm level and since adapted to analyzing total factor productivity at the national level, allows me to use project identification numbers, loan approval dates, and project/country characteristics to explore what determines the duration of project preparation. Duration in this context is a kin to cost where the most "efficient" projects–those with the shortest duration–define the frontier. The methodology is analogous to duration analysis (in this case modeled with an exponential distribution) which simultaneously estimates the starting date from a variable that is a noisy measure of that date.

The analysis finds that several political factors have a significant impact on the length of World Bank project preparation. When recipient countries vote with the U.S. in the UN General Assembly (UNGA) on measures the U.S. considers important, occupy one of the non-permanent seats in UNSC, or have a national representing them on the World Bank Executive Board, the length of project preparation is reduced. This fits with Dreher *et al*.'s (2009a) finding that the number of World Bank projects approved per year is higher while a country holds a non-permanent seat on the UNSC. It is also consistent with Kaja and Werker's (2010) result that loan amounts from the World Bank's less concessional window, the International Bank for Reconstruction and Development

(IBRD), are higher when a country's national is serving as a World Bank Executive Director.

The next section (II) presents a brief survey of the relevant portions of the literature on the political economy of IFI lending. Section III presents data on Project Identification Numbers and explains how to incorporate them in a stochastic frontier analysis. Section IV describes the remaining data and presents estimation results. Section V concludes.

II. Literature Review

This section covers past research on the political economy of World Bank lending directly linked to this paper and other work relating project preparation to project performance.

Quantitative research into the role of donor interests in the allocation of World Bank funds began with Akins (1981), Frey and Schneider (1986), and Weck-Hannemann and Schneider (1991). Following in this tradition, Fleck and Kilby (2006) develop a model in which donor threats to withhold funding motivate the aid agency to increase the share of aid going to the donor's preferred recipient. This model motivates a panel analysis of World Bank lending shares from 1968 to 2002 which finds links between U.S. trade interests and World Bank disbursement shares.

Andersen, Hansen and Markussen (2006) narrow the focus to the 1990s and the more concessional window of the World Bank, the International Development Association (IDA). Looking at commitment data, these researchers find a link between UN voting alignment with the U.S. on measures the U.S. considers important and IDA loan volume. The focus on only those votes considered important by the U.S. follows earlier work on the IMF (Thacker, 1999); in most settings, these votes have proven far more predictive (and robust) than measures that do not distinguish between important and other votes (e.g., Kilby 2009b).

Some controversy remains over the use of UNGA voting alignment to measure donor

interests in this setting. Andersen, Harr, and Tarp (2006) develop a vote buying model to argue for separately including alignment on other votes or country fixed effects to avoid omitted variables bias. Kuziemko and Werker (2006) introduce non-permanent membership on the UNSC as a measure of geopolitical importance to the U.S. in their analysis of the geopolitics of U.S. bilateral aid. This has the advantage of varying systematically over time (since countries are precluded from holding consecutive terms), capturing aggregate G7 (not just U.S.) interests in multilateral aid applications, and arguably being "more exogenous" in terms of the other determinants of aid allocation (Dreher *et al*., 2009a, 2009b, 2010). From a practical perspective, UNSC status has advantages and disadvantages when compared to UNGA important votes. Long time series are available for UNSC status while the U.S. State Department only began publishing lists of important votes in 1983. In addition, UNGA voting has become more contentious over time and alignment with the U.S. has trended down.[1] On the other hand, variation in the UNSC data is limited since there are only 10 non-permanent seats and some countries have never held a seat.

Kilby (2009a) follows the suggestion in Andersen, Harr, and Tarp (2006) by using the difference between important UNGA vote alignment and other UNGA vote alignment to measure concessions to the U.S. Using this variable to classify countries as U.S. friends or not, Kilby finds evidence that World Bank Structural Adjustment Loan disbursements are linked to macroeconomic performance only for countries not friendly with the U.S., providing an alternate explanation for the failure of conditionality. Kilby (2010) uses the same measure of concessions to examine informal influence after World Bank loan approval; in this setting, U.S. informal influence appears to be at

[1]See Voeten (2004). This raises the issue of spurious correlation some settings (e.g., when including year dummies is not appropriate, as in the SFA presented below).

least as important in determining the flow of World Bank funds as U.S. formal influence.[2]

Dreher *et al*. (2009a) utilize instead UNSC non-permanent member status in an analysis of the determinants of the number of World Bank projects a country receives per year. The authors find a statistically significant and sizeable jump in the number of projects for countries in the second year of their term as non-permanent members of the UNSC. This pattern is consistent with rushed preparation of projects when a country joins the UNSC, with the bulk of these "rush orders" only reaching the World Bank's Board of Executive Directors by the second year.[3] In discussing this "second year" pattern, Dreher *et al*. (2009a, 11-12) note that:

> This is contrary to the results in Dreher *et al*. (2006), showing that the effect of UNSC membership on IMF program participation is strongest in the first year of membership. Most likely, the difference is due to the typically longer preparation phase of World Bank projects. While IMF loans are usually negotiated relatively quickly, the World Bank explains that their project preparation phase can range from a few months to three years, depending on the complexity of the project proposed.

Switching to an analysis of lending volume in dollar terms (commitments), they find an unexpected negative though insignificant link.

Kaja and Werker (2010) explore an interesting new approach, introducing a corporate governance angling into the analysis. Many day-to-day decisions at the World Bank (such as approval of new loans) are made by a group of 24 EDs, a number of them representing several

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[2]In a related analysis for the Asian Development Bank, Kilby (2011) measures both Japanese and U.S. influence, again finding an important role played by, especially Japanese, informal influence.

[3]It is also consistent with the initiation of types of projects that require little preparation, for example supplemental loans for existing projects.

borrowing countries at once. Kaja and Werker's basic question is whether EDs fulfill their fiduciary obligation to provide a level playing field for all borrowing countries or rather favor insiders, namely their own countries of origin. One important question that arises is how quickly lending can respond to a new country gaining control of an ED's seat. Kaja and Werker (2010, 184) select an event-time specification that includes dummy variables for years before, years during and years after holding an ED's seat:

> [This approach] also enables identifying any lag structure between project conceptualization and board-approved commitments. An infrastructure project may require three or more years to iron out all the details, but other categories–like budget support–can be approved much faster.

The analysis finds that both ED and ED-alternate (who can–and do–take charge when the regular ED is absent) status substantially increases IBRD loan commitments to a country while the country holds the position.[4] The level of IDA credits (the official term for the more concessional IDA loans) is not affected by the country's ED-status, perhaps reflecting the stricter rules for allocation of IDA funds (despite the findings of Andersen, Hansen, and Markussen (2006)). Alternatively, this result may depend on which countries are treated as IDA-eligible.

Dreher *et al*. (2010) use the case of the World Bank to tackle a long debated issue in the aid literature: is politically motivated aid less effective? In this setting, the question is whether projects approved while the country occupied a position of power (on the UNSC or as an ED) perform differently from projects approved at other points in time. In other words, do the costs of favoritism

[4]Executive directors' two year terms start mid-calendar year while other data follow the calendar year. Kaja and Werker construct a dummy variable that misses the first ½ year, captures the next year, and counts the final ½ year as a full year. In the analysis below, I construct a variable that also counts the first ½ year.

extend beyond an inequitable distribution of resources? Measuring performance via World Bank ratings, Dreher *et al*. find that economically vulnerable countries (those with high percentages of short term debt or high debt service burden) have worse outcomes for projects approved while the country was a non-permanent member of the UNSC. This result does not hold for ED-status. This differentially poor performance in economically vulnerable countries is not explained by receiving an even larger numbers of World Bank projects when those countries were in the UNSC; vulnerability is not a factor in the allocation process.

There is a largely separate literature examining whether World Bank inputs (such as preparation) influence project performance. Looking after the preparation period, Kilby (2000) finds that World Bank project supervision (which consists of monitoring and advice during project implementation) has a sizeable impact on project performance. Kilby (1994) examines the impact of "quality at entry" on project outcomes; the data available suggest that the quality of preparation has a strong impact on final outcomes, both in terms of average results and in terms of "insulating" a project from a difficult macroeconomic environment. Thus, compressed preparation could have a substantial cost in terms of reduced development impact per dollar of aid.

It is important to note that the results reported in Kilby (1994) use subjective ratings of "quality at entry" assigned by the same World Bank project evaluators who assess the project's overall performance. While these are the only evaluations available, this design creates obvious potential for endogeneity due to a halo effect. Deininger *et al*. (1998) take an alternative approach, looking directly at the number of staff weeks of preparation. They show that preparation inputs (weeks of staff time) have remained fairly constant over time (per dollar of lending) but overall World Bank project-specific inputs (staff weeks of preparation plus supervision) vary considerably across regions and sectors. A simple bivariate analysis finds that staff weeks of preparation are

higher on average for projects that are subsequently rated "unsatisfactory" on completion. In an instrumental variables analysis, World Bank project-specific inputs (preparation plus supervision) do not have a significant impact on a country's average performance though weak instruments are an issue.[5]

Dollar and Svensson (2000) find that (instrumented) staff weeks of preparation do not influence the success rate of structural adjustment programs. Again, the strategy used to select instruments is likely to generate weak instruments. Looking at the determinants of preparation, Dollar and Svensson (2000, 907) note that:

> ...the World Bank allocates different amounts of resources to different regions, so that preparation resources tend to be low in East Asia and Latin America relative to Africa. ... Second, there are more resources for large loans and for those with many conditions... Finally, resources go to low-income countries and to countries small in population.

All of these are factors that could, in principle, be related to project performance. In sum, the literature investigating the impact of World Bank project preparation on project performance is inconclusive. While it is intuitively appealing that poor or rushed preparation is may to lead to poor project selection or subsequent implementation problems, attempts to measure this have been plagued by endogeneity concerns.

III. Project Identification Numbers in a Stochastic Frontier Model

As discussed above, this paper explores political economy factors that influence project preparation at the World Bank. A natural way to approach this question is through duration analysis,

[5]See footnote 3 in Deininger *et al*. (1998).

i.e., examining the factors that influence the length of time that passes between project identification and project approval. The project identification date is the date on which World Bank staff begin the process of identifying the project or program. The project approval date is the date on which the World Bank's Board of Directors approves the project plan and accompanying loan documents. The publically available data source for all World Bank projects (the World Bank Projects Database) lists the approval date for projects that have passed this milestone. Unfortunately, the World Bank does not systematically provide project identification dates.

The World Bank Projects Database does include the Project Identification Number (Project ID). Project IDs are the World Bank's method of tracking a project internally both for accounting and documentation purposes. The World Bank typically assigns a unique Project ID as soon as project-related documents are generated or expenses are incurred (e.g., staff time, travel, consultants). From that point forward, the Project ID is the World Bank's method of tracking everything related to that project. It is used throughout preparation, appraisal, negotiations with the borrowing government, Board approval, project implementation, and ex post project evaluation. This raises the possibility that one might be able to extract useful information about the project identification date from the Project ID.

[Figure 1 about here]

Figure 1 plots all Project ID numbers in the World Bank Projects Database against the closest available date we have, the project approval date. The World Bank Projects Database contained 13,644 entries as of July 5, 2010, covering projects from 1945 to 2010 with Project IDs ranging from P000001 to P122181. For projects that have been approved, approval dates range from 1947 to 2010. The analysis in this paper focuses on IBRD and IDA lending to individual countries; the database includes other funds that the World Bank administers (e.g., the Global Environmental

Fund) as well as a few regional loans. The restricted sample is depicted in Figure 1A. This slightly reduces the dispersion of the data points but the basic pattern remains.[6] Both of these figures illustrate that the method of assigning Project IDs has changed over time.

[Figure 1A about here]

Broadly speaking, three distinct regions are evident: projects with Project ID numbers in the 10,000 and below range (Region 1); projects with Project ID numbers closer to 50,000 with approval dates up through 1990 (Region 2); and projects with Project ID numbers above about 30,000 with approval dates after 1993 (Region 3). Below, I look at each of these regions separately to better understand the process of assigning Project IDs and to determine if they contain useful information about the identification date.

Figure 2 (Early Project ID Number System) includes only projects in Region 1. Out of this cloud of data points, the graph separately identifies data points for five selected countries to illustrate the structure of the data. For each country identified, Project IDs fall into a specific range. For example, Project IDs for Brazil range from 6210 to 6572; the range includes 234 Brazilian projects and no projects for other recipient countries. This pattern suggests that each countries' projects were assign a number from a pre-determined range. The upward slope of the "line" of Brazilian projects suggests that Project IDs were, for the most part, assigned sequentially within this range. However, with separate country ranges, no useful information for comparisons between countries can be extracted from these data.

[Figure 2 about here]

Figure 3 (Early Project ID Number System – High Numbers) examines projects in Region

[6]Later in the analysis, I include only observations with approval dates or that are designated as in "the pipeline" (pre-approval); other cases have missing data and cannot be appropriately categorized.

2. These data points reveal more detail about the nuances of the World Bank's numbering system but again do not appear to contain useful information about the timing of project identification.[7]

[Figure 3 about here]

Finally, Figure 4 (Recent Project ID Number System) depicts projects in Region 3. The same five representative countries are separately identified and reveal a very different data structure. Numbers for each country no longer fall within non-overlapping ranges but are randomly distributed across the range of ID numbers. Under this new system, Project IDs appear to be drawn sequentially from a common pool. Diamonds at right margin reflect "pipe-line" projects that have not yet been approved by the Board. Thus, for projects in Region 3, Project IDs do contain information about the timing of project identification that is comparable across countries.

[Figure 4 about here]

Figure 5 presents the same data but in a different orientation that suggests one approach to exploiting this information. With Project IDs appearing on the horizontal axis and approval dates on the vertical axis, the data resemble cost data in a stochastic frontier analysis. In frontier analysis, the lower edge of the data define the "best practice" or least cost approach, e.g., what an economics student would derive as a cost curve in a microeconomic theory course. Data points above the frontier reflect firms whose operations are less efficient. If there is no measurement error, one would use a data envelopment analysis (DEA) to define a convex hull approximating the theoretical lower bound, i.e., the cost function. With measurement error, a stochastic frontier model is used.

In this application, we can think of the lower edge of the data as defining the shortest period of preparation and hence approximating the project identification date. This would suggest using

[7]The blue dots indicate Denmark, Finland, France, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, South Africa, and Spain.

DEA to uncover these dates and then proceeding with a duration analysis. However, there is a high likelihood of measurement error if a few projects deviate from the general pattern linking Project IDs to identification date. To allow for error on the frontier, a stochastic frontier model is appropriate.

[Figure 5 about here]

Model

To apply the model more formally, assume there exists a "most efficient" project preparation process in the sense that if this process is followed the minimum possible amount of time elapses between project identification (*idate*) and project approval (*adate*). Define this minimum duration of preparation as α.[8] If u denotes the duration of preparation beyond the minimum, then the approval date for project j in recipient country i is given by

$$adate_{ij} = idate_{ij} + \alpha + u_{ij} \tag{1}$$

Since u_{ij} is a duration, I model it as an independent exponential process that may depend on country and project characteristics $\boldsymbol{x}_{ij}$:

$$u_{ij} \sim \exp(\beta \boldsymbol{x}_{ij}) \tag{2}$$

As discussed above, *idate* is not observed but a related variable, *Project ID* is. Although *Project ID* is assigned sequentially, the number and timing of projects identified each year is not fixed. This means that even a flexible deterministic mapping from *Project ID* to *idate* necessarily introduces some error. For ease of notation, consider a linear specification:[9]

$$idate_{ij} = \gamma Project\ ID_{ij} + \nu_{ij} \tag{4}$$

where $1/\gamma$ is the average number of projects identified each day and v is assumed iid $N(0, \sigma_{\nu}^2)$. Thus

[8]For the purposes of this analysis, α=0 is unproblematic. A value of zero simple means that some loans are conceived and approved on the same day, e.g., an emergency relief package.

[9]In exploratory empirical specifications, I allow up to quartic in *Project ID*; the estimated relationship, however, does prove to be essentially linear.

the model to be estimated is

$$adate_{ij} = \alpha + \gamma Project\ ID_{ij} + \nu_{ij} + u_{ij} \quad (5)$$

Note that with the distributional assumptions specified for ν and *u* this is the Stochastic Frontier Model described by Aigner *et al.* (1977), analogous to a cost function since the one-sided "inefficiency" term *u* enters with a positive sign. Estimation is via maximum likelihood.

Figure 6 presents the results of a "back of the envelope" calculation that suggest the exponential distribution may be appropriate for the one-sided error term. Ordering the data from lowest *Project ID* to higher *Project ID*, I divide the sample into groups containing 50 projects each. I then use the earliest approval date in that group as the identification date for the entire group. I calculate durations based on the difference between the approval date and this approximated identification date. The histogram summarizes the distribution of these durations; I also include an exponential PDF with the same mean (2 year) and hence the same variance. Although by no means a formal test of the distributional assumptions, this graph does suggest that preparation duration is reasonably described by an exponential process.

[Figure 6 about here]

Figure 7 presents the results of estimating the stochastic frontier model. Again, observations for selected individual countries are highlighted to illustrate the temporal information embodied in the project id numbers. The black line at the lower edge of the cloud of data points is the estimated frontier which can be interpreted as the identification date. The distance between any point and that line is the estimated "inefficiency" or, in this context, the duration of preparation for each project. The results presented in the next section focus on project and country characteristics which influence that duration.

One issue raised by the graph is the censored nature of the data. The World Bank Projects

Database includes so-called "pipe-line" projects that are still under preparation (shown as open "diamonds" at the top right of Figure 7). Because of the nature of the Stochastic Frontier Model likelihood function, incorporating these observations in the estimation process (in a manner akin to a Tobit analysis) is not straightforward; the most obvious approach is a simulated maximum likelihood method. I do not pursue that approach here, for two reasons. First, only about 6 percent of the observations in the estimation sample are censored so omitting them is unlikely to introduce an important bias. Second, as is apparent from Figure 7, censored data is only an issue on the right hand side of the graph; Project ID 75267 is the first censored data point. Limiting the analysis to the 45 percent of the sample to the left of this point provides an alternative approach.

[Figure 7 about here]

IV. Data and Results

This section describes the project and country data used in the analysis and presents estimation results.

Data

The full specification with an unrestricted sample includes 3627 project observations spread across 119 countries. The sample is determined by data availability; the time period considered in terms of approval dates is from January 1, 1994 to July 5, 2010 while the (unobserved) identification dates likely extend further back in time.[10] Three broad categories of variables enter into the analysis: project variables, country variables, and political economy variables. Project variables include

[10]There are two observations with 1993 approval dates in Region 3, a loan to Zambia on August 9th and a loan to Algeria on December 23. I omit these from the estimation sample. The earliest predicted identification date (using the specification in Table 2, Column 8) is December 21, 1987.

Approval Date (the dependent variable), *Project ID*, *Loan Amount*, and various indicators the loan type and sector. Country variables include those likely to impact the speed of preparation (i.e., how easily World Bank staff can interact with borrowing country counterparts and how in-depth preparation needs to be).[11] The list includes macroeconomic and governance/institutional quality variables. I also consider a range of donor interest political economy variables: UN voting alignment, non-permanent UNSC membership, World Bank Executive Board membership, trade flows, military aid, and bilateral aid.

Approval Date ranges from January 14, 1994 to June 29, 2010 with its mean at November 4, 2003. The median approval date is May 18, 2004; skewing of the sample is expected since we include only those projects assigned numbers under the new system.

I include the size of the loan (in log terms) as a measure of project size, importance and complexity. *Loan Amount* is measured in millions of constant 2005 dollars, averaging 3.7 ($40 million) and ranging from −1.8 ($160,000) to 8.1 ($3.4 billion). *Loan Amount* is the sum of all IBRD loans and IDA credits associated with the project. In this model, it is important to express variables in real terms since year dummies cannot be included.

The other project-specific variables are indicators of loan or project type. *IDA* equals one if the project includes at least some IDA funding, a condition which holds for just over sixty percent of the observations. *Supplemental Loan* equals one if the loan is to supplement an previous loan, i.e., it supports an existing project. Approximately 13 percent of the observations fit this category. "Preparation" for such loans may be quite different than for new projects; I return to this issue later. *SAL* equals one if the loan/credit is for a Structural Adjustment Program, now called Development

[11]For example, more detailed planning may be necessary in a difficult implementation environment as suggested by Kilby (1994).

Policy Lending. Some twenty percent of the sample finances this type of activity.

I include a number of country characteristics that may be important determinants of preparation duration. *War* is a dummy variable indicating whether there is an major on-going conflict, i.e., one that claims at least 1000 lives during the year. Eight percent of the observations fall into this category. Given the nature of project preparation (i.e., that it involves access to the country and interaction with government representatives) and the goal of project preparation (to begin implementation of a project or program in the borrowing country), an on-going war may well play a role in the duration of preparation. Country descriptors also include *Population* (log of millions of people), *GDP per capita* (a PPP measure expressed in 2000 dollars and included in its log form), the *Democracy* indicator of Cheibub *et al*. (2010), and *Freedom House* (an index constructed by averaging the political freedom and civil liberties measures, then inverting so 7 is "Most Free" and 1 is "Not Free").

The remaining explanatory variables are country-level political economy measures and closely related control variables. *US important votes* is the alignment between the borrowing country and the U.S. on UNGA roll call votes designated as important by the U.S. State Department. *US other votes* covers all UNGA regular session roll call votes on resolutions that passed which are not already included in *US important votes*. The alignment calculation method follows Kilby (2011) and has a theoretical range from 0 to 1. Alignment is substantially higher on important votes (0.41 versus 0.31); it is also important to note that voting in the UN has become more polarized over time so that these US alignment measures trend down during the period under study. I include matching variables for the remaining G7 countries, *G7-1 important votes* and *G7-1 other votes*. These are average alignments across the 6 countries but use the same categorization of votes as for the U.S. variables. This is the correct specification if we interpret them purely as control variables; it may

not be the correct specification for actually determining the influence of these other countries since the set of important votes may be mis-specified.

US military aid is a dummy variable equal to 1 if the country receives substantial U.S. military aid, defined here as more than $500,000 (in 2005 dollars). Data on military aid from other donors is not systematically available. *US economic aid* is the log of U.S. total official gross disbursements of economic aid, measured in millions of 2005 dollars. *G7-1 aid* is the log of total official gross disbursements of economic aid from the other G7 countries (averaged over these donors, i.e., divided by 6 before taking the log), again measured in millions of 2005 dollars. Fleck and Kilby (2006) point out that these bilateral aid variables may proxy for elements of recipient need not adequately captured by the country descriptors I include. Following their approach, the estimations include a third aid variable, *Like-minded donor aid*, which reflects aid from Denmark, the Netherlands, Norway, and Sweden. These countries are known for their relatively humanitarian allocation of aid and also have very limited power within the World Bank.[12] *US trade* is the sum of exports to and imports from the U.S., again measured in constant 2005 dollars and entering the estimation in log form. *G7-1 trade* is the same variable for the other G7 countries. I also include *World trade* (which includes G7 trade) so that the U.S. and G7-1 measures reflect the differential effect of trade with these geopolitically important countries, rather other factors correlated with trade volume.

The final two political variables reflect international positions the country might hold temporarily that increase its importance or power. *UNSC non-permanent member* equals 1 for those years the country occupied one of the non-permanent seats on the UNSC. This variable averages

[12]I omit Canada from the like-minded donor group as it is already included in the G7-1.

0.07 in the sample. UN rules require rotation after a two year period so this variable exhibits negative auto-correlation for lags of two years or more. *World Bank Executive Director* is a dummy variable equal to 1 if the country held an ED position in the current year or past three years. The variable averages 0.28. Board membership is not required to rotate at the World Bank though for some seats there is a tradition of doing so.

Estimation Results

Estimation is by maximizing the likelihood function of the Stochastic Frontier Model. In his discussion of estimating this model, Greene (2007, 154) notes the question of "where do we put the z's," that is whether explanatory variables enter Equation (1) that determines the frontier or Equation (2) that specifies the "inefficiency." Fortunately, in this setting since use of the Stochastic Frontier Model is purely to solve a data problem, the location of the "z's" is clear. *Project ID* is included in Equation (1) and all other variables appear in the conditional mean of the exponential term. The tables below do not report the coefficient estimate for *Project ID* which ranges from 0.068 (z-statistic of 284.96) in the full sample to 0.059 (z-statistic of 67.49) in the restricted sample discussed later. Interpretation of the coefficient is not particularly enlightening in this setting, at least in part because there are many "missing" project id numbers. The 3,627 observations in the unrestricted sample run from *Project ID* 31,828 to *Project ID* 121,193, a span of nearly 90,000. Despite this, including higher order *Project ID* terms (quadratic, cubic, quartic) does not change results.

Table 2 has two parts. The first (2A) reports coefficient estimates for basic project and country characteristics; the second (2B) reports coefficient estimates for political variables. Columns (1) to (8) include different political variables (reported in Table 2B) with slightly different coverage; those in log form (aid and trade variables) are missing when the value of the underlying variable is

zero. The estimation sample ranges from a maximum of 3831 observations to a minimum of 3627 in the most complete specification. In the baseline specification, the estimated preparation time for the typical project (all variables set to their sample mean values) is 528 days or just under a year and a half.

Most coefficient estimates in Table 2A are very stable across different specifications. The table begins with loan/project characteristics, most of which are significant factors in determining the duration of preparation. As expected, *Loan Amount* enters with a positive and significant estimated coefficient indicating a significantly longer preparation period for projects financed with larger World Bank loans and credits. For an otherwise typical project (all variables at the sample mean), an increase in loan size to one standard deviation above the sample mean corresponds to an 82 day (15%) increase in the estimated preparation period. Projects receiving IDA funds have shorter preparation periods but the difference (relative to purely IBRD-funded projects) is insignificant in all but the last specification. Supplemental loans have a significantly and substantially shorter preparation time than other projects; this result is very stable across specifications and statistically extremely strong (z-statistics above 20). For an otherwise typical project, funded via a supplemental loan reduces the estimated preparation period by 557 days, from 669 days to 112 days (an 83% reduction). Structural Adjustment Programs/Development Policy Loans (*SAL*) also have substantially and significantly shorter preparation periods (240 days shorter).

The lower portion of Table 2A reports country characteristics. I include all these variables with a three year lag to allow for the time elapsed during preparation. In most cases, the length of lag (from 3 years to 0 years) has little impact on the coefficient estimate (in part due to serial

correlation) but in a few instances results are stronger with the three year lag.[13] Across all eight specifications, *War* enters with an unexpected negative sign (i.e., shorter preparation for countries at war) but this is uniformly insignificant.[14] The preparation period is somewhat longer for larger countries though this effect is insignificant in two of eight specifications. For an otherwise typical project, a one standard deviation increase in log of population corresponds to a 21 day longer predicted preparation period. *GDP per capita* enter with a negative coefficient in most specifications (as one would expect) but is generally insignificant. *Democracy* enters with a negative coefficient which is significant in more than half the specifications; the predicted preparation period is 60 days shorter for democracies. *Freedom House* also enters with a negative estimated coefficient though it is significant (marginally so) in only one of the eight specifications. Overall, there is a striking difference between the results for project characteristics–which are generally important determinants of preparation speed–and for country characteristics. This suggests that identification and preparation are largely determined by the World Bank rather than the borrowing country.

Table 2B reports results for political variables, first with groups of related variables included separately and then altogether. Column (1) is simply a place holder; no political variables are included in the first specification. Column (2) includes UN voting alignment variables for the U.S. and the other G7 countries. The estimated coefficient for *US important votes* is large, negative and statistically significant while that for *US other votes* is substantially smaller, positive and not statistically significant. For an otherwise typical project, an increase of one standard deviation in

[13]An alternative is to use the average value of each variable over the three year period approaching approval. Results are generally the same.

[14]If the specification includes a dummy for an "Emergency Recovery Loan" (approximately 2% of the sample), the war dummy is generally positive though still insignificant. The "Emergency Recovery Loan" dummy is itself negative and significant but its inclusion does not influence other estimates.

alignment with the U.S. on important UN votes corresponds to a 126 day (25%) reduction in the predicted duration of preparation. On the face of it, this indicates that project preparation is significantly shorter when the borrowing country votes with the U.S. on UN measures that the U.S. considers important while votes on other measures are not consistently linked to project preparation. By itself, this suggests that the U.S. uses its influence in the World Bank to reward its allies by expediting the preparation process to increase the number of projects (and, therefore, the amount of funding) these countries get from the World Bank.[15]

The picture is somewhat clouded by the estimation results for the other G7 countries. *G7-1 important votes* and *G7-1 other votes* both enter with positive and significant coefficients. A test that the two G7-1 coefficients are equal fails to reject this hypothesis (p=0.4602) and including a single variable for alignment on all regular session UNGA roll call votes on passing resolutions yields similar results. That countries would be "punished" for voting in-line with the other G7 countries is a very odd implication. The explanation lies in the *ceteris paribus* interpretation of these results and the correlation between U.S. and other G7 votes. If U.S. voting is omitted from the equation, other G7 votes cease to be significant. If other G7 voting is omitted from the equation, *US important votes* remains significant and negative while *US other votes* is positive and significant. This result is consistent with Kilby (2009b) and Andersen, Harr and Tarp (2006).

In contrast, the estimated coefficient for *US military aid* in Column (3) is small and insignificant.[16] Column (4) introduces bilateral aid as a measure of donor interests. The estimated coefficient on *US economic aid* is negative as expected but small and not statistically significant.

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[15]This result could equivalently be interpreted as the U.S. punishing its enemies by delaying approval of their World Bank loans.

[16]Results are similar using a continuous measure of U.S. military aid.

In contrast, the estimated coefficient on *G7-1 economic aid* is both negative and statistically significant so that countries favored with more aid from the other G7 countries also "enjoy" faster project preparation (55 days or 10% for a one standard deviation increase in *G7-1 economic aid*). *Like-minded donor aid*, intended to capture aspects of recipient need not already reflected in the included country characteristics, enters with a positive and significant coefficient. This can be interpreted as "lower capacity" borrowers having longer preparation times. These individual results are robust to excluding any one of the aid variables.

Column (5) introduces trade variables. *US trade* and *G7-1 trade* both enter with negative, statistically significant coefficients. *World trade*, included so that *US trade* and *G7-1 trade* measure the differential effect of trading with these countries, enters with a positive and statistically significant coefficient. A one standard deviation increase in *US trade* (and the increase in *World Trade* this generates) for an otherwise typical project corresponds to a 28 day decrease in the predicted preparation period as compared to an 87 day increase if the increased trade were with a non-G7 partner (i.e., a differential effect of 115 days or 22%). The same increase in *G7-1 trade* results in a 55 day decrease (i.e., a differential effect of 142 days or 37%). Thus, more trade is linked to longer project preparation periods except for U.S. and other G7 trade partners.

Column (6) includes a dummy variable for UNSC non-permanent membership. The variable enters with a negative and statistically significant coefficient. Membership is associated with a 97 day (18%) reduction in preparation time. I include *UNSC non-permanent member* with a two year lag; results are similar with a three year lag but not significant with shorter lags. Sensitivity to lag length makes sense since UNSC rotation rules induce a negative correlation for lags of two years or more. Column (7) introduces *World Bank Executive Director* into the baseline specification. The coefficient enters with the expected negative sign and is marginally significant. For the executive

board, membership is associated with a 52 day (10%) reduction in preparation time. Column (8) includes all the political variables simultaneously. Some of the estimated coefficients fall in magnitude slightly and *US trade* slips to being marginally significant. However, by-and-large the results presented above hold: A wide range of political variables demonstrate that the duration of project preparation is shorter for countries aligned with or important to the U.S. and the other G7 countries.

Robustness

Table 3 addresses a potentially serious concern with the above results, namely spurious correlation. In this application of a stochastic frontier model that effectively estimates the identification date, it is not straightforward to include year dummies. Without these variables, causally unrelated time trends in the dependent and independent variables could account for their correlation. In an attempt to avoid potential spurious correlation, I re-estimate the relevant specifications after de-trending the independent variables.[17] The links between *US important votes*, *G7-1 economic aid*, and *US trade*, on the one hand, and the length of project preparation, on the other, survive de-trending in Columns (1), (3) and (4). In the full specification, only *US important votes*, *UNSC non-permanent member*, and *World Bank Executive Director* remain individually significant.

[Figure 8 about here]

I use the model estimated in Table 3, Column (5) to predict the duration of preparation and plot the resulting distribution in Figure 8. The bimodal distribution suggests there may yet be

[17]I do not attempt to de-trend *UNSC non-permanent member* and *World Bank Executive Director* and hence do not re-estimate Columns (6) and (7) of Table 2.

problems with the estimation results. One possibility is that the sample includes types of projects that are too different from each other. Looking at the estimates for project characteristics in Table 2A, the obvious candidate is supplemental loans which take much less time to prepare (112 days versus 669 days), for obvious reasons. Another (remote) possibility is the censoring issue discussed above: the unrestricted sample omits a little over 200 projects that had been identified but not yet approved by the cut-off of July 5, 2010.

Table 4 addresses these issues by restricting the sample. Column (1) repeats the specification of Table 3, Column (5)–with detrended variables–but drops supplemental loans from the sample. Column (2) limits the sample to cases where *Project ID* is less than 75267, the first censored observation in the data set. Finally, Column (3) imposes both restrictions and also includes regional dummies which may be important given the regional heterogeneity in staff weeks described in Deininger *et al*. (1998).

Across all three columns, the results described earlier prove robust. The restriction to the portion of the sample without censoring (and hence without the sample selection issue) increases the magnitude of *US important vote*s and *World Bank Executive Director* coefficient estimates. Figure 9 presents the distribution of predicted duration using Column (3) from Table 4 which is now single-peaked.

[Figure 9 about here]

V. Conclusion

This paper uses sequentially issued World Bank project identification numbers to estimate a Stochastic Frontier Model that explores the determinants of the duration of project preparation. I find robust evidence linking shorter preparation periods to a range of political variables that reflect

donor interests and recipient country political or organizational leverage. The project preparation process is accelerated (and thus World Bank funding is delivered more quickly) for countries more closely aligned with the U.S. on UN votes that the U.S. considers important. When a country temporarily holds a geopolitically important position as a member of the UNSC, World Bank projects are delivered more quick. A similar "benefit" accrues from having a seat at the table in the World Bank Executive Board.

This evidence of powerful countries using the World Bank as an instrument of their own foreign policy–doling out rewards to friends and punishment to enemies–adds to an already impressive literature. It validates the findings of Dreher *et al*. (2009b) and Kaja and Werker (2010) by demonstrating at least one channel through which the World Bank delivers more projects or more funding to favored countries. It is also reenforces the message of Dreher *et al*. (2010) that political favoritism can lead to a rushed preparation process that may undermine the development effectiveness of aid in some circumstance. A promising area for future research is to use this more structured understanding of the World Bank's response to donor pressure to explore further the question of the costs of favoritism raised in Dreher *et al*. (2010).

These finding are also interest in light of earlier work on donor influence at different stages of the project cycle. Kilby (2010, 2011) looks at "downstream" donor influence in the World Bank and the Asian Development Bank, i.e. donor influence over disbursement after loan approval. Because the board has no direct involvement in post-approval disbursement decisions at these institutions, the measured influence is purely informal. Conversely, donor influence over commitment decisions (loan approval) is not purely informal. This allows a comparison of the relative importance of formal and informal influence and sheds light on the likely effectiveness of proposed formal governance reforms. Kilby (2009a) likewise focuses downstream to explore a

narrower but equally important issue, the role of informal U.S. influence in the failure of structural adjustment.

Research on the role of donor influence "upstream" during project identification and preparation is likely to be just as fruitful. This work provides important information to guide IFI reforms, specifically efforts to increase representation and limit excessive donor influence that distorts the allocation of resources and undermines the credibility of the institution. It also has interesting things to say about the role of World Bank staff versus borrowing countries governments in the process of selecting and preparing projects. That characteristics of a borrowing country–its domestic economic conditions and political institutions–have little impact on the duration of preparation is telling.

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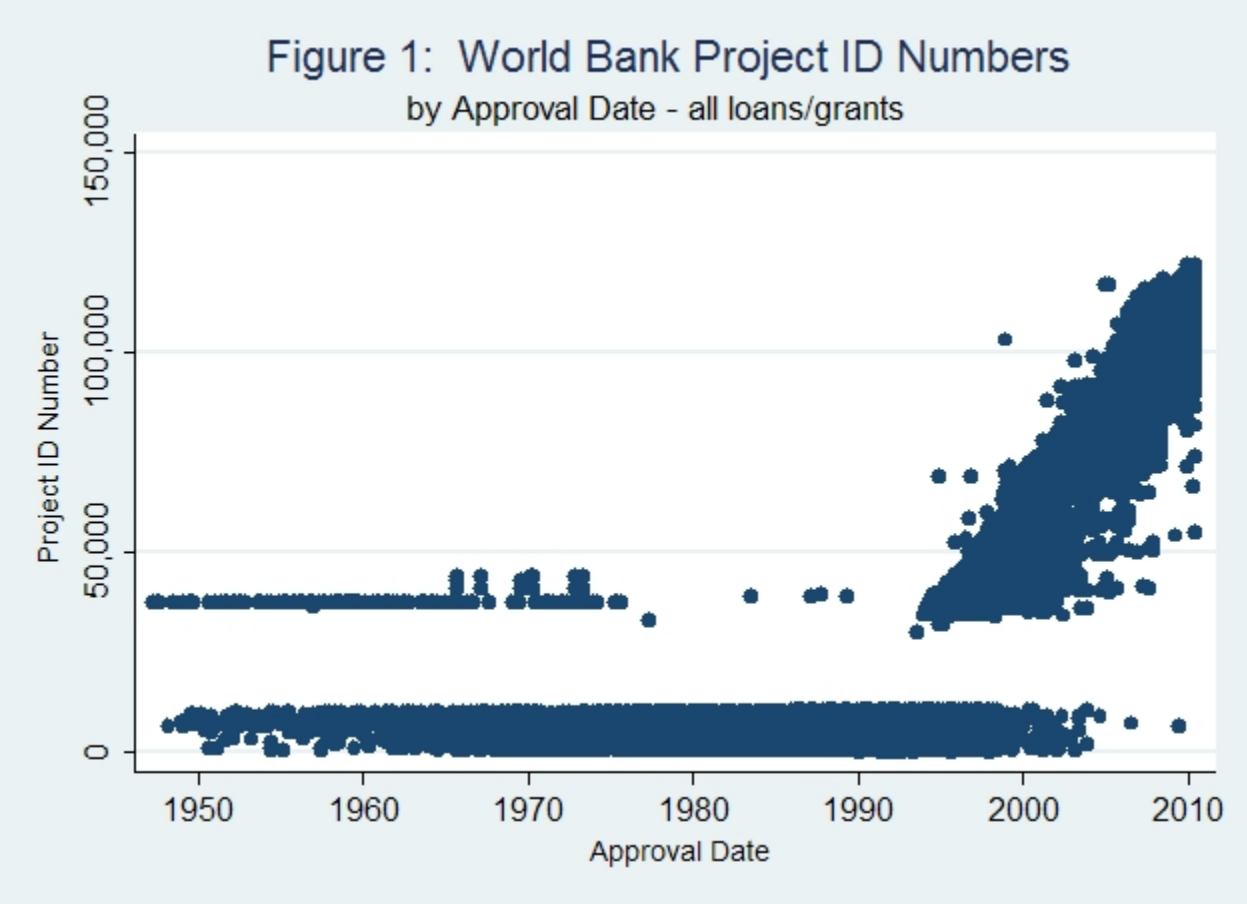


Figure 1: World Bank Project ID Numbers
by Approval Date - all loans/grants
Project ID Number
0
50,000
100,000
150,000
1950
1960
1970
1980
1990
2000
2010
Approval Date

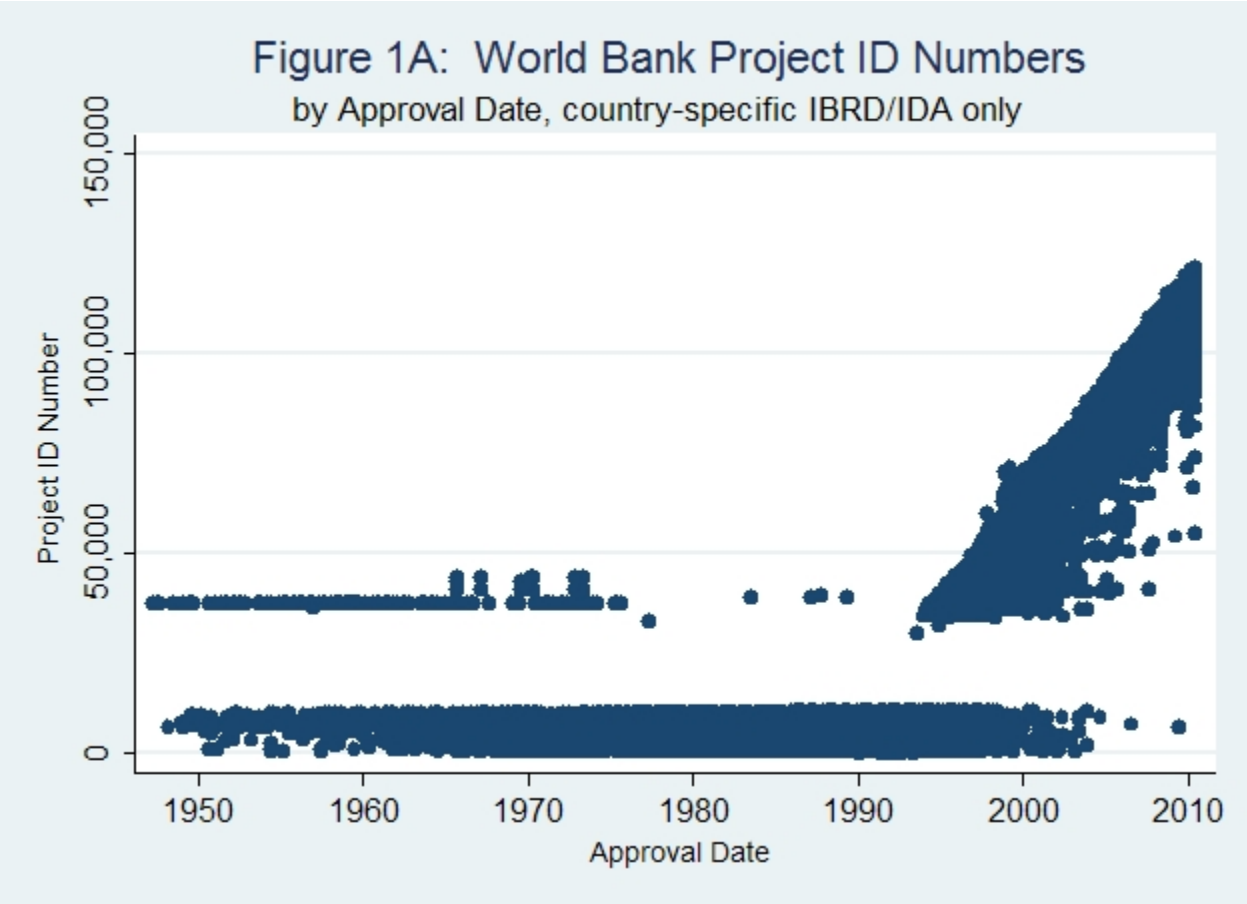


Figure 1A: World Bank Project ID Numbers
by Approval Date, country-specific IBRD/IDA only
Project ID Number
0
50,000
100,000
150,000
1950
1960
1970
1980
1990
2000
2010
Approval Date

Figure 2: Early Project ID Number System

country-specific IBRD/IDA only

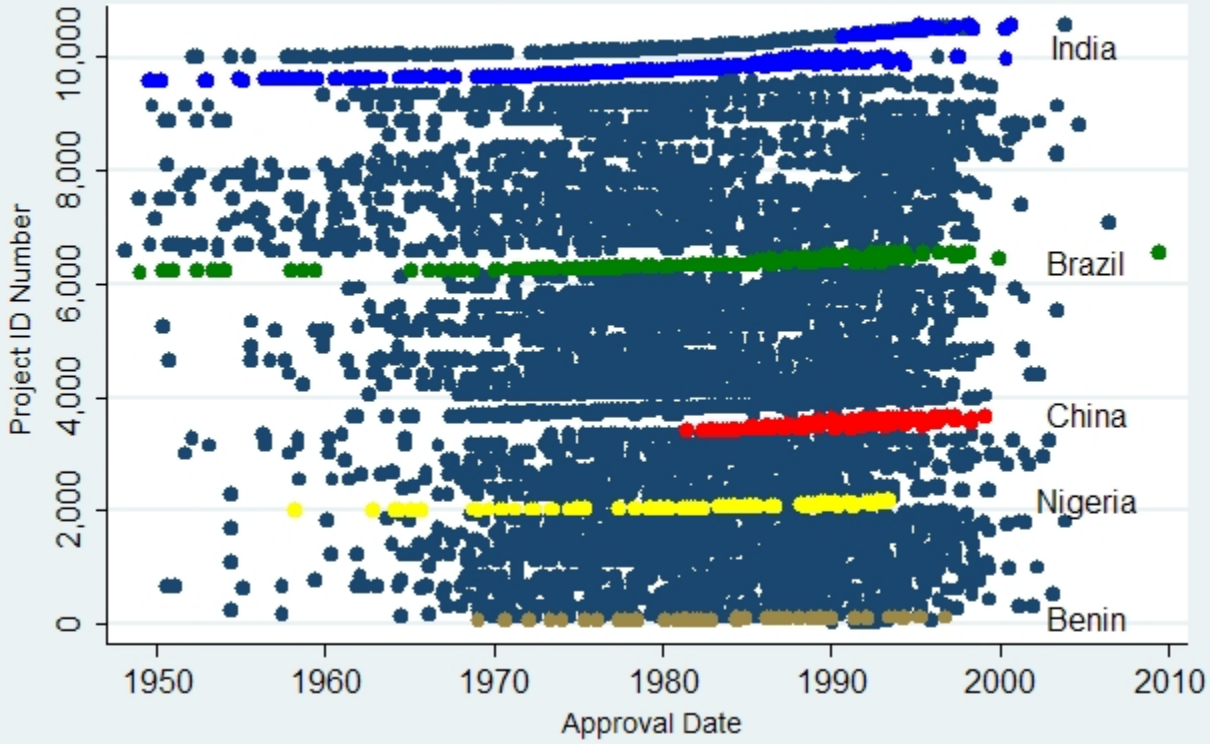
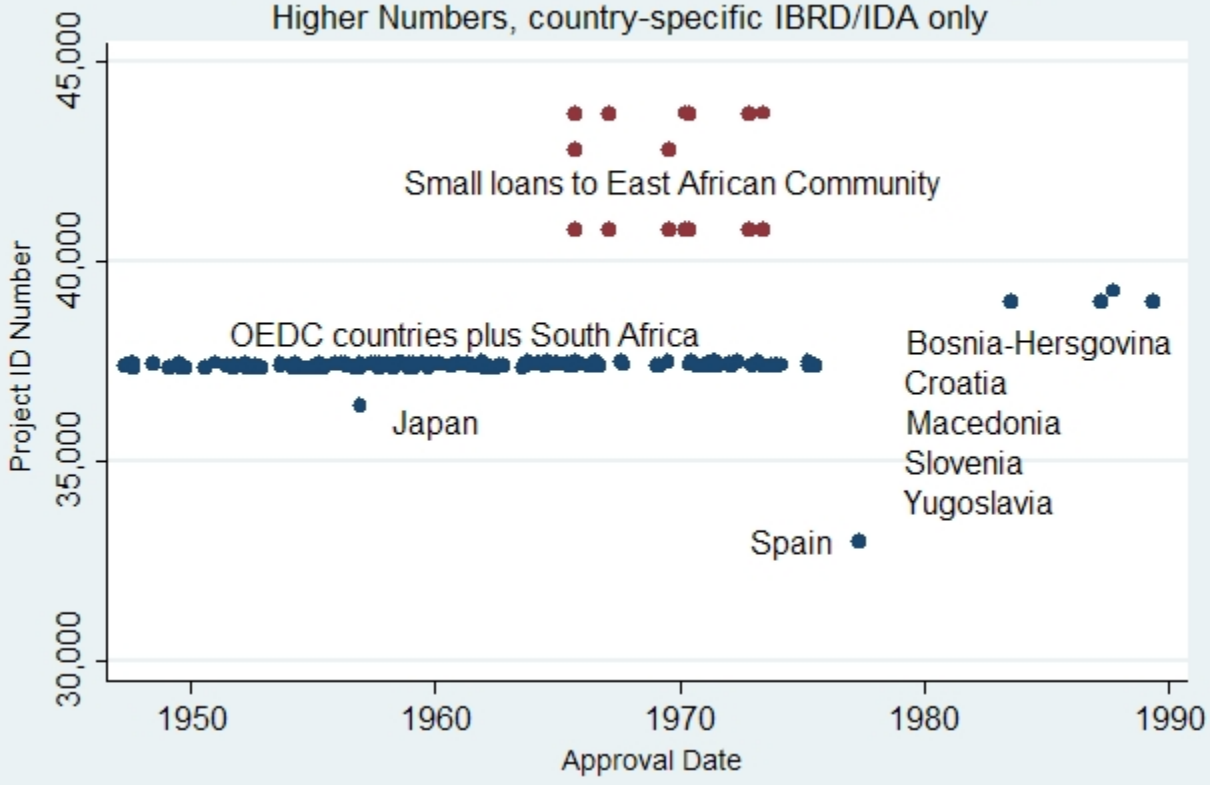


Figure 3: Early Project ID Number System

Higher Numbers, country-specific IBRD/IDA only



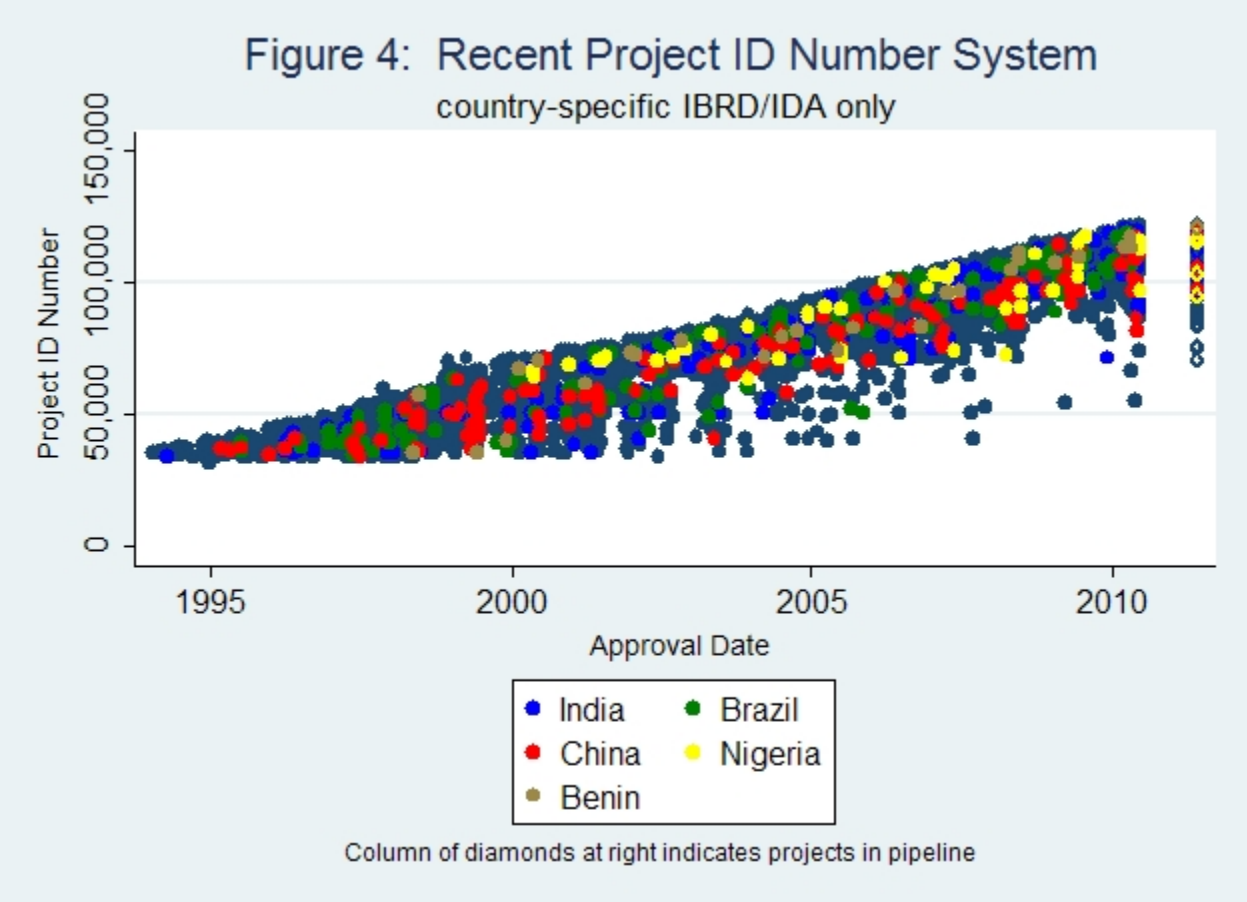


Figure 4: Recent Project ID Number System
country-specific IBRD/IDA only
Project ID Number
0
50,000
100,000
150,000
1995
2000
2005
2010
Approval Date
India
Brazil
China
Nigeria
Benin
Column of diamonds at right indicates projects in pipeline

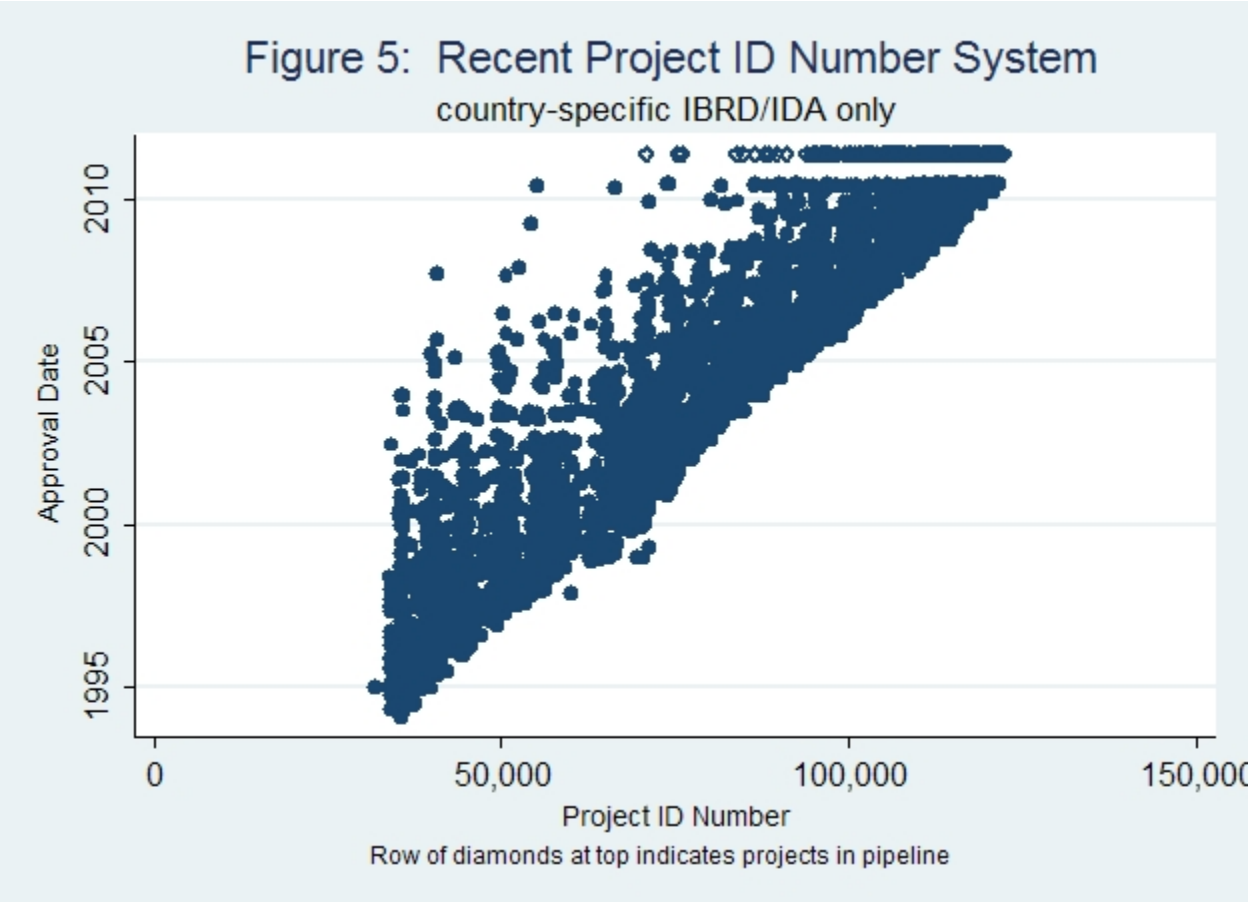


Figure 5: Recent Project ID Number System
country-specific IBRD/IDA only
Approval Date
1995
2000
2005
2010
0
50,000
100,000
150,000
Project ID Number
Row of diamonds at top indicates projects in pipeline

Figure 6: Distribution of duration (approximation)

with exponential PDF for comparison

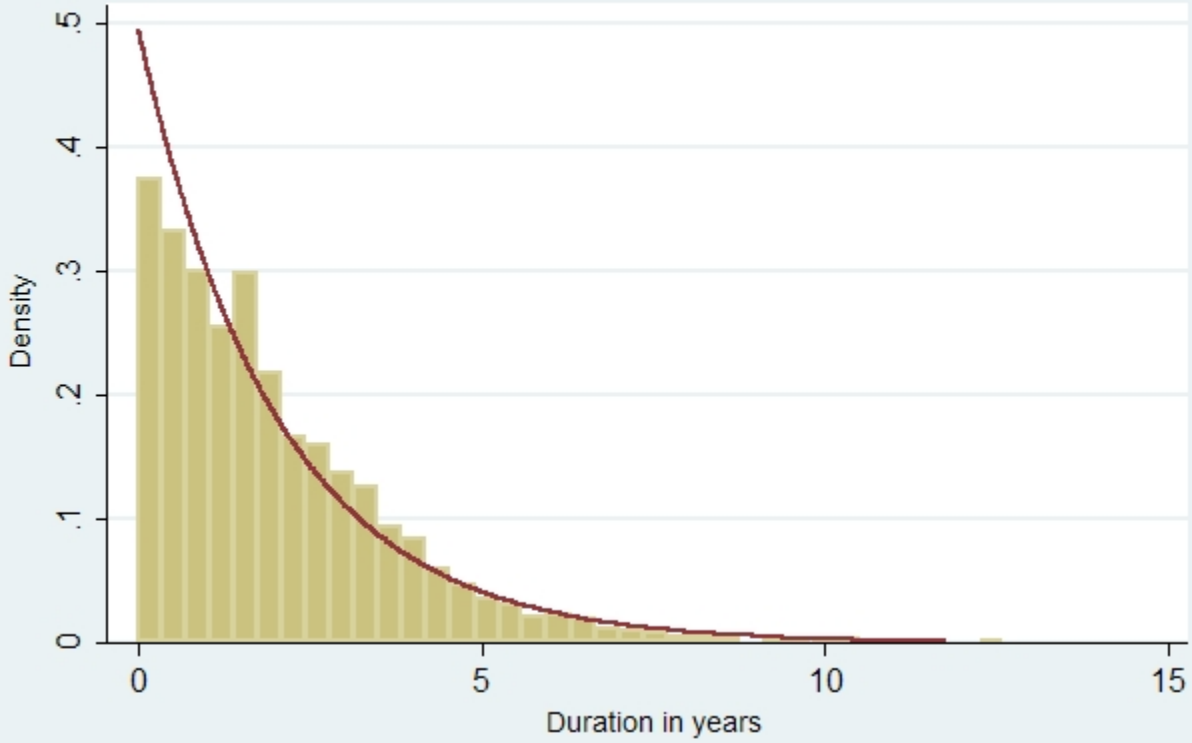
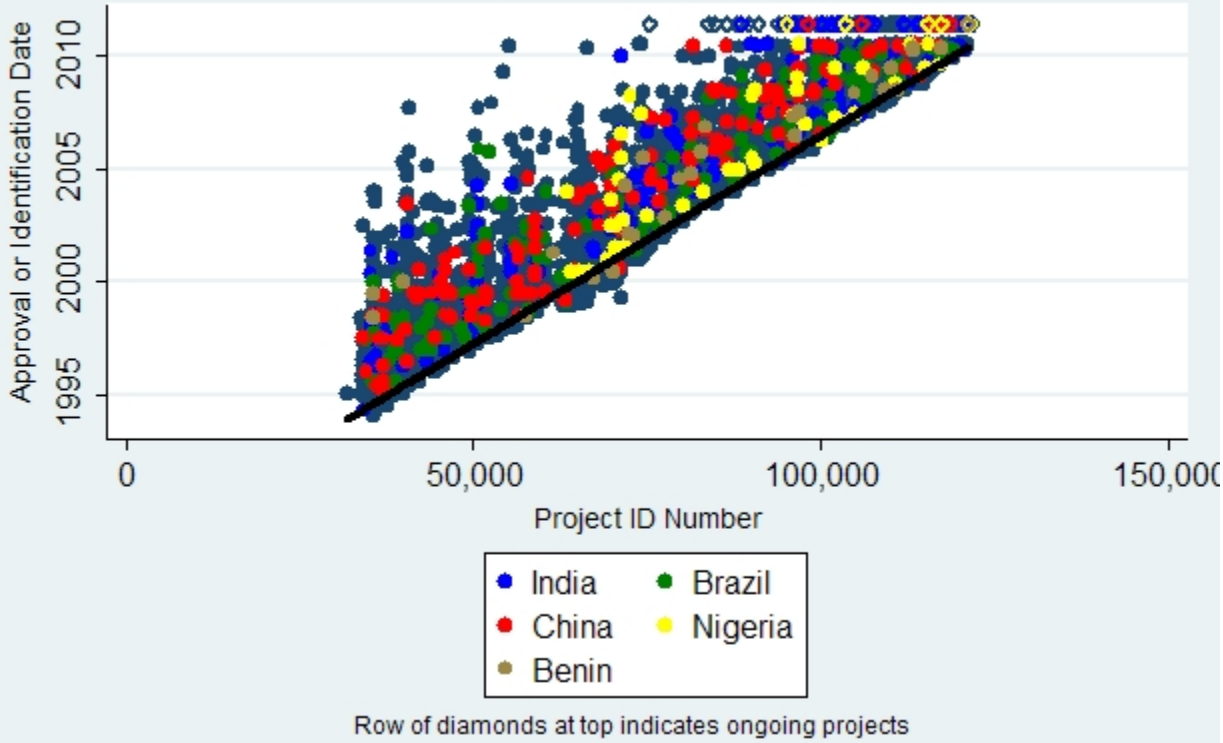


Figure 7: World Bank Stochastic Frontier Analysis

country-specific IBRD/IDA only



Row of diamonds at top indicates ongoing projects

Figure 8: Distribution of predicted duration

based on Table 3, Column 5

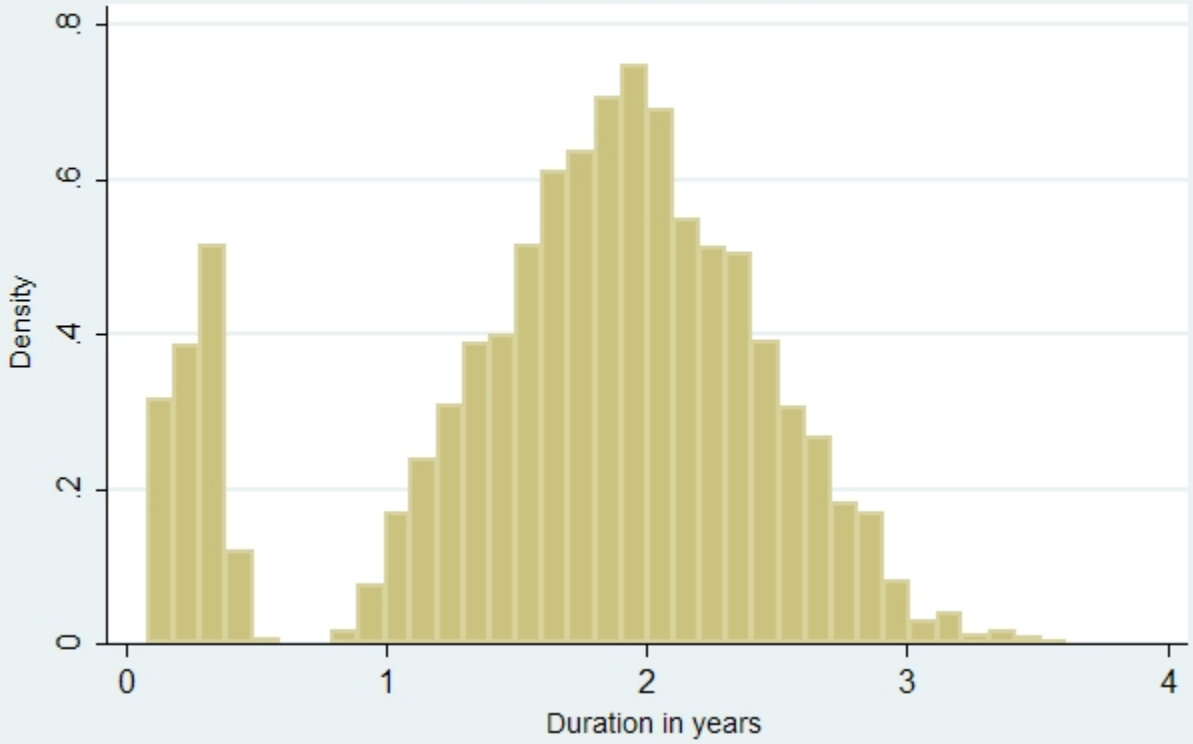


Figure 9: Distribution of predicted duration

based on Table 4, Column 3

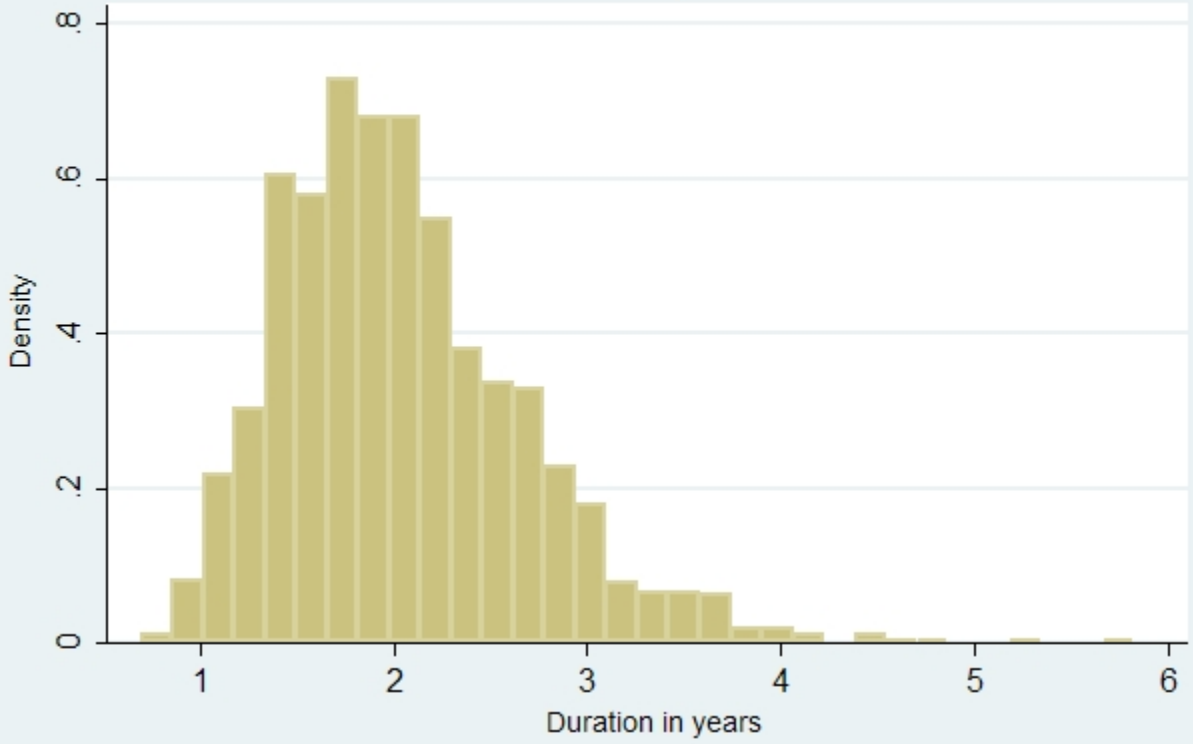


Table 1: Descriptive Statistics

Variable	Mean	StDev	Min	Max	Description
Approval Date	16,013	1,597	12,432	18,442	Approval date (Stata date format: days since 1/1/1960)
	11/4/2003		1/14/1994	6/29/2010	Approval date (month/day/year)
Project ID	76,736	24,455	31,828	121,193	World Bank Project Identification Number
Loan Amount	3.682	1.356	-1.824	8.138	Log of loan amount in constant 2005 $ millions
IDA	0.6137		0	1	IDA funds dummy
Supplemental Loan	0.1356		0	1	Supplemental loan dummy (adds to existing project)
SAL	0.2013		0	1	Structural Adjustment Loan dummy
War	0.07775		0	1	On-going major conflict dummy (>1000 dead) t-3
Population	17.02	1.776	11.53	21	log of population in millions t-3
GDP per capita	7.827	0.8454	5.471	9.609	PPP GDP per capita in chained 2000 $ t-3
Democracy	0.5296		0	1	Democracy dummy t-3
Freedom House Index	4.045	1.52	1	7	Averaged Freedom House rating (inverted) t-3
US important votes	0.4089	0.1807	0	0.85	Alignment with US on UN votes important to US t-3
US other votes	0.3084	0.1224	0.119	0.6667	Alignment with US on other UN votes t-3
G7-1 important votes	0.6825	0.1502	0.3269	0.9848	Alignment with other G7 on UN votes important to US t-3
G7-1 other votes	0.7142	0.0796	0.5608	0.951	Alignment with other G7 on other UN votes t-3
US military aid	0.528		0	1	US military aid>0.5 (2005 $ millions) t-3
US economic aid	3.891	1.609	-2.303	7.902	Log of disbursements of US economic aid (2005 $ millions) t-3
G7-1 aid	3.802	1.524	-1.431	7.506	Log average disbursements other G7 economic aid (2005 $ millions) t-3
Like-minded donor aid	1.919	1.583	-3.75	4.661	Log average disbursements like-minded donor aid (2005 $ millions) t-3
US trade	6.87	2.604	-0.125	12.85	Log of US trade (imports+exports) with country (2005 $ millions) t-3
G7-1 trade	7.75	2.105	1.736	13.09	Log of G7-1 (imports+exports) with country (2005 $ millions) t-3
World trade	9.273	1.999	4.216	14.61	Log of world trade (imports+exports) with country (2005 $ millions) t-3
UNSC non-permanent member	0.07113		0	1	Non-permanent UNSC seat dummy t-2
World Bank Executive Director	0.2845		0	1	Country held a World Bank ED seat in current year or past 3 years

3627 observations

Table 2A: Baseline Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent Variable: Approval Date							
Loan Amount	0.209**	0.200**	0.209**	0.227**	0.209**	0.205**	0.202**	0.217**
	(5.66)	(5.37)	(5.65)	(6.00)	(5.57)	(5.54)	(5.44)	(5.61)
IDA	-0.00773	-0.0894	-0.00764	-0.0965	-0.0646	-0.0326	-0.0100	-0.226*
	(-0.07)	(-0.77)	(-0.07)	(-0.79)	(-0.56)	(-0.28)	(-0.09)	(-1.79)
Supplemental Loan	-3.572**	-3.589**	-3.573**	-3.605**	-3.577**	-3.583**	-3.586**	-3.630**
	(-23.48)	(-23.61)	(-23.44)	(-23.31)	(-23.41)	(-23.36)	(-23.41)	(-23.24)
SAL	-1.053**	-1.098**	-1.053**	-1.068**	-1.068**	-1.043**	-1.052**	-1.124**
	(-11.24)	(-11.56)	(-11.23)	(-11.15)	(-11.29)	(-11.11)	(-11.22)	(-11.46)
War	-0.178	-0.132	-0.178	-0.165	-0.184	-0.200	-0.158	-0.0836
	(-1.36)	(-1.00)	(-1.36)	(-1.21)	(-1.37)	(-1.53)	(-1.21)	(-0.58)
Population	0.0419*	0.0138	0.0419*	0.102**	0.111**	0.0497**	0.0741**	0.125*
	(1.70)	(0.51)	(1.70)	(2.50)	(1.99)	(1.99)	(2.49)	(1.79)
GDP per capita	-0.0436	-0.127*	-0.0441	-0.0199	0.0394	-0.0445	-0.0232	0.000642
	(-0.65)	(-1.85)	(-0.66)	(-0.28)	(0.40)	(-0.67)	(-0.34)	(0.01)
Democracy	-0.225**	-0.247**	-0.225**	-0.235**	-0.172	-0.215*	-0.234**	-0.191
	(-2.04)	(-2.21)	(-2.04)	(-2.03)	(-1.53)	(-1.95)	(-2.12)	(-1.58)
Freedom House Index	-0.0592	-0.0627	-0.0589	-0.0543	-0.0552	-0.0623*	-0.0672*	-0.0733*
	(-1.57)	(-1.61)	(-1.55)	(-1.37)	(-1.43)	(-1.65)	(-1.77)	(-1.74)
Observations	3831	3831	3831	3647	3797	3831	3831	3627

z-statistics in parentheses; * p<.1, ** p<.05
Maximum Likelihood Estimation of Stochastic Frontier Model (cost function) with exponential distribution.
Model reported is conditional variance of exponential term.

Table 2B: Donor Interest Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Dependent Variable: Approval Date				
US important votes		-3.072**						-2.840**
		(-6.35)						(-5.61)
US other votes		0.724						0.945**
		(1.63)						(1.98)
G7-1 important votes		1.583**						1.198**
		(2.98)						(2.14)
G7-1 other votes		2.260**						1.690**
		(3.70)						(2.34)
US military aid			0.00403					-0.0966
			(0.05)					(-1.19)
US economic aid				-0.0194				0.00970
				(-0.72)				(0.33)
G7-1 economic aid				-0.143**				-0.0663
				(-3.32)				(-1.36)
Like-minded donor aid				0.0625**				0.0140
				(2.00)				(0.42)
US trade					-0.159**			-0.0944*
					(-3.86)			(-1.93)
G7-1 trade					-0.291**			-0.218**
					(-3.90)			(-2.58)
World trade					0.406**			0.267**
					(3.51)			(2.13)
UNSC non-permanent member						-0.402**		-0.329**
						(-2.85)		(-2.27)
World Bank Executive Director							-0.201*	-0.206*
							(-1.94)	(-1.76)
Observations	3831	3831	3831	3647	3797	3831	3831	3627

z-statistics in parentheses; * p<.1, ** p<.05
Maximum Likelihood Estimation of Stochastic Frontier Model (cost function) with exponential distribution.
Model reported is conditional variance of exponential term.

Table 3: Donor Interest Variables, detrended

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Approval Date				
US important votes	-1.138**				-1.119**
	(-2.18)				(-2.06)
US other votes	0.395				0.501
	(0.89)				(1.06)
G7-1 important votes	0.527				0.167
	(0.99)				(0.30)
G7-1 other votes	1.057*				0.748
	(1.74)				(1.05)
US military aid		-0.0508			-0.128
		(-0.68)			(-1.56)
US economic aid			-0.0156		0.0186
			(-0.58)		(0.64)
G7-1 economic aid			-0.0853**		-0.0430
			(-1.97)		(-0.88)
Like-minded donor aid			0.0461		0.00584
			(1.47)		(0.18)
US trade				-0.0816**	-0.0682
				(-2.00)	(-1.40)
G7-1 trade				-0.0633	-0.0716
				(-0.83)	(-0.84)
World trade				-0.0654	-0.0530
				(-0.56)	(-0.41)
UNSC non-permanent member					-0.356**
					(-2.47)
World Bank Executive Director					-0.287**
					(-2.48)
Observations	3831	3831	3647	3797	3627

z-statistics in parentheses; * p<.1, ** p<.05
Maximum Likelihood Estimation of Stochastic Frontier Model (cost function) with exponential distribution.
Model reported is conditional variance of exponential term.

Table 4: Donor Interest Variables, detrended
Sample Restrictions

	(1)	(2)	(3)	
	Dependent Variable: Approval Date			
US important votes	-1.191**	-3.892**	-3.142**	
	(-2.06)	(-4.33)	(-3.24)	
US other votes	0.0356	1.352*	0.345	
	(0.07)	(1.83)	(0.39)	
G7-1 important votes	0.368	1.929**	1.322	
	(0.62)	(1.97)	(1.25)	
G7-1 other votes	0.510	2.525**	1.616	
	(0.67)	(2.56)	(1.42)	
US military aid	-0.127	-0.0597	0.0123	
	(-1.46)	(-0.50)	(0.10)	
US economic aid	0.0204	0.0432	0.0539	
	(0.66)	(1.12)	(1.28)	
G7-1 economic aid	-0.0755	-0.0437	-0.0961	
	(-1.43)	(-0.62)	(-1.26)	
Like-minded donor aid	0.00588	-0.0170	-0.0158	
	(0.17)	(-0.38)	(-0.34)	
US trade	-0.0793	0.0436	0.0592	
	(-1.52)	(0.59)	(0.71)	
G7-1 trade	-0.00769	-0.0319	-0.0957	
	(-0.08)	(-0.25)	(-0.62)	
World trade	-0.0715	-0.511**	-0.562**	
	(-0.52)	(-2.68)	(-2.64)	
UNSC non-permanent member		-0.407**	-0.346*	-0.445**
	(-2.64)	(-1.65)	(-2.05)	
World Bank Executive Director		-0.382**	-0.611**	-0.716**
	(-3.13)	(-3.69)	(-4.10)	
Observations	3135	1761	1607	

z-statistics in parentheses; * p<.1, ** p<.05
Maximum Likelihood Estimation of Stochastic Frontier Model (cost function) with exponential distribution. Model reported is conditional variance of exponential term.

Sample restrictions
(1) Supplemental Loans excluded
(2) Sample limited to Project ID Number <75267 (region with no censored observations)
(3) Includes regional dummies plus restrictions (1) and (2)

Data Appendix

Data sources:

Approval Date	World Bank (2010)
Project ID	World Bank (2010)
Loan Amount	World Bank (2010)
IDA	World Bank (2010)
Supplemental Loan	World Bank (2010)
SAL	World Bank (2010)
War	Gleditsch *et al*. (2002)
Population	Heston *et al*. (2002, 2006), World Bank (2009)
GDP per capita	Heston *et al*. (2002, 2006), World Bank (2009)
Democracy	Cheibub *et al*. (2010)
Freedom House Index	Freedom House (2009)
US important votes	U.S. State Department (1984-2010)
US other votes	Voeten and Merdzanovic (2009)
G7-1 important votes	U.S. State Department (1984-2010), Voeten and Merdzanovic (2009)
G7-1 other votes	U.S. State Department (1984-2010), Voeten and Merdzanovic (2009)
US military aid	USAID (2009)
US economic aid	OECD Development Cooperation Directorate (2006-2009)
G7-1 aid	OECD Development Cooperation Directorate (2006-2009)
Like-minded donor aid	OECD Development Cooperation Directorate (2006-2009)
US trade	International Monetary Fund (2009)
G7-1 trade	International Monetary Fund (2009)
World trade	International Monetary Fund (2009)
UNSC non-permanent member	United Nations (2010)
World Bank Executive Director	Kaja and Werker (2010)