

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 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, 2011; 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, 2013; Weck-Hannemann and Schneider, 1991), the Asian Development Bank (Kilby, 2006, 2011; Lim and Vreeland, 2010), and the Inter-American Development Bank (Bland and Kilby, 2011).

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 a number of 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; Limodio 2011). 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 (SFM) 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 akin 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 their own 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 describes data on project identification numbers and explains how to incorporate them in a stochastic frontier analysis (SFA). Section IV describes the remaining data and presents estimation results, including analysis of robustness. Section V concludes. Additional details on project identification number data and methods used in the robustness analysis are in a separate supplemental appendix.

## 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. I do not review the stochastic frontier analysis literature because of its size and because I have found no previous studies with similar applications (i.e., where the model is used for duration analysis with measurement error). For an excellent review of the empirical SFA literature, see Greene (2007).

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. Their 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 its list of important votes in 1983. In addition, UNGA voting has become more contentious over time and alignment with the U.S. has trended down.<sup>1</sup> 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

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

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 (2013) 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 least as important as U.S. formal influence in determining the flow of World Bank funds.<sup>2</sup>

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.<sup>3</sup> 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

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<sup>2</sup>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. For the Inter-American Development Bank, Bland and Kilby (2011) also find evidence of U.S. influence as measured by UN voting and bilateral trade flows.

<sup>3</sup>It is also consistent with the initiation of types of projects that require little preparation, for example supplemental loans for existing projects.

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 angle 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 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 status substantially increases IBRD loan commitments to a country while the country holds the position.<sup>4</sup> 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,

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<sup>4</sup>Alternate EDs can—and do—take charge when the regular ED is absent. 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.

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 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 number 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 Kilby (1994) uses 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.<sup>5</sup>

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 may lead to poor project selection or subsequent implementation problems, attempts to measure this have been

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<sup>5</sup>See footnote 3 in Deininger *et al.* (1998).

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, 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 publicly 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., Initiating Memorandum, 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

date systematically available, 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.<sup>6</sup> 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 IDs in the 10,000 and below range (Region 1); projects with IDs closer to 50,000 with approval dates up through 1990 (Region 2); and projects with IDs 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 these codes contain useful information about the identification date.

Figure 2 (Early Project ID System) includes only projects in Region 1. Out of this cloud of data points, the graph separately identifies data points for five selected countries (Benin, Brazil, China, India, and Nigeria) 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 assigned 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,

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<sup>6</sup>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.

assigned sequentially within this range. However, with separate country ranges, no useful information for comparisons between countries can be extracted from these data. A supplemental data appendix provides more information on Region 1 Project IDs that suggests these numbers were assigned retroactively to existing projects when the World Bank's management information system was updated.

[Figure 2 about here]

Figure 3 (Early Project ID System – High Numbers) examines projects in Region 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.<sup>7</sup>

[Figure 3 about here]

Finally, Figure 4 (Recent Project ID System) depicts projects in Region 3. The same five countries are separately identified and reveal a very different data structure. Numbers for each country no longer fall within non-overlapping ranges but appear randomly distributed across the range of ID numbers. Under this new system, Project IDs appear to be drawn sequentially from a common pool.<sup>8</sup> 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. The rest of this paper focuses exclusively on Region 3.

[Figure 4 about here]

Figure 5 presents the same data but in a different orientation that suggests one approach to

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

<sup>8</sup>The data appendix provides additional information (based on examination of the data and on "spot checks" against World Bank documents) consistent with this interpretation.

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 a standard cost function 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 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  $\alpha$ .<sup>9</sup> If  $u$  denotes the duration of preparation beyond the minimum, then the approval date for project  $j$  in recipient country  $i$  is given by

$$adate_{ij} = idate_{ij} + \alpha + u_{ij} \quad (1)$$

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<sup>9</sup>For the purposes of this analysis,  $\alpha=0$  is unproblematic. A value of zero simply means that some loans are conceived and approved on the same day, e.g., an emergency relief package.

Since  $u_{ij}$  is a duration, I model it as an independent exponential process with variance  $e^{\beta x_{ij}}$  where  $x_{ij}$  are country and project/loan characteristics.<sup>10</sup> 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:<sup>11</sup>

$$idate_{ij} = \gamma Project ID_{ij} + v_{ij} \quad (2)$$

where  $1/\gamma$  is the average number of projects identified each day and  $v$  is assumed iid  $N(0, \sigma_v^2)$ . Thus the model to be estimated is

$$adate_{ij} = \alpha + \gamma Project ID_{ij} + v_{ij} + u_{ij} \quad (3)$$

Note that with the distributional assumptions specified for  $v$  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 highest *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

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<sup>10</sup>The mean of an exponential random variable is the square root of its variance. This parameterization is in keeping with the approach in the stochastic frontier literature and ensures that variance (and mean) of  $u$  is non-negative. I address limitations of the exponential distribution assumption in robustness analysis below.

<sup>11</sup>In exploratory empirical specifications, I allow up to quartic in *Project ID*; the estimated relationship, however, does prove to be essentially linear.

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 IDs. 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 SFM 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.<sup>12</sup>

[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.<sup>13</sup> Three broad categories of variables enter into the analysis: project variables, country variables, and political economy variables. Project variables include *Approval Date* (the dependent variable), *Project ID*, *Loan Amount*, and various indicators of 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).<sup>14</sup> The list includes macroeconomic and governance/institutional quality

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<sup>12</sup>The robustness analysis below also addresses this right censoring. Another data issue is project cancellation. The supplemental appendix provides information on the share and distribution of cancelled projects. The cancellation rate is low and relatively uniform over the period examined suggesting this does not introduce any serious problems.

<sup>13</sup>There are two observations with 1993 approval dates in Region 3, a loan to Zambia on August 9<sup>th</sup> 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.

<sup>14</sup>For example, more detailed planning may be necessary in a difficult implementation environment as suggested by Kilby (1994).



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.

[Table 1 about here]

*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 (log) size of the loan 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 that holds for just over sixty percent of the observations. *Supplemental Loan* equals one if the loan is to supplement a 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 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 a 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 with 1 as "Most Free" and 7 as "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 same measure for the other G7 countries (averaged over these donors, i.e., divided by 6 before taking the log). 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.<sup>15</sup> *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 than 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 0.07 in the sample. UN rules limit a country's term to two years 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*

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<sup>15</sup>I omit Canada from the like-minded donor group as it is already included in the G7-1.

Estimation is by maximizing the likelihood function of the SFM. 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 the conditional mean (equivalently, the variance) of the exponential term that specifies the "inefficiency." Fortunately, in this setting since use of the SFM 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.

Before turning to the results, one more estimation issue should be addressed, the possibility of autocorrelation in the measurement error term ( $v_{ij}$ ). Imagine a country director sitting down at a computer and generating a string of *Project IDs* at once, some for projects that have actually been identified and where preparation is starting, others very much just an idea for the distant future (e.g., following a discussion with counterparts in the borrowing government). This suggests that some of these would have a larger measurement error in their identification date, resulting in both a higher mean measurement error but also a higher variance in measurement error as compared to cases where a single number is generated. Fortunately, it is straightforward to accommodate this in the SFM. For the specifications reported below, I include the number of sequential *Project IDs* for the same country (ranging from 1 to 6) in both the mean and variance of  $v_{ij}$ . The coefficient estimates on these

variables are statistically significant with the expected positive sign—but their inclusion has no substantial impact on other coefficient estimates. See the supplemental appendix for details.

Table 2 presents estimation results in 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.

[Table 2 (A & B) about here]

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, with a 95% confidence interval of 66 day to 100 days.<sup>16</sup> Projects receiving IDA funds have shorter preparation periods but the difference

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<sup>16</sup>Because this quantity is the difference between the mean and one standard deviation above the mean, the appropriate method for calculating a "confidence interval" is not immediately obvious. Here, I implement it using Stata's *adjust* command and then transforming the results. The *adjust* command can provide both a prediction at a given point (*p(.)*) and the standard error of the prediction at a given point (*se(.)*) for linear predictions. In the case of SFA with Stata's *frontier* command, this linear prediction is the log variance. I then transform this into the mean (which

(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 (95% confidence interval of 544 days to 569 days), i.e., 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.<sup>17</sup> Across all eight specifications, *War* enters with an unexpected negative sign (i.e., shorter preparation for countries at war) but this is uniformly insignificant.<sup>18</sup> The preparation period is somewhat longer for larger countries though this effect is insignificant in one of the eight specifications. For an otherwise

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equals the standard deviation for an exponential distribution) by exponentiating and taking the square root. Let  $x$  denote the mean of the variable,  $sd$  the standard deviation of the variable, and  $f()$  the transformation above:  $f(y)=(e^y)^{1/2}$ . Then for the 95% confidence interval, the lower end (minus two standard deviations) is given by

$$f(p(x+sd)-2se(x+sd)) - f(p(x)-2se(x))$$

and the upper end (plus two standard deviations) is given by

$$f(p(x+sd)+2se(x+sd)) - f(p(x)+2se(x)).$$

All reported confidence intervals are based on this equation; for dummy variables, I calculate a range by replacing  $x$  with 0 and  $x+sd$  with 1. In all cases, other variables are kept at their sample mean.

<sup>17</sup>An alternative is to use the average value of each variable over the three year period approaching approval. Results are generally the same.

<sup>18</sup>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.

typical project, a one standard deviation increase in log of population corresponds to a 21 day longer predicted preparation period (with a 95% confidence interval running from 12 days to 32 days). *GDP per capita* enters with a negative coefficient in most specifications (as one would expect) but is generally insignificant (with or without an IDA dummy variable in the specification). *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 three of the eight specifications (even without the *Democracy* dummy).

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. To test this further, I include an important additional measure of borrowing country capacity, the widely used International Country Risk Guide *Bureaucratic Quality* index (Political Risk Services, 2011). Limited country coverage reduces the sample size and presents convergence problems when supplemental loans are included in the sample. Where convergence is achieved, the estimated coefficient on *Bureaucratic Quality* is significant only in some specifications and then has a relatively small estimated impact on preparation length (40 days).

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

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 substantially 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.<sup>19</sup>

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.<sup>20</sup> 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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<sup>19</sup>This result could equivalently be interpreted as the U.S. punishing its enemies by delaying approval of their World Bank loans.

<sup>20</sup>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.<sup>21</sup> 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.

[Table 3 about here]

[Figure 8 about here]

I use the model estimated in Table 3, Column (5) to predict the duration of preparation and

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<sup>21</sup>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.

plot the resulting distribution in Figure 8. The bimodal distribution suggests there may yet be 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 below 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 votes* 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.

[Table 4 about here]

[Figure 9 about here]

Another potentially serious concern is duration dependence.<sup>22</sup> Implicit in the use of the

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<sup>22</sup>I am grateful to William Greene for bringing this to my attention.

exponential distribution for the duration of project preparation is that the probability a project is approved on day  $t$  (conditional on not being approved before  $t$ ) is independent of  $t$ . In a typical duration analysis, this is a central reason to favor more flexible distributions (such as the Weibull).

To address this concern, I apply DEA to construct estimated preparation duration data and then uses those data in a duration analysis that allows for a variety of distributional assumptions. The supplemental appendix details the DEA approach that generates the duration variable. Table 5 reports results from estimating a hazard function parallel to Tables 2 and 4 using both exponential and Weibull distributions. The table reports coefficient estimates from the hazard function rather than hazard ratios so that comparisons are against zero rather than one; a negative coefficient indicates a lower hazard rate. That is, a negative coefficient indicates a lower probability of board approval on day  $t$  for projects not yet approved and by implication a longer expected preparation period. Conversely, a positive coefficient indicates a higher hazard rate and a shorter expected preparation period.<sup>23</sup>

*US important votes* enters consistently with positive and statistically significant coefficient estimates, supporting earlier results which indicate that borrower-U.S. alignment is associated with faster project approval. Likewise, *UNSC non-permanent membership* and *World Bank Executive Director* enter with positive and significant (in one case marginally) coefficients. Other results are mixed across the columns (e.g., *G7-1 economic aid*, *US trade*, and *G7-1 trade*), again consistent with the mixed results for these variables across Tables 2 and 4. In sum, duration analysis with preparation periods based on DEA support results from the SFA.

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<sup>23</sup>Results prove relatively insensitive to distributional assumptions. The estimated coefficients on the key political economy variables have the same sign and similar statistical significance for a range of other related models: a Cox proportional hazard model or a hazard model with Gompertz, loglogistic, lognormal, or generalized gamma survival distributions.

[Table 5 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 receipt of World Bank funds expedited) 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 seat on 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 interesting in light of earlier work on donor influence at different stages of the project cycle. Kilby (2011, 2013) looks at "downstream" donor influence in the Asian

Development Bank and the World 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 is, borrower ownership. That characteristics of a borrowing country—its domestic economic conditions and political institutions—have little impact on the duration of preparation is telling. Finally, this work suggests political economy variables as instruments to solve endogeneity problems noted in studies that attempt to measure the impact of preparation on project outcomes (e.g., Denizer *et al.*, 2011). Understanding the impact of preparation has important policy implications for donors (notably the World Bank) and, viewed from the broader perspective, provides another way to assess the contribution of aid to economic development.

## References

- Aigner, Dennis, C.A. Knox Lovell, and Peter Schmidt. 1977. "Formulation and estimation of stochastic frontier production function models." *Journal of Econometrics* 6:21-37.
- Akins, Michael E. 1981. *United States control over World Bank Group decision-making*. Unpublished doctoral dissertation. University of Pennsylvania, Philadelphia.
- Andersen, Thomas Barnebeck, Henrik Hansen, and Thomas Markussen. 2006. "US politics and World Bank IDA-lending." *Journal of Development Studies* 42(5):772-794.
- Andersen, Thomas Barnebeck, Thomas Harr, and Finn Tarp. 2006. "On US politics and IMF lending." *European Economic Review* 50:1843-1862.
- Barro, Robert and Jong-Wha Lee. 2005. "IMF programs: Who is chosen and what are the effects?" *Journal of Monetary Economics* 52(7):1245-1269.
- Bland, Elizabeth and Christopher Kilby. 2011. "Informal influence in the Inter-American Development Bank." Working Paper, Villanova School of Business.
- Cheibub, José Antonio, Jennifer Gandhi, and James Raymond Vreeland. 2010. "Democracy and dictatorship revisited." *Public Choice* 143(1-2): 67-101.
- Deininger, Klaus, Lyn Squire, and Swati Basu. 1998. "Does economic analysis improve the quality of foreign assistance?" *The World Bank Economic Review* 12(3):385-418.
- Denizer, Cevdet, Daniel Kaufmann, and Aart Kraay. 2011. "Good countries or good projects? Macro and micro correlates of World Bank project performance." World Bank Policy Research Working Paper 5646.
- Dollar, David and Jakob Svensson. 2000. "What explains the success or failure of structural adjustment programmes?" *The Economic Journal* 110(466):894-917.
- Dreher, Axel and Nathan M. Jensen. 2007. "Independent actor or agent? An empirical analysis of the impact of US interests on IMF conditions." *The Journal of Law and Economics* 50(1):105-124.
- Dreher, Axel, Jan-Egbert Sturm, and James Raymond Vreeland. 2006. "Does membership on the UN Security Council influence IMF decisions? Evidence from panel data." KOF Working Paper 151. ETH, Zurich.
- Dreher, Axel, Jan-Egbert Sturm, and James Raymond Vreeland. 2009a. "Development aid and international politics: Does membership on the UN Security Council influence World Bank decisions?" *Journal of Development Economics* 88:1-18.
- Dreher, Axel, Jan-Egbert Sturm, and James Raymond Vreeland. 2009b. "Global horse trading: IMF

loans for votes in the United Nations Security Council." *European Economic Review* 53(7):742-757.

Dreher, Axel, Stephan Klasen, James Raymond Vreeland, and Eric Werker. 2010. "The costs of favoritism: Is politically-driven aid less effective?" Institute for the Study of Labor (IZA) Discussion Paper No. 4820.

Fleck, Robert K. and Christopher Kilby. 2006. "World Bank independence: A model and statistical analysis of U.S. influence." *Review of Development Economics* 10(2):224-240.

Freedom House. 2009. *Freedom in the world*.

[http://www.freedomhouse.org/uploads/fiw09/CompHistData/FIW\\_AllScores\\_Countries2009.xls](http://www.freedomhouse.org/uploads/fiw09/CompHistData/FIW_AllScores_Countries2009.xls)  
Accessed 5/17/2009.

Frey, Bruno and Friedrich Schneider. 1986. "Competing models of international lending activity." *Journal of Development Economics* 20:225-245.

Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, and Håvard Strand. 2002. "Armed conflict 1946-2001: A new dataset." *Journal of Peace Research* 39(5): 615-637. Updated data set:

[http://new.prio.no/CSCW-Datasets/Data-on-Armed-Conflict/UppsalaPRIO-Armed-Conflicts-Dataset/ file="Main Conflict Table v4\\_2009.xlsx"](http://new.prio.no/CSCW-Datasets/Data-on-Armed-Conflict/UppsalaPRIO-Armed-Conflicts-Dataset/file=Main%20Conflict%20Table%20v4_2009.xlsx) Accessed on 8/27/2009.

Greene, William. 2007. "The econometric approach to efficiency analysis." In Harold O. Fried, C.A. Knox Lovell, and Shelton S. Schmidt (Eds.), *The measurement of productive efficiency and productivity*, Oxford University Press, 92-250.

Heston, Alan, Robert Summers, and Bettina Aten. 2002. "Penn World Tables 6.1." Center for International Comparisons of Production, Income and Prices, University of Pennsylvania. Accessed 9/25/2006.

Heston, Alan, Robert Summers, and Bettina Aten. 2006. "Penn World Tables Version 6.2." Center for International Comparisons of Production, Income and Prices, University of Pennsylvania. Accessed 8/29/2009.

International Monetary Fund. 2009. *Direction of Trade CD-ROM*.

Kaja, Ashwin and Eric Werker. 2010. "Corporate governance at the World Bank and the dilemma of global governance." *The World Bank Economic Review* 24(2):171-198.

Kilby, Christopher. 1994. "Risk management: An econometric investigation of project-level factors." Background paper for the World Bank's Operations Evaluation Department *Annual Review of Evaluation Results 1994*.

Kilby, Christopher. 2000. "Supervision and performance: The case of World Bank projects." *Journal of Development Economics* 62(1):233-259.



- Kilby, Christopher. 2006. "Donor influence in multilateral development banks: The case of the Asian Development Bank." *Review of International Organizations* 1(2):173-195.
- Kilby, Christopher. 2009a. "The political economy of conditionality: An empirical analysis of World Bank loan disbursements." *Journal of Development Economics* 89(1):51-61.
- Kilby, Christopher. 2009b. "Donor influence in international financial institutions: Deciphering what alignment measures measure." Villanova School of Business Department of Economics and Statistics Working Paper #8.
- Kilby, Christopher. 2011. "Informal influence in the Asian Development Bank." *Review of International Organizations*, forthcoming.
- Kilby, Christopher. 2013. "An empirical assessment of informal influence in the World Bank." *Economic Development and Cultural Change*, forthcoming.
- Kuziemko, Ilyana and Eric Werker. 2006. "How much is a seat on the security council worth? Foreign aid and bribery at the United Nations." *Journal of Political Economy* 114(5):905-930.
- Lim, Daniel Yew Mao and James Raymond Vreeland. 2010. "Regional organizations and international politics: Trading Asian Development Bank loans for United Nations Security Council votes." Working Paper, Department of Government, Georgetown University.
- Limodio, Nicola. 2011. "The success of infrastructure projects in low-income countries and the role of selectivity." World Bank Policy Research Working Paper # 5694.
- OECD Development Cooperation Directorate. 2006-2009. *International development statistics, CD-ROM*.
- Political Risk Services. 2011. *International country risk guide*.  
<http://www.prsgroup.com/ICRG.aspx>
- Stone, Randall W. 2002. *Lending credibility: The International Monetary Fund and the post-communist transition*. Princeton: Princeton University Press.
- Stone, Randall W. 2004. "The political economy of IMF lending in Africa." *American Political Science Review* 98(4):577-591.
- Stone, Randall W. 2011. *Controlling institutions: International organizations and the global economy*. New York: Cambridge University Press.
- Thacker, Strom C. 1999. "The high politics of IMF lending." *World Politics* 52:38-75.
- United Nations. 2010. "UN Security Council members." [http://www.un.org/sc/list\\_eng5.asp](http://www.un.org/sc/list_eng5.asp)  
 Accessed 9/1/2010.

USAID. 2009. U.S. overseas loans and grants: obligations and loan authorizations, July 1, 1945-September 30, 2007 (Greenbook). <http://quesdb.usaid.gov/gbk/> Accessed 5/15/2009.

U.S. State Department. 1984-2010. *Voting practices in the United Nations*. GPO, Washington.

Voeten, Erik. 2004. "Resisting the lonely superpower: Responses of states in the United Nations to U.S. dominance." *Journal of Politics* 66(3):729-754.

Voeten, Erik and Adis Merdzanovic. 2009. "United Nations General Assembly voting data." [http://hdl.handle.net/1902.1/12379 UNF:3:Hpf6qOkDdzzvXF9m66yLTg==](http://hdl.handle.net/1902.1/12379_UNF:3:Hpf6qOkDdzzvXF9m66yLTg==) Access 7/23/2009.

Weck-Hannemann, Hannelore and Friedrich Schneider. 1991. "Determinants of foreign aid under alternative institutional arrangements." In Roland Vaubel and Thomas D. Willett (Eds.), *The political economy of international organizations: A public choice approach*, 245-266. Boulder: Westview.

World Bank. 2009. *World development indicators*. <http://www.worldbank.org/data/online databases/online databases.html> Accessed 5/15/2009.

World Bank. 2010. *Projects database*. <http://go.worldbank.org/IAHNQIVK30> Accessed on 7/5/2010.

Figure 1: World Bank Project IDs  
by Approval Date - all loans/grants

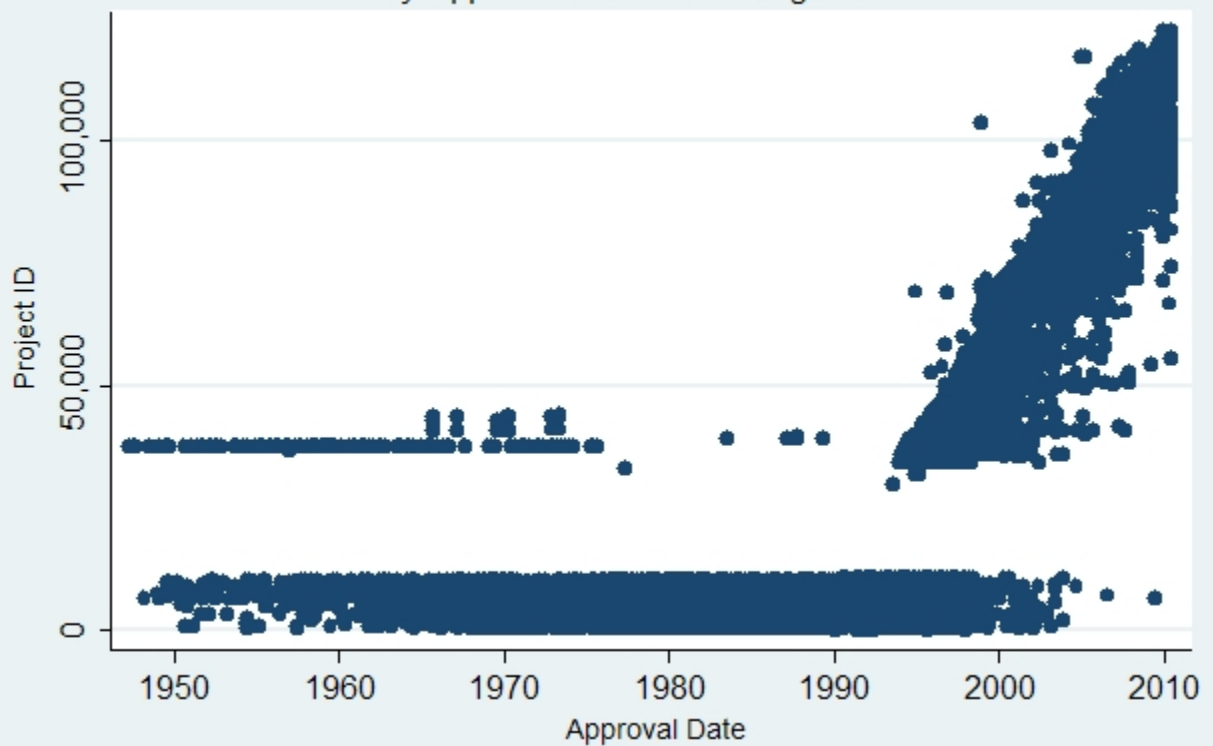


Figure 1A: World Bank Project IDs  
by Approval Date, country-specific IBRD/IDA only

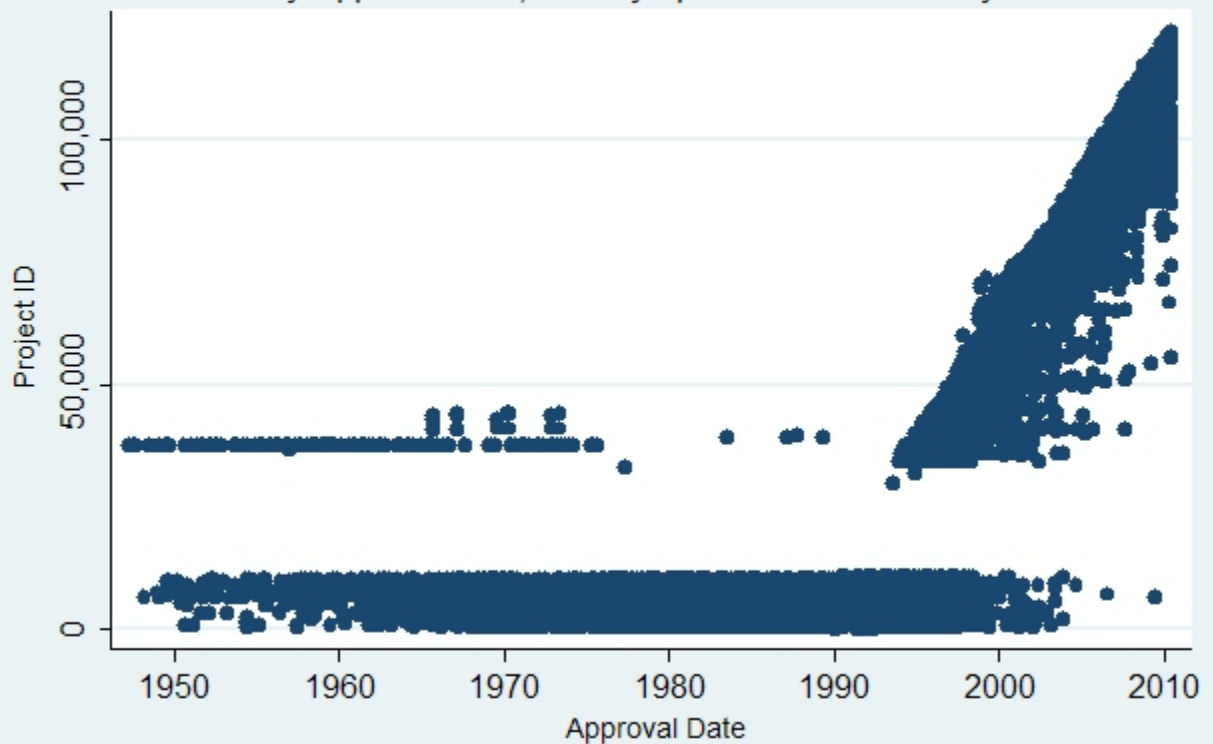


Figure 2: Early Project ID System

country-specific IBRD/IDA only

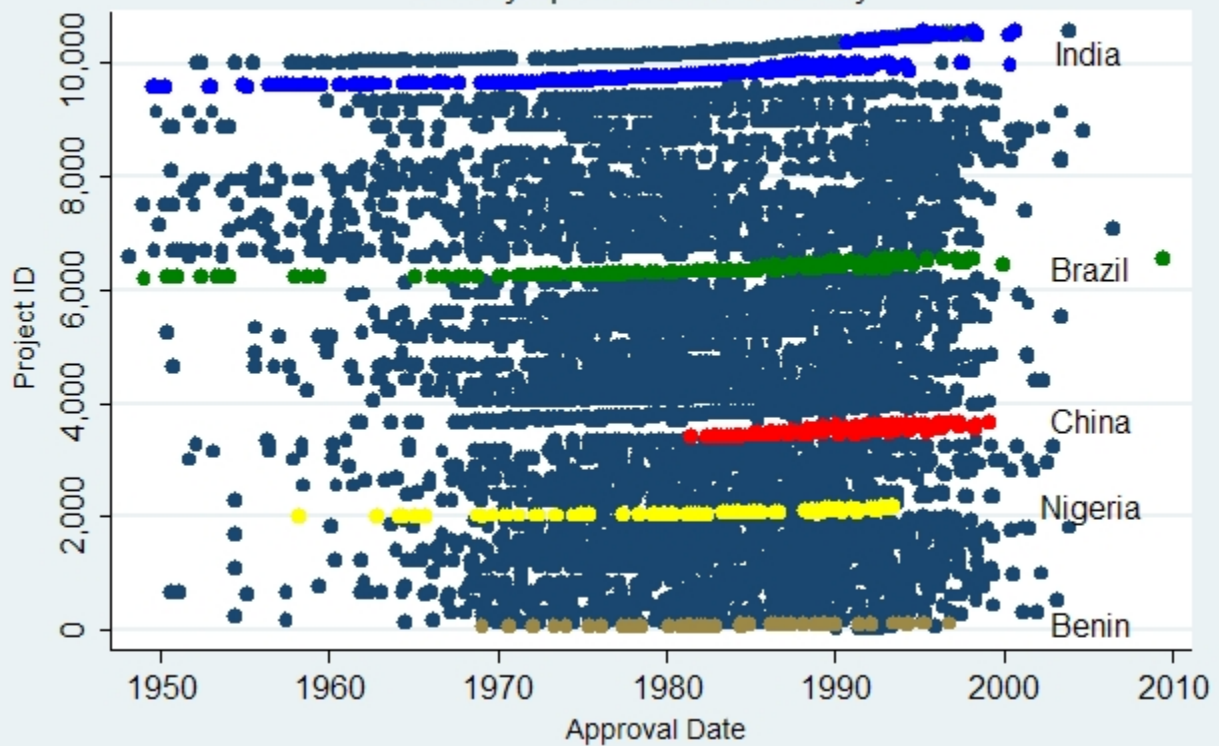


Figure 3: Early Project ID System

Higher Numbers, country-specific IBRD/IDA only

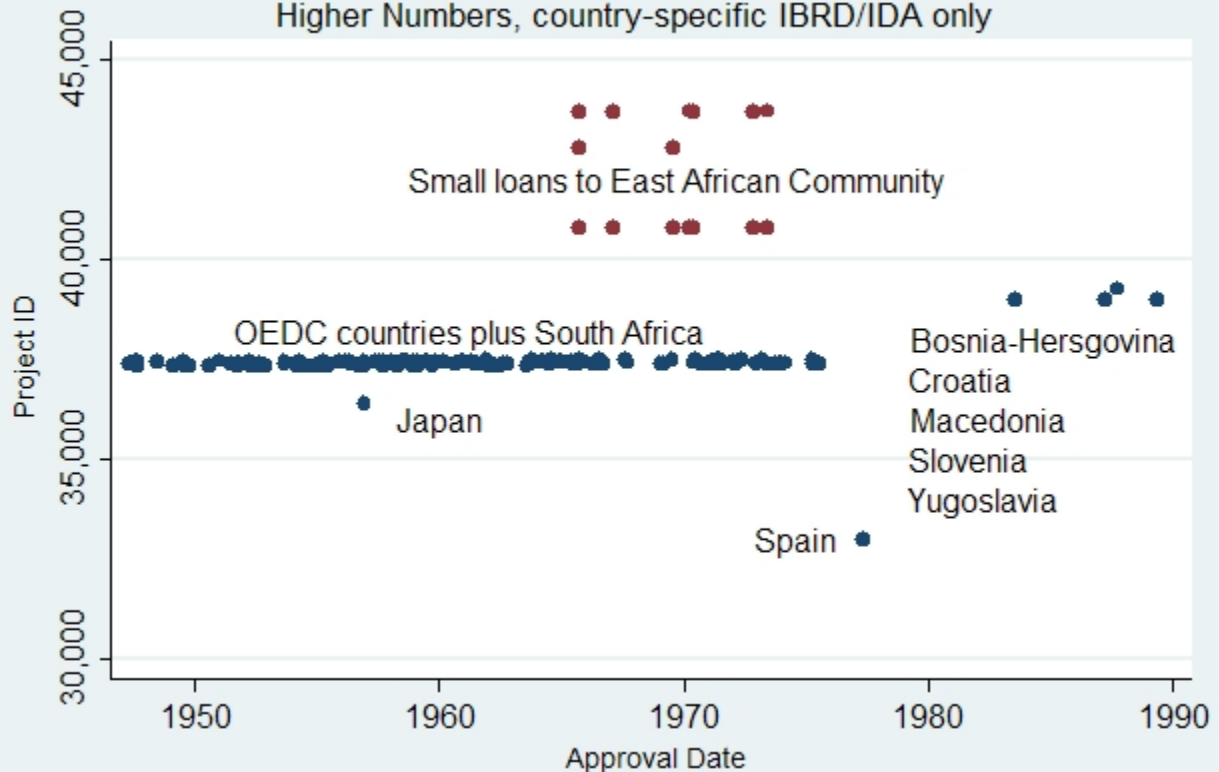
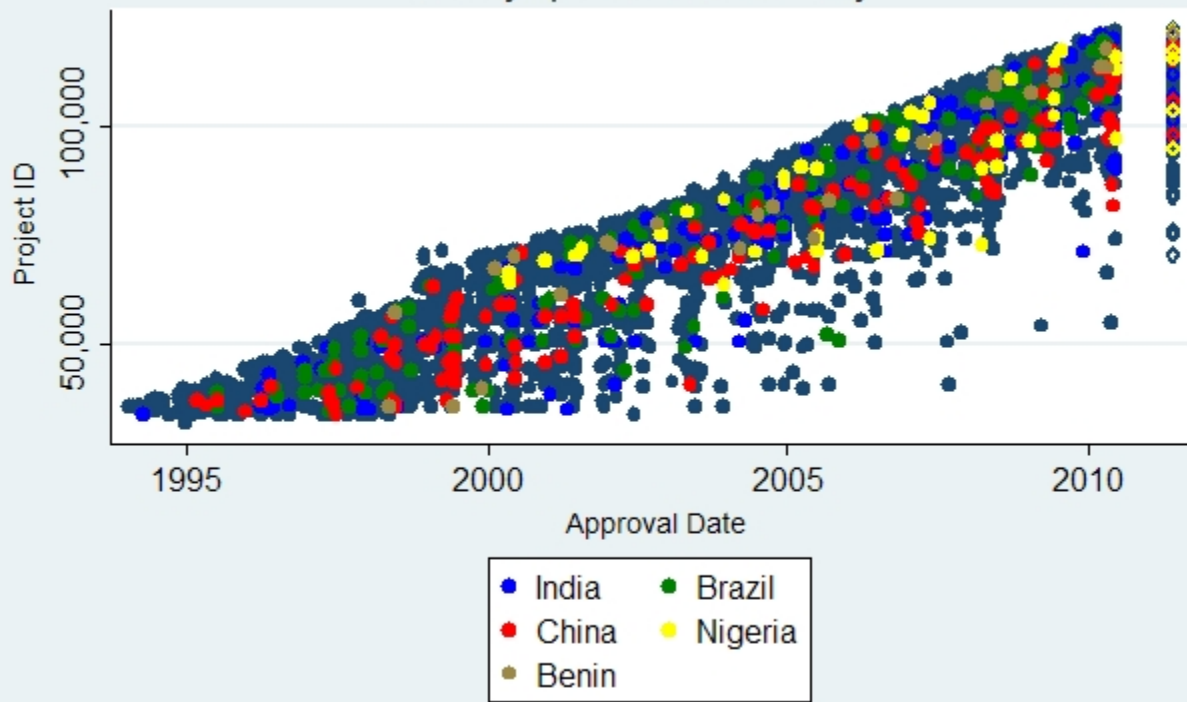
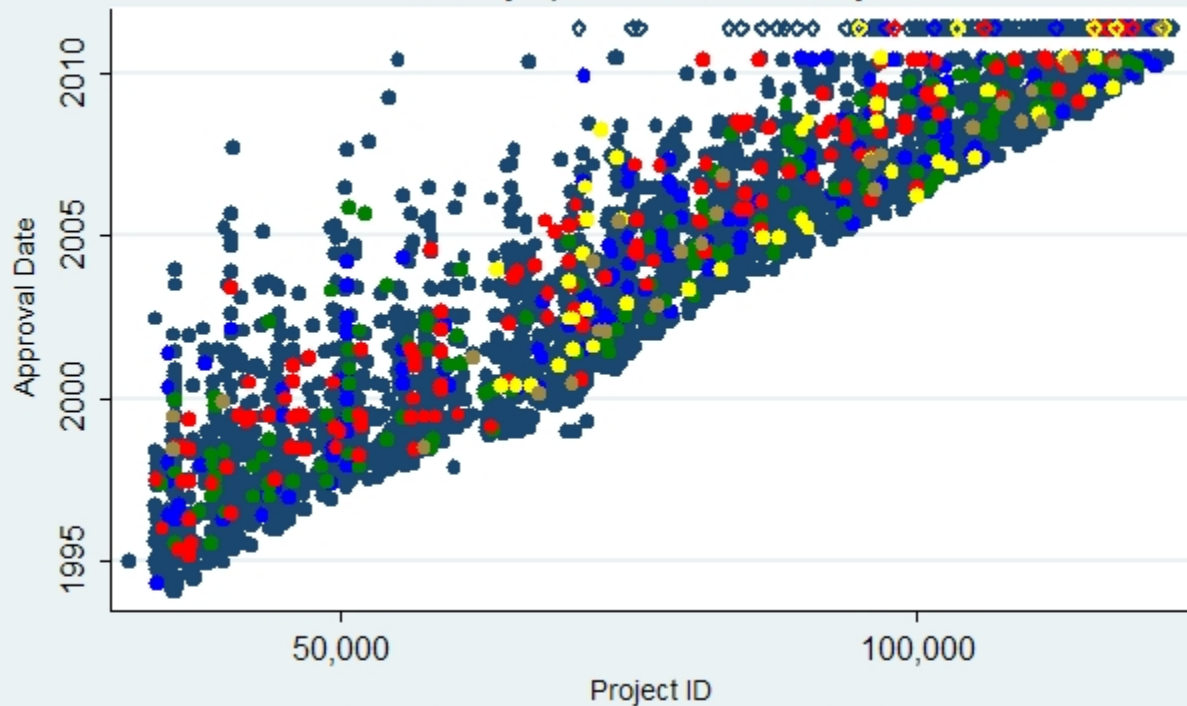


Figure 4: Recent Project ID System  
country-specific IBRD/IDA only



Column of diamonds at right indicates projects in pipeline

Figure 5: Recent Project ID System  
country-specific IBRD/IDA only



Row of diamonds at top indicates projects in pipeline

Figure 6: Distribution of duration (approximation)  
with exponential PDF for comparison

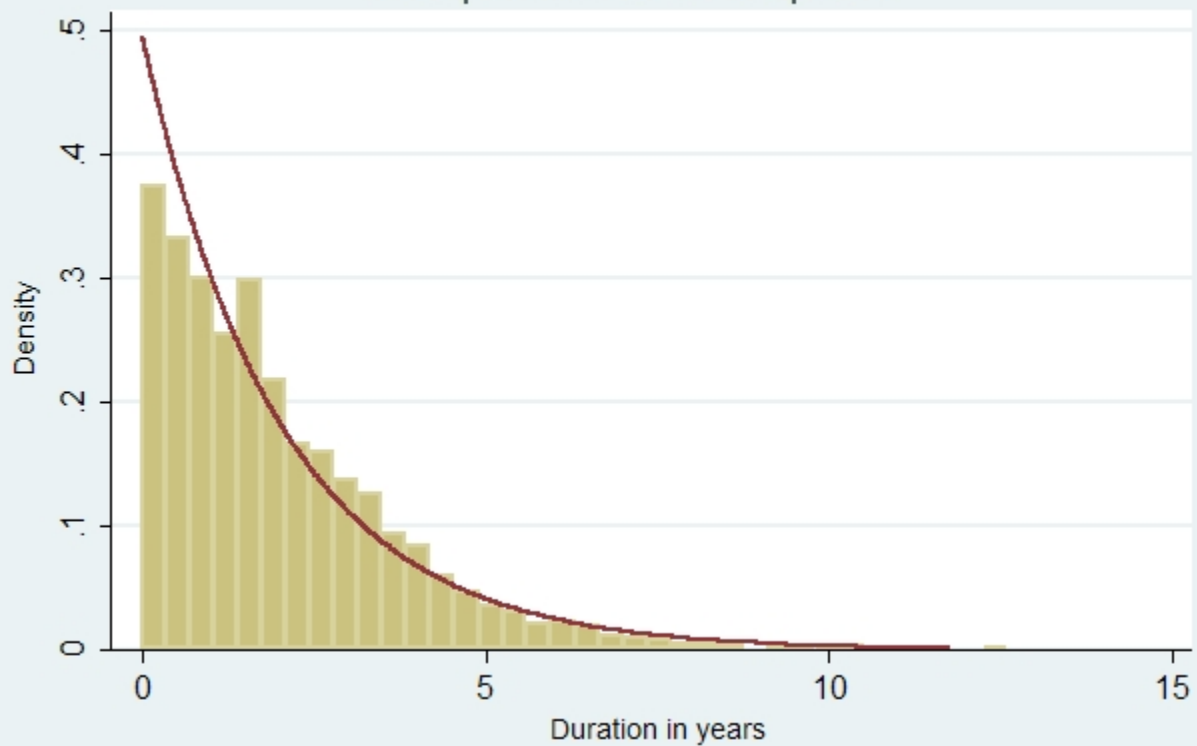
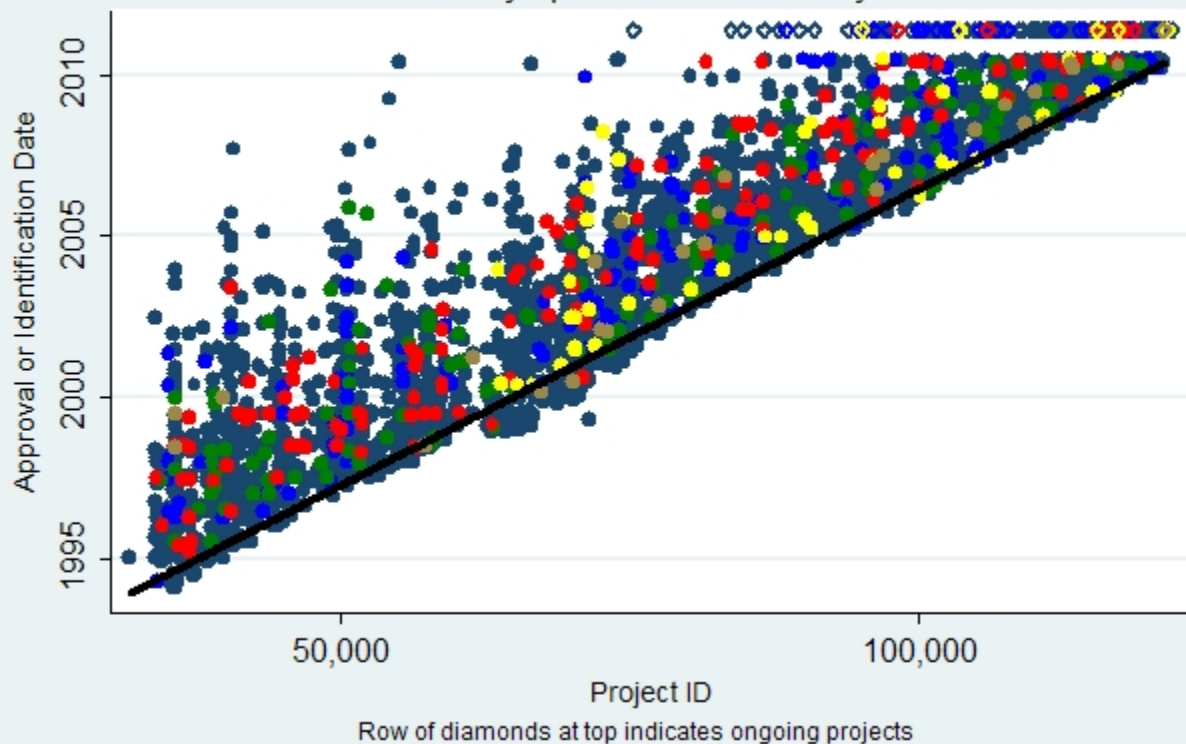
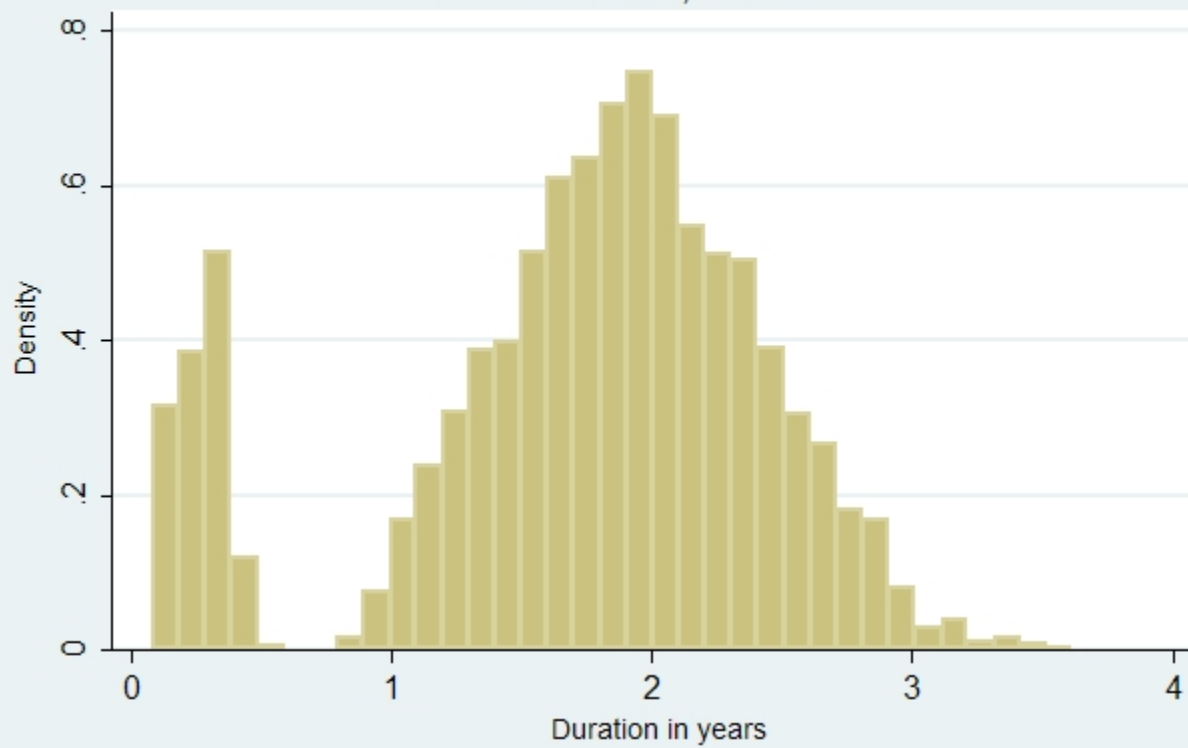


Figure 7: World Bank Stochastic Frontier Analysis  
country-specific IBRD/IDA only



**Figure 8: Distribution of predicted duration**  
based on Table 3, Column 5



**Figure 9: Distribution of predicted duration**  
based on Table 4, Column 3

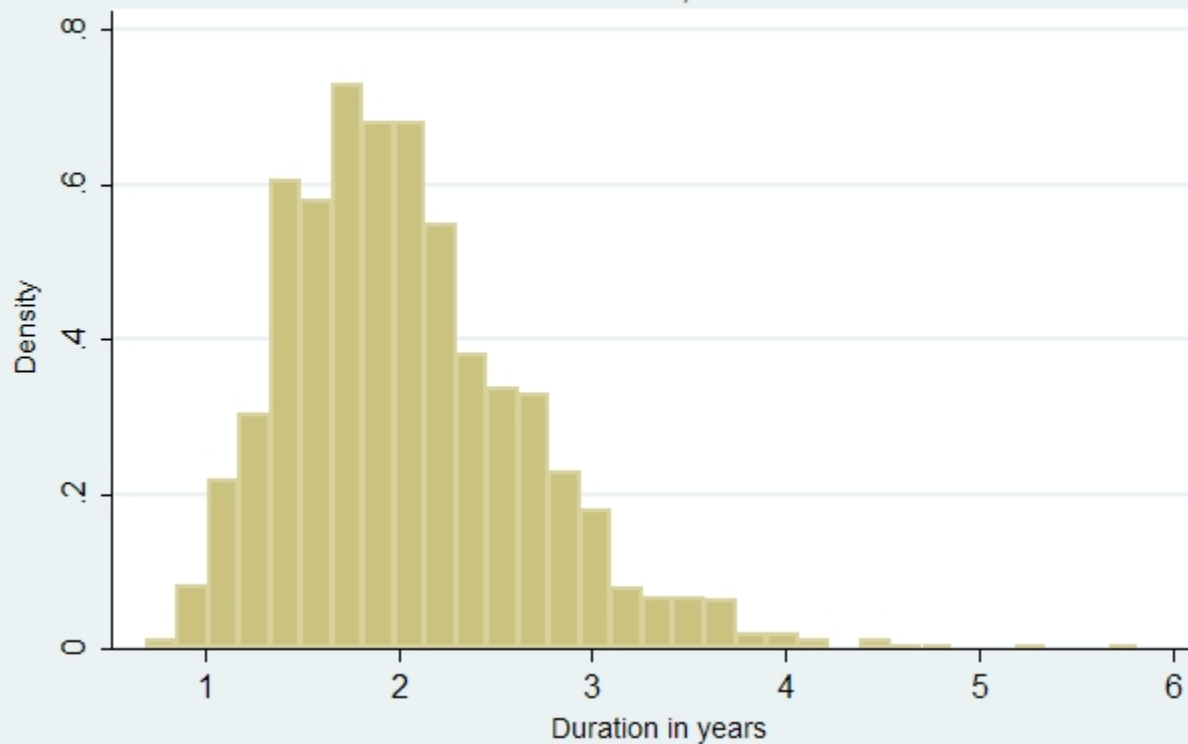


Table 1: Descriptive Statistics

Variable	Mean	StDev	Min	Max	Description
<i>Approval Date</i>	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)
<i>Project ID</i>	76,736	24,455	31,828	121,193	World Bank Project Identification Number
<i>Loan Amount</i>	3.682	1.356	-1.824	8.138	Log of loan amount in constant 2005 \$ millions
<i>IDA</i>	0.6137		0	1	IDA funds dummy
<i>Supplemental Loan</i>	0.1356		0	1	Supplemental loan dummy (adds to existing project)
<i>SAL</i>	0.2013		0	1	Structural Adjustment Loan dummy
<i>War</i>	0.07775		0	1	On-going major conflict dummy (>1000 dead) t-3
<i>Population</i>	17.02	1.776	11.53	21	log of population in millions t-3
<i>GDP per capita</i>	7.827	0.8454	5.471	9.609	PPP GDP per capita in chained 2000 \$ t-3
<i>Democracy</i>	0.5296		0	1	Democracy dummy t-3
<i>Freedom House Index</i>	4.045	1.52	1	7	Averaged Freedom House rating t-3
<i>US important votes</i>	0.4089	0.1807	0	0.85	Alignment with US on UN votes important to US t-3
<i>US other votes</i>	0.3084	0.1224	0.119	0.6667	Alignment with US on other UN votes t-3
<i>G7-1 important votes</i>	0.6825	0.1502	0.3269	0.9848	Alignment with other G7 on UN votes important to US t-3
<i>G7-1 other votes</i>	0.7142	0.0796	0.5608	0.951	Alignment with other G7 on other UN votes t-3
<i>US military aid</i>	0.528		0	1	US military aid>0.5 (2005 \$ millions) t-3
<i>US economic aid</i>	3.891	1.609	-2.303	7.902	Log of disbursements of US economic aid (2005 \$ millions) t-3
<i>G7-1 aid</i>	3.802	1.524	-1.431	7.506	Log average disbursements other G7 economic aid (2005 \$ millions) t-3
<i>Like-minded donor aid</i>	1.919	1.583	-3.75	4.661	Log average disbursements like-minded donor aid (2005 \$ millions) t-3
<i>US trade</i>	6.87	2.604	-0.125	12.85	Log of US trade (imports+exports) with country (2005 \$ millions) t-3
<i>G7-1 trade</i>	7.75	2.105	1.736	13.09	Log of G7-1 (imports+exports) with country (2005 \$ millions) t-3
<i>World trade</i>	9.273	1.999	4.216	14.61	Log of world trade (imports+exports) with country (2005 \$ millions) t-3
<i>UNSC non-permanent member</i>	0.07113		0	1	Non-permanent UNSC seat dummy t-2
<i>World Bank Executive Director</i>	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)
	<i>Dependent Variable: Approval Date</i>							
<i>Loan Amount</i>	0.209** (5.66)	0.200** (5.37)	0.209** (5.65)	0.227** (6.00)	0.209** (5.57)	0.205** (5.54)	0.202** (5.44)	0.217** (5.61)
<i>IDA</i>	-0.00773 (-0.07)	-0.0894 (-0.77)	-0.00764 (-0.07)	-0.0965 (-0.79)	-0.0646 (-0.56)	-0.0326 (-0.28)	-0.0100 (-0.09)	-0.226* (-1.79)
<i>Supplemental Loan</i>	-3.572** (-23.48)	-3.589** (-23.61)	-3.573** (-23.44)	-3.605** (-23.31)	-3.577** (-23.41)	-3.583** (-23.36)	-3.586** (-23.41)	-3.630** (-23.24)
<i>SAL</i>	-1.053** (-11.24)	-1.098** (-11.56)	-1.053** (-11.23)	-1.068** (-11.15)	-1.068** (-11.29)	-1.043** (-11.11)	-1.052** (-11.22)	-1.124** (-11.46)
<i>War</i>	-0.178 (-1.36)	-0.132 (-1.00)	-0.178 (-1.36)	-0.165 (-1.21)	-0.184 (-1.37)	-0.200 (-1.53)	-0.158 (-1.21)	-0.0836 (-0.58)
<i>Population</i>	0.0419* (1.70)	0.0138 (0.51)	0.0419* (1.70)	0.102** (2.50)	0.111** (1.99)	0.0497** (1.99)	0.0741** (2.49)	0.125* (1.79)
<i>GDP per capita</i>	-0.0436 (-0.65)	-0.127* (-1.85)	-0.0441 (-0.66)	-0.0199 (-0.28)	0.0394 (0.40)	-0.0445 (-0.67)	-0.0232 (-0.34)	0.000642 (0.01)
<i>Democracy</i>	-0.225** (-2.04)	-0.247** (-2.21)	-0.225** (-2.04)	-0.235** (-2.03)	-0.172 (-1.53)	-0.215* (-1.95)	-0.234** (-2.12)	-0.191 (-1.58)
<i>Freedom House Index</i>	-0.0592 (-1.57)	-0.0627 (-1.61)	-0.0589 (-1.55)	-0.0543 (-1.37)	-0.0552 (-1.43)	-0.0623* (-1.65)	-0.0672* (-1.77)	-0.0733* (-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 log of conditional variance of exponential term.

Table 2B: Donor Interest Variables

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

Table 3: Donor Interest Variables, detrended

	(1)	(2)	(3)	(4)	(5)
	<i>Dependent Variable: Approval Date</i>				
<i>US important votes</i>	-1.138** (-2.18)				-1.119** (-2.06)
<i>US other votes</i>	0.395 (0.89)				0.501 (1.06)
<i>G7-1 important votes</i>	0.527 (0.99)				0.167 (0.30)
<i>G7-1 other votes</i>	1.057* (1.74)				0.748 (1.05)
<i>US military aid</i>		-0.0508 (-0.68)			-0.128 (-1.56)
<i>US economic aid</i>			-0.0156 (-0.58)		0.0186 (0.64)
<i>G7-1 economic aid</i>			-0.0853** (-1.97)		-0.0430 (-0.88)
<i>Like-minded donor aid</i>			0.0461 (1.47)		0.00584 (0.18)
<i>US trade</i>				-0.0816** (-2.00)	-0.0682 (-1.40)
<i>G7-1 trade</i>				-0.0633 (-0.83)	-0.0716 (-0.84)
<i>World trade</i>				-0.0654 (-0.56)	-0.0530 (-0.41)
<i>UNSC non-permanent member</i>					-0.356** (-2.47)
<i>World Bank Executive Director</i>					-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 log of conditional variance of exponential term. All specifications also include independent variables from Table 2A.

Table 4: Donor Interest Variables, detrended  
Sample Restrictions

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

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)

Table 5: Survival analysis using DEA data  
Alternate Distributional Assumptions

	(1)	(2)	(3)	(4)
	Dependent Variable: Estimated Duration of Preparation			
<i>US important votes</i>	0.656** (3.48)	1.203** (4.09)	1.177** (2.77)	1.607** (2.60)
<i>US other votes</i>	-0.0936 (-0.41)	-0.233 (-0.71)	-0.227 (-0.47)	0.125 (0.17)
<i>G7-1 important votes</i>	-0.0702 (-0.28)	-0.390 (-1.01)	-0.538 (-1.16)	-0.702 (-1.02)
<i>G7-1 other votes</i>	-0.0915 (-0.30)	-0.471 (-1.08)	-0.626 (-0.99)	-0.624 (-0.65)
<i>US military aid</i>	0.0325 (0.95)	0.0236 (0.49)	0.0164 (0.32)	-0.0142 (-0.18)
<i>US economic aid</i>	-0.00488 (-0.45)	-0.00573 (-0.36)	-0.0200 (-1.05)	-0.0408 (-1.50)
<i>G7-1 economic aid</i>	0.0434* (1.89)	0.0498 (1.46)	0.0282 (0.59)	0.0460 (0.65)
<i>Like-minded donor aid</i>	-0.0120 (-0.82)	-0.00635 (-0.31)	0.00251 (0.10)	0.0177 (0.48)
<i>US trade</i>	0.0591** (2.34)	0.0652* (1.80)	-0.0132 (-0.35)	-0.00905 (-0.16)
<i>G7-1 trade</i>	0.0773* (1.90)	0.118* (1.89)	0.0299 (0.33)	0.0722 (0.55)
<i>World trade</i>	-0.158** (-2.59)	-0.186** (-2.05)	0.182* (1.67)	0.259 (1.60)
<i>UNSC non-permanent member</i>	0.148** (2.38)	0.220** (2.48)	0.157* (1.92)	0.262** (2.16)
<i>World Bank Executive Director</i>	0.129** (2.09)	0.191** (2.13)	0.241** (3.12)	0.390** (3.27)
Observations	3350	3350	1604	1604
Distribution	Exponential	Weibull	Exponential	Weibull

z-statistics based on country clustered standard errors in parentheses. \*  $p < .1$ , \*\*  $p < .05$

Table 5 reports coefficient estimates from survival model (not hazard ratios). In addition to variables listed above, Columns 1 & 2 include the same independent variables as in Table 2 (except that data exclude supplemental loans) and Columns 3 & 4 include the same independent variables as in Table 4, Column 3. The dependent duration variable estimated via Data Envelopment Analysis (DEA) using sample from Columns 1 & 2. Sample for Columns 1 & 2 includes cases of right censoring (pipeline projects).

## 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 <i>et al.</i> (2002)
Population	Heston <i>et al.</i> (2002, 2006), World Bank (2009)
GDP per capita	Heston <i>et al.</i> (2002, 2006), World Bank (2009)
Democracy	Cheibub <i>et al.</i> (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)

## Supplemental Appendix – NOT FOR PUBLICATION

### *Part I: World Bank Projects Database*

As described in the paper, the World Bank Projects Database (WBPD) tracks each entry by a project identification number (Project ID). The paper identifies three distinct regions in these data. Region 1 corresponds to "early" projects with Project IDs below 20,000. Region 2 appears to be "special cases," e.g., lending to OECD countries, loans for regional projects, etc. The paper focuses on Region 3, Project IDs greater than 20,000 with board approval dates after 1993.

Looking at the data, three questions arise. First, why are there different regions of Project IDs? Second, why are there many numbers not assigned to projects? Third, do patterns in Region 3 have implications for how the data should be used in estimations? Put another way, are Project IDs in Region 3 really assigned sequentially from a common pool as projects are identified?

#### 1) Why are there different regions of project identification numbers?

Project IDs are generated by the administrative side of the World Bank. Unfortunately for my research, there is no public history of Bank administrative minutia. However, based on searches of Bank documents and available older data, it is possible to speculate. Looking at data drawn from the Bank's Time Recording System (TRS—used to track the allocation of staff time between different activities) of the larger Management Information System (MIS) from the early 1990s (Kilby 2000), Project IDs consisted of four components: a 1 digit numerical regional code; a three letter country code; the letters "PA"; and a three digit project code (restarting at 01 for each country). The region codes are: Sub-Saharan Africa (3); Asia and Pacific (4); Europe and Central Asia, the Middle East and North Africa (5); and Latin America and Caribbean (6). The three letter codes (somewhat different from the current ISO codes) are given at the end of this appendix.

Region 1 of the WBPD appears to be ordered according to these codes (numerically by geographic region and alphabetically by these country codes within each geographic region) with major two exceptions. First, the regions used follow a later, more disaggregate system: Sub-Saharan Africa; East Asia and Pacific; Middle East and North Africa; Latin America and Caribbean; Europe and Central Asia; and South Asia. Second, data for South Asia mix entries for Pakistan, Sri Lanka, and Nepal and then also India (though India has an initial section not mixed) rather than being fully sorted by country. Despite this discrepancy, these clues suggest that WBPD Project IDs were assigned retroactively to these projects by mapping an older project identification code system into the current one.<sup>1</sup>

Sorted by Project ID, the first four entries in the WBPD are regional African projects followed by country-specific entries ranging from Angola (P000031 to P000061) to Zimbabwe (P003261 to P003333). Subregional projects (Eastern Africa, West Africa) also appear in the listing according to their alphabetic ordering.<sup>2</sup> East Asia and Pacific runs from Myanmar (Burma – P003335 to P003384) to Western Samoa (P004851 to P004869). The Middle East and North Africa region starts with Algeria (P004870 to P004978) and ends with Yemen (P005754 to P005912).

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<sup>1</sup>There are a few other minor discrepancies, most of which are likely due to changes in the World Bank's regional classifications. Djibouti is currently in the Middle East and North Africa region but has Project IDs in the Sub-Saharan Africa range. Maldives is in the South Asia region but has Project IDs in the East Asia and Pacific range. As part of the former Yugoslav Republic, Macedonia is an unusual case. Three Macedonian Project IDs for projects approved after the break-up of Yugoslavia appear in the appropriate range (i.e., alphabetic order within Europe and Central Asia). One Macedonian Project ID for a project completed before the break-up of Yugoslavia (but physically located in the region of Macedonia) is in the middle of the Yugoslav range. Finally, one Macedonian Project ID (for a project identified in early 1993 by the FAO and completed in 2002) mysteriously appears at P001001, the point at which South Asian Project IDs cease to be alphabetic.

<sup>2</sup>The WBPD also has projects listed as "Africa" with Project IDs that correspond to Eastern Africa. However, examining available project documents reveals that these are indeed Eastern Africa projects (e.g., P000620 is Railways and Harbours Administration Development Project for the East African Community, approved in 1955).



Latin America and the Caribbean ranges from Argentina (P005920 to P006062) to Venezuela (P006062 to P008237). Next is Europe and Central Asia, starting with Albania (P008252 to P008281) and ending with Yugoslavia (P009175 to P009285). South Asia begins with Afghanistan (P009299 to P009319) and continues in alphabetic order up part way through India (P010000), then jumps around between India, Nepal, Pakistan, and Sri Lanka and ends with India (P010566). Although these numbers appear to be chronological in terms of identification date within a given country, they are not ordered chronologically between countries.

Early project documents (where available) refer to projects simply by country and name (no code used) until a loan or credit number is assigned; then the loan/credit number is included in most documents. However, on documents produced in the late 1990s, a hybrid of the old MIS country-specific system and the new Project ID is often included. This takes the form of a 2 letter country code, the letters "PA," and a 4 digit project number that matches the current WBPD Project ID. For example, an 1997 Implementation Completion Report (ICR) for a Korean project approved in 1993 includes the code "KRPA4172" while the WBPD Project ID is "P004172." Another example, a 1997 Project Identification Document (PID) for a Moroccan project approved in 1999 includes the code "MAPA5519" while the WBPD Project ID is "P005519." (The World Bank country code for Morocco changed from MYC to the more standard MOR.)

## 2) Why are there many numbers not assigned to projects?

There are really two questions here. First, if we understand the administrative process generating Project IDs, we should be able to account for missing numbers. Can we? Second, does the link between identification dates and Project IDs vary in a systematic way, for example changing over time? If so, this could introduce problems when using Project IDs as a proxy for identification

dates of World Bank projects.

The WBPD identifies entries by "PROJECT ID" but strictly speaking not all entries are World Bank projects. First, not all entries are classified as projects; many are for programs (loans or credits for general budget support, often with policy conditions included) and a few are unclassified. Overall, 88% of the entries are classified as projects. Second, not all entries are World Bank funded; the database includes activities administered by the World Bank but funded by other sources. Figure A1 gives the breakdown on the composition of the World Bank Projects Database for the data points of interest (Region 3). The point here is that although the identifier is referred to as a "project identification number," it is actually applied to a broader range of activities that the World Bank tracks.

This point is further reflected in the World Bank's definition of the "product lines" reported in the database. The World Bank website states:

The World Bank offers several product lines to its clients, loosely grouped into lending and analytical/advisory. This database [the WBPD] contains the lending portion of the portfolio. (World Bank 2011a)

Analytical and advisory products are described as:

Products range from reports on key economic and social issues, to policy notes, to knowledge-sharing workshops and conferences. (World Bank 2011b)

The types of non-lending activities the website lists are economic and sector work, technical assistance, impact evaluations, World Development Reports, research services, and donor aid coordination. Each of these activities could be tracked with a separate identification number to allow staff to record how their time is split among activities and to indicate which activity should be billed for which expense (such as travel and consultants).

These other activities may thus explain the "missing numbers," i.e., why the 13,664 entries in the database have Project IDs ranging from 1 to 122,181. In Region 1, Project IDs range from 1 to 10,566 for 6,905 entries, i.e., 65% of the range is used for entries in the database. In Regions 2 and 3, Project IDs range from 34,106 to 121,805. There are 216 entries in Region 2 (prior to 1994) and 6,543 entries in Region 3 (1994 and on), i.e., 7.7% of the range is used for entries in the database (7.5% considering only Region 3). The difference between the "utilization rates" for Region 1 and Regions 2/3 may be driven by MIS changes and expansion of the World Bank's non-lending activities (consistent with the drive to be a "knowledge bank" that started under World Bank President James Wolfensohn in the 1990s).

This brings us to the second question, the link between Project IDs and the identification dates of World Bank projects. Because the analysis in the paper only uses entries from Region 3, the change in utilization rates between data regions is not a direct concern. However, if the expansion of Project IDs for non-lending activities continued during the period under study, this could pose a problem. In fact, if the number of new Project IDs per year—for any purpose—varied systematically over this period, this would impact the link between Project IDs and identification dates.

Examining the relevant graphs (e.g., Figures 4 or 5 in the paper), there is no clear pattern over the period studied (i.e., Region 3). Furthermore, as footnoted in the paper, including higher order terms when linking the Project ID to the approval date turns up no evidence of a change in utilization rates within the region.

### 3) Are project identification numbers consistent with sequential assignment at identification?

Restricting our attention to Region 3, is the pattern of Project IDs consistent with sequential

assignment from a common pool at the time of project identification? There are a number of approaches one could take to address this question. One is spot checks against available project documents. Unfortunately, these documents do not always list the identification date (i.e., a date specifically indicated as identification or a date indicating the earliest entry for World Bank staff time attributed to preparation of the project in the TRS). There are, however, some illuminating cases. Following the January 12, 1994, devaluation of the CFA franc, many CFA zone countries received Economic Recovery Credits (ERCs) from the World Bank in mid March or shortly thereafter:

**Table A1**

Project ID	Country	Identification	Approval
P035481	Cameroon	10-14 January, 1994 <sup>a</sup>	16 June, 1994
P035590	Mali	January, 1994	17 March, 1994
P035591	Niger	10-14 January, 1994	17 March, 1994
P035592	Senegal	15 January, 1994	17 March, 1994
P035593	Burkina Faso	12 January, 1994	29 March, 1994
P035594	Chad	10-14 January, 1994	29 March, 1994
P035989	Cameroon	January 1994 <sup>b</sup>	10 March, 1994
P035991	Togo	17 March, 1995 <sup>c</sup>	25 April, 1996

<sup>a</sup>Initiating Memorandum (World Bank 1996b, 24).

<sup>b</sup>Conversion of last tranche of pre-existing IBRD SAL into single tranche IDA credit.

<sup>c</sup>Initiating Memorandum (World Bank 1999, 15).

Identification dates listed are culled from available project documents and indicate the earliest date listed in the file (e.g., Bank preparation mission to the country, Initiating Memorandum). While there is some variation here, the link between identification date and Project ID is clear.

There are also cases connected to this same episode that do not fit as directly, at least at first glance. Côte d'Ivoire received a new IDA Economic Recovery Credit (ERC) but not immediately (approved 20 October, 1994) and that "project" follows the old numbering system (P001165).

However, there is evidence that things were moving slowly with Côte d'Ivoire and that this program might have been a reformulation of something already in the works. In writing about the Côte d'Ivoire ERC, the Implementation Completion Report states:

Prior to the devaluation, new Bank lending had been reduced to a minimum and the IMF had canceled the undisbursed amount of its stand-by agreement...[However, following the CFA devaluation]...The Bank disbursed US\$435 million in adjustment support to Côte d'Ivoire during 1994. A large part of these resources were mobilized through the release of outstanding tranches of three sector adjustment loans totaling US\$250 million after their conversion from IBRD to IDA terms. Additional resources were provided by the approval of a supplemental IDA credit of US\$85 million equivalent under the FY94 Fifth Dimension. The ERC (US\$100 million) was designed to support the Government's new adjustment program following the devaluation and to provide the required additional financing. (World Bank 1996c, i)

So the immediate response to devaluation was through modification of existing loans/credits. Bank staff also may have "repurposed" an existing Project ID for the ERC. The report also states:

The ERC was identified, appraised, negotiated, approved and fully disbursed in nine months. (World Bank 1996c, 9)

Consistent with this, the report lists an Identification Initiating Memorandum on March 25, 1994. (World Bank 1996c, 15). But the ICR also lists NO resources devoted to preparation (prior to appraisal) (World Bank 1996c, 23).

Another example that does not obviously fit is Gabon's Economic Recovery Loan with Project ID P000783, identification (Initiating Memorandum) on January 10-14, 1994, and approval June 21, 1994. This does not fit the new number scheme. However, there is evidence that work on

this project might have begun as SAL 2:

Mired for six years in an economic and financial crisis, Gabon has been seeking since the end of 1992 to formulate a new development strategy based on an overall review, including a long-term approach and reexamination of certain determining sector policies. The World Bank had supported this undertaking and offered its technical support in the form of an Economic Memorandum and identification of sector adjustment programs in agriculture, transport and the restructuring of parapublic enterprises... The ERL was thus an individual operation, but one that was based on an analysis of the Gabonese economy made in the course of 1993 by World Bank and Gabonese Government experts... (World Bank 1996a, 12)

Thus based on this evidence, it is plausible that Project IDs reflect the time of identification and, for Project IDs in Region 3, are drawn sequentially from a common pool.

A second approach is to look at the pattern of Project IDs. If Project IDs are sequentially assigned at identification from a common pool, we would not expect a long string of numbers in a row for the same country (i.e., the pattern since in Region 1). Figure A2 summarizes patterns for Region 3. I present data for two definitions of "sequence length." The first definition ("Same Country") counts observations as being in an unbroken sequence if there are no intervening Project IDs for projects from another country. For example, there is a string of five projects for Macedonia with Project IDs P038391, P038392, P038393, P038295, and P038399. Although there are gaps in these numbers, no other projects fall into those gaps so this is a "Same Country" sequence of 5. The second definition ("Sequential") requires no gaps in the Project IDs. Thus, the above Project IDs count as a 3 and two 1's by this definition. The figure shows that either definition generates a similar distribution with the vast majority of observations being "singletons" (over 3000 of 3627

observations). There are 386 pairs by the first definition or 288 pairs by the second definition, 123 or 56 triples, 60 or 17 quadruplets, 23 or 10 quintuples, and 11 or 0 sextuplets. There are a few more observations beyond strings of 6 for the first definition but none by the second definition.

One possible explanation for the clustering of Project IDs is an identification mission during which Bank staff and their country counterparts discuss several potential projects. One could imagine either that this actually describes the identification process (all projects in the sequence really were initiated in earnest at that point) or that a country director simply generates project identification numbers in batches (including numbers for some projects not yet identified) in an attempt to use time efficiently. In either case, we would expect this to be associated with a longer preparation period on average and a higher variance. If this is "measurement error," such strings of projects might enter into both the mean and variance of the two-sided error term. If we view it as truly related to the duration of actual preparation, it would be more sensible to include it in the one-sided error term.

Failing to model this could introduce serial correlation in the error term. For the SFMs presented in the paper, I re-estimated including the second count variable ("Sequential") in both the mean and the variance of the symmetric error term  $v_{ij}$  in equation (3). The estimated coefficients (available from author) for both are positive and significant as expected. Results are similar with the other definition. However, results for the variables of interest are the same with either count variable or with no count variable. Again, results for the variables of interest are similar if either count variable is introduced in the one-sided error term instead.

## *Part II: Data Envelopment Analysis*

Table 5 in the paper presents a robustness check using preparation durations generated from Data Envelopment Analysis. To improve the accuracy of these estimated durations, I first exclude all supplemental loans as the main analysis found these have radically different preparation times compared to other World Bank loans. Figure A3 presents the convex hull constructed from these data. This lower envelop is defined by five data points: Structural Adjustment Credit Project for Cameroon (P035989, approved 3/10/1994), Hurricane Emergency Project for Nicaragua (P064084, approved 12/22/1998), Structural Adjustment Credit III for Burkina Faso (P069165, approved 12/2/1999), HT Emergency Bridge Reconstruction & Vulnerability Reduction Project for Haiti (P114292, approved 11/18/2008), and Infrastructure & Institutions Emergency Recovery for Haiti (P120895, approved 3/18/2010). Not surprisingly, all these rapidly approved projects were either emergency recovery measures or development policy lending (the first associated with the CFA franc devaluation discussed above).

Preparation duration is calculated as the vertical distance between the lower envelop and the data point. Duration averages 910 days, ranging from 0 days (by construction) to 4,732 days (Transportation Sector Support Project for Tanzania, Project ID, approved 05/27/2010).<sup>3</sup> Figure A4 illustrates the full distribution.

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<sup>3</sup>According to World Bank (2010, 103), the Project Concept Note review was 6/25/2009.



Table A2: World Bank "country" codes from early 1990s

**Sub-Saharan Africa**

AFR	Africa
ANG	Angola
BEN	Benin
BOT	Botswana
BUI	Burundi
BUR	Burkina Faso
CAM	Cameroon
CAP	Cape Verde
CAR	Central African Republic
CHD	Chad
COB	Congo, Republic of
COM	Comoros
DJI	Djibouti
EAC	East African Community
EAN	Eastern Africa
EQG	Equatorial Guinea
ETH	Ethiopia
GAB	Gabon
GAM	Gambia, The
GHA	Ghana
GUB	Guinea-Bissau
GUI	Guinea
IVC	Cote d'Ivoire
KEN	Kenya
LES	Lesotho
LIB	Liberia
MAG	Madagascar
MAL	Malawi
MLI	Mali
MOZ	Mozambique
MTA	Mauritania
MTS	Mauritius
NIG	Niger
NIR	Nigeria
RWA	Rwanda
SEN	Senegal
SEY	Seychelles
SIL	Sierra Leone
SOM	Somalia
STP	Sao Tome and Principe
SUD	Sudan
SWA	Swaziland
TAN	Tanzania
TOG	Togo
UAN	Uganda
WAN	Western Africa
ZAI	Congo, Democratic Republic of
ZAM	Zambia
ZIM	Zimbabwe

**Asia & Pacific**

BAN	Bangladesh
BHU	Bhutan
BUA	Myanmar
CHA	China
CHN	Taiwan
FIJ	Fiji
IND	India
INS	Indonesia
KOR	South Korea
LAO	Laos
MAY	Malaysia
MLD	Maldives
NEP	Nepal
PAP	Papua New Guinea
PHL	Philippines
SLI	Solomon Islands
SRI	Sri Lanka
THL	Thailand
TNG	Tonga
VAN	Vanuatu
VNM	Vietnam
WSM	Western Samoa

**Europe & Central Asia, Middle East & North Africa**

AFG	Afghanistan
ALG	Algeria
BUL	Bulgaria
CYP	Cyprus
CZK	Czechoslovakia
EGT	Egypt
GRE	Greece
HUN	Hungary
IRN	Iran
JOR	Jordan
LEB	Lebanon
MYC	Morocco
OMA	Oman
PAK	Pakistan
POL	Poland
POR	Portugal
ROM	Romania
SYR	Syria
TUN	Tunisia
TUR	Turkey
YAR	Yemen Arab Republic
YDR	Yemen Democratic Republic
YUG	Yugoslavia

**Latin America & Caribbean**

ARG	Argentina
BAH	Bahamas
BAR	Barbados
BEZ	Belize
BOL	Bolivia
BRA	Brazil
CEN	Central America
CHL	Chile
CLM	Columbia
COS	Costa Rica
CRB	Caribbean / OECS countries
DMC	Dominica
DOM	Dominican Republic
ECU	Ecuador
ESL	El Salvador
GRD	Grenada
GUA	Guatemala
GUY	Guyana
HAI	Haiti
HDS	Honduras
JAM	Jamaica
MXC	Mexico
NIC	Nicaragua
PAN	Panama
PAR	Paraguay
PER	Peru
STK	Saint Kitts and Nevis
STL	Saint Lucia
STV	Saint Vincent and the Grenadines
TRI	Trinidad and Tobago
URU	Uruguay
VEN	Venezuela

## Data Appendix References

World Bank. 1996a. *Implementation Completion Report. Gabonese Republic Economic Recovery Loan (Loan 3759-GA). Report # 15695.* Washington, DC: The World Bank.

World Bank. 1996b. *Implementation Completion Report. Republic of Cameroon Economic Recovery Credit (Credit 2627-CM). Report # 15682.* Washington, DC: The World Bank.

World Bank. 1996c. *Implementation Completion Report. Republic of Cote d'Ivoire Economic Recovery Credit (Credits 2656-0-IVC and 2656-1-IVC). Report # 15234.* Washington, DC: The World Bank.

World Bank. 1999. *Implementation Completion Report. Republic of Togo Economic Recovery and Adjustment Credit (Credit 28490-TOG). Report # 19433.* Washington, DC: The World Bank.

World Bank. 2010. *Project Appraisal Document. United Republic of Tanzania for the Transport Sector Support Project. Report # 53152-TZ.* Washington, DC: The World Bank.

World Bank. 2011a. "Projects - Product Line."  
<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,contentMDK:20628633~menuPK:115635~pagePK:64328798~piPK:64328797~theSitePK:40941,00.html> Accessed 7/22/2011.

World Bank. 2011b. "Projects - Products & Services."  
<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,contentMDK:20120721~menuPK:232467~pagePK:41367~piPK:51533~theSitePK:40941,00.html> Accessed 7/25/2011.

Figure A1

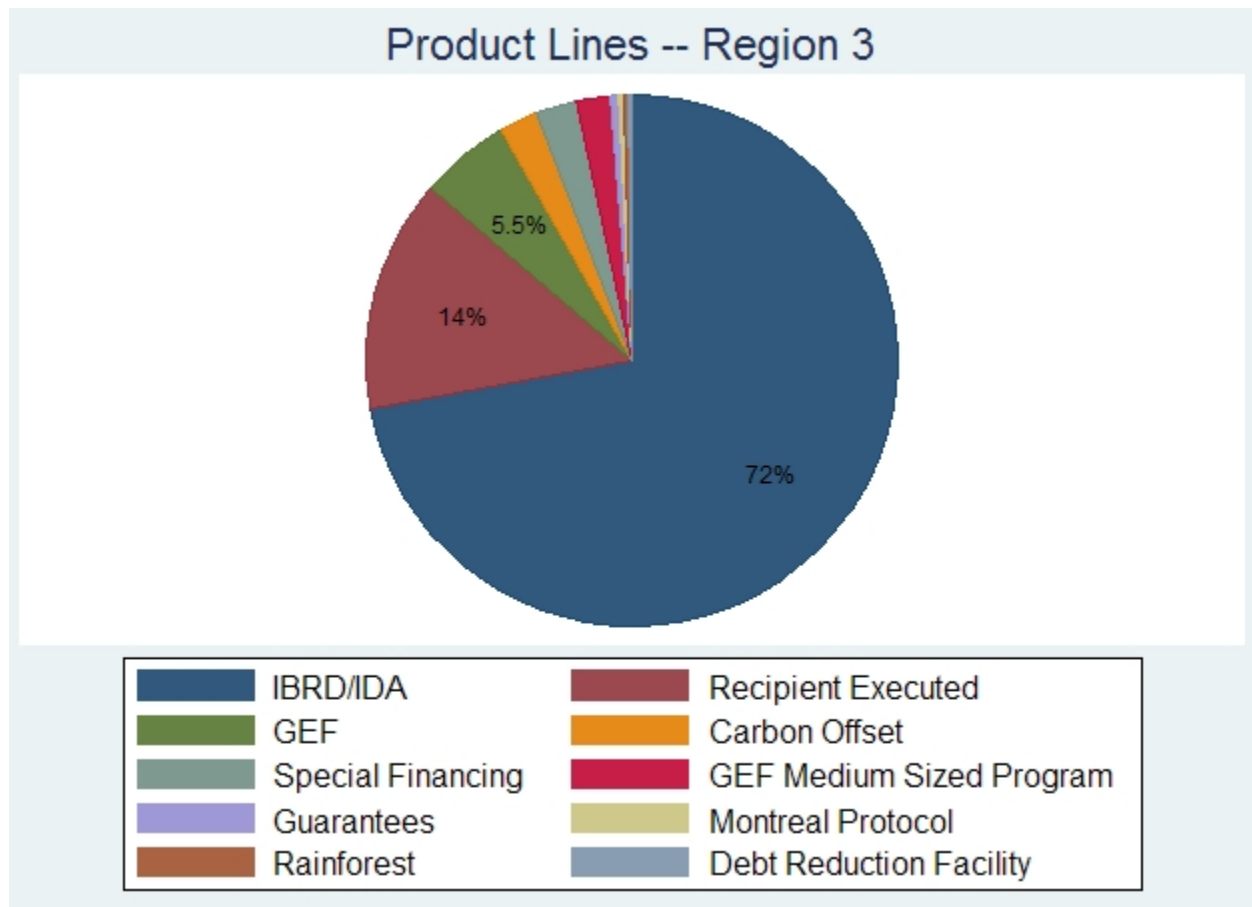


Figure A2

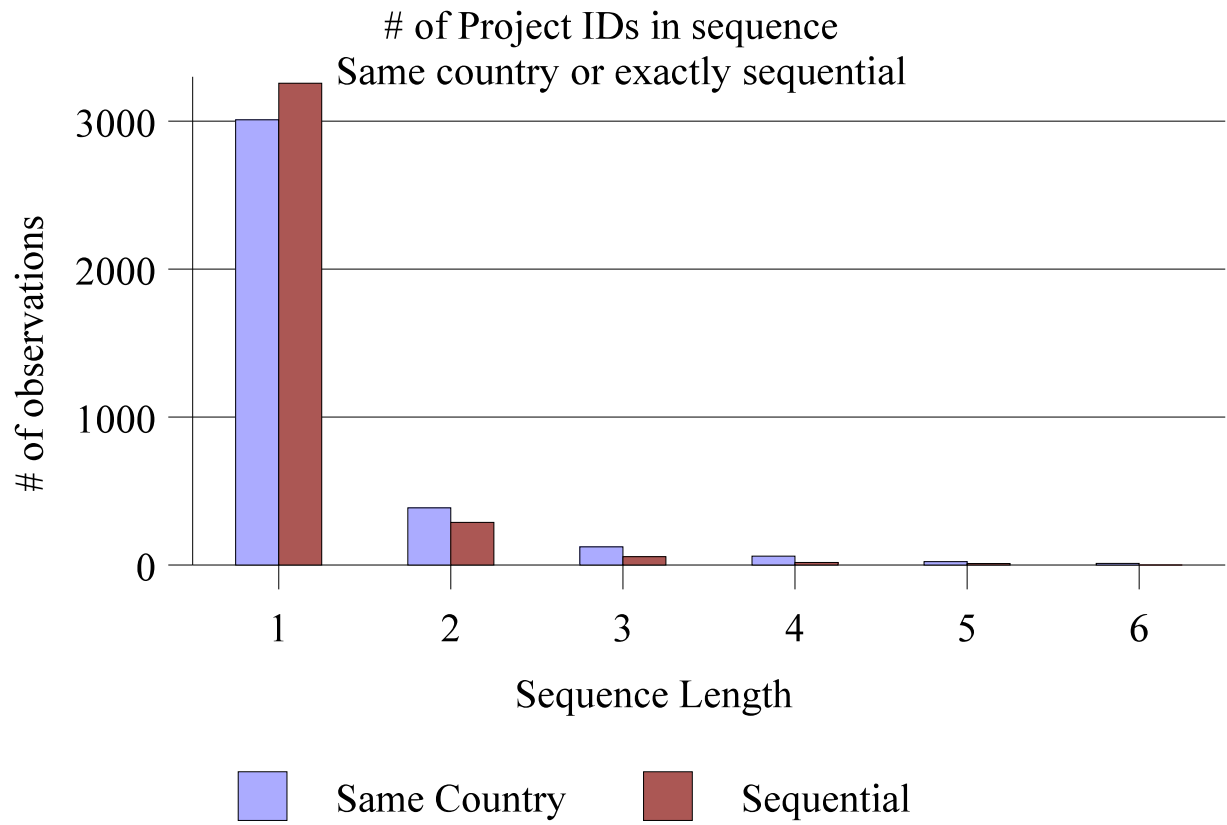


Figure A3

## Data Envelopment Analysis

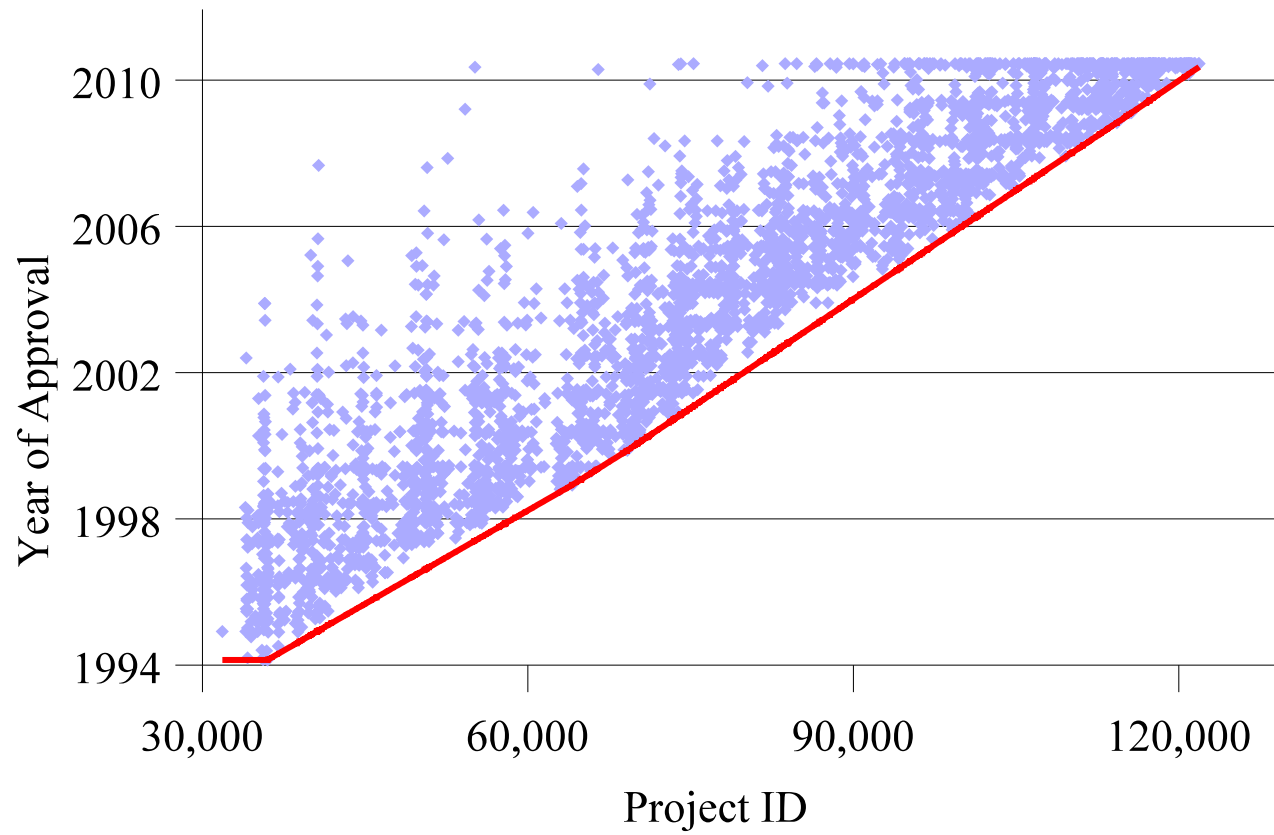


Figure A4

