On the Dynamics of the Projects Approval Process

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Abstract

This technical note analyzes specific project- and country-level characteristics that affect the duration of the projects' approval process from year to year and builds a framework to characterize projects that would require further monitoring to complete their approval process. We present evidence that the number of team leaders changes, the time that a project remains in pipeline A, the size of a project relative to the pipeline of its country, and whether it is an electoral year in a given country affect the rate at which projects are approved. These empirical regularities can support the projects' preparation process and better allocate resources and efforts to optimize approval times.

JEL Codes: F53, O19, O22

Keywords: International organizations, the role of international organizations, project analysis

1. Introduction

Have you ever wondered how long it takes to approve a project since it is first registered in the IDB's system? Well, answering this question is not straightforward, and there may not be a definite answer. The very nature of project preparation, and some project specificities, make the time spent formulating a project until its approval very heterogeneous. A project's preparation is a multistage process that involves completing several standardized milestones, including phases of diagnostic, selection, and evaluation of the initiatives. At each stage, this process is potentially subject to factors beyond the control of the project manager, affecting approval times. As a result, it is difficult for any team leader to make a precise ex-ante assessment of the time required until approval.

During the period 2009-2019, it took approximately 16 months on average to approve a project, although the variance is quite large. When a project goes through a long process until its approval, it is subject to the risk that conditions prevailing during the formulation period had changed. If the needs and priorities in any given country change, its projects may be postponed or even reclassified as "off-pipeline." Some of these projects could become active again, but others do not. Therefore, when we ask how long it takes for a project to be approved, we must consider that a 'non-approval' outcome is also possible.

In this noter, we employ duration models to answer two interrelated questions. First, how different project- and country-level variables affect the rate at which a project is approved. And second, what is the probability of approval for a project with a particular set of characteristics. To answer the first question, we can simply estimate the case-specific hazard rate from a Cox model. To answer the second question, we need to consider that not all projects that are registered end up being approved. The fact that some projects are offloaded from the pipeline represents a competing risk in the approval process. The estimation of the incidence of approvals would be biased without adequate modeling of the off-pipeline risk. Thus, we compute the probability of approval based on the competing risk model, as in Fine and Gray (1999).

Some important regularities emerging from our analysis are: First, the size of a project (relative to the total amount of Bank's approvals in a year) and being in a country that was part of the Special Fund Operation (FSO) do not play any role in the rate at which the approval process occurs. However, when we consider an alternative measure of the size of a project, as a share of a given country's total pipeline, we find that bigger projects are approved faster. Second, the time allocated to the project’s preparation contributes positively to faster approval, though the impact is negligible; one additional hour of preparation increases the approval rate by 0.1%. Third, an increase of 1% of the time a project is cataloged as pipeline A increases the approval rate by 2.1%. Fourth, political cycles can influence approval times; during presidential or parliamentary elections, the time required to approve a project decline. The approval rate increases by 24.8% when we consider projects whose approval process takes place during an election year. The impact of elections is only immediate, as we do not observe changes in approval rates one year after the elections.

Let us consider the average project in terms of size, time classified in pipeline A, total hours, and total costs. The probability of approval for this project ten months after registration with only one team leader change would be five percentage points higher than an equivalent project with three team leader changes. By month 20, after registration, this difference increases to 12 percentage points. Similarly, the probability of approval after ten months of registered for an average project is two percentage points higher in elections years than in a non-election year; by month 20 after registration, this difference goes up to 5 percentage points.

Using these model estimates, we also assess the probability of approval of a subset of projects listed in the Operational Program Report (OPR) of 2020. We find that the average probability of approval is 55%, although it masks substantial heterogeneity at the country and sector level. We suggest a metric to characterize projects that will require further assistance to complete their approval process. This metric is based on a combination of the project's probability of approval, the chances that this probability will increase over time, and the project's tenure in the pipeline.

The understanding of the drivers of approval times becomes an essential tool for planning and resource allocation. Avellan and León-Díaz (2019) report that projects listed in the Operational Program Report (OPR) that remain for too long in the pipeline have a lower probability of approval. Therefore, longer approval times, which result in the perpetuation of projects in the pipeline, imply that the efforts and resources invested in the costly preparation process get wasted.

This paper is structured as follows. Section 2 describes the dataset and presents non-parametric estimations on time required for approval. Section 3 discusses the methodology, presents the estimated duration models' results, and proposes a metric to monitor the pipeline projects. Section 4 presents robustness checks. Section 5 presents the analysis focusing on project profile completion as the date of registration for projects. Section 6 concludes.

2. Data Description

We collect data on 1,321 investment loan projects in the pipeline for at least one month between April 2009 and September of 2019, excluding Haiti and regional operations projects. Of these projects, 58 percent were approved during the period under study, 11 percent were still pending approval by the end of the sample period, and 31 percent were classified as 'off-pipeline'. Regarding the sectoral distribution of the projects considered, 34% of the projects are in Infrastructure and Energy (INE), 31% of the projects are in Institutions for Development (IFD), 19% of the projects are in Social Sector (SCL), and 12% in Climate Change and Sustainable Development Sector (CSD).

The average time elapsed between a project's registration and its approval is 16 months. Although there is a large variability; The interquartile range, which is a measure of dispersion, is approximately 14 months. For general purposes, we assume that the date of creation of a project is associated with the date at which it was registered in the system. So, we use the terms "creation" and "registration" interchangeably. However, how do we measure a project's creation in the system? To establish a homogeneous date of creation among projects and maximize the number of observations, we define a project's registration as the first date at which either a cost or hours worked is imputed.[1] In section 5, we analyze the sensitivity of our results to alternative measures of the date of creation.

Based on the definition above, Figure 1 depicts how the time to approval for investment projects varies from year to year and by country. For instance, the average age of a project approved in 2015 was 15 months, while the average age of a project approved in 2012 was 18 months. At the country level, the differences in approval times are more pronounced. Uruguay's average project is approved within 11 months, while it takes, on average, 24 months to approve a project in Costa Rica. Extreme observations do not entirely drive these differences since the differences in median times of approval are also sizable. The median age of projects approved is 9 and 24 months for Uruguay and Costa Rica, respectively.

2.1 Time to Approval: A Non-Parametric Approach

In this section, we analyze the likelihood of approval through the lens of the survival and

[1] There are two alternative moments reported in the system to consider as the birth date of any project: the "*start*" and "on" date. The *start* date occurs when a predetermined number of hours has been reported to the operation; the *on* date reflects the time when a project is registered on the pipeline. However, this information is not necessarily available for all sample projects and might only reflect administrative changes.

cumulative incidence curves. This allows us to estimate an event's incidence as a function of follow-up time and provides important information on the approval process based solely on observed frequencies.

Projects at any given point in time are cataloged in one of three states: either they are pending approval, they have been approved, or they are classified as off-pipeline. Not all projects registered at the IDB end up being approved; there is a chance that some projects become off-pipeline during this process. Being off-pipeline corresponds to a competing risk in the approval process. More specifically, a competing risk is an event that precludes the existence of our event of interest, and it requires to be accounted for in all our estimations.

Figure 2 depicts project attrition from the pipeline by cause. This figure combines the Kaplan-Meier estimate of overall approval with the cumulative incidence function of our two competing events.[2] In the absence of competing risks, the Kaplan-Meier estimate of the survival function is frequently used for estimating the survival function. However, this specification creates a bias when a competing risk is present, as projects off-pipeline are considered still at risk of being approved.

Figure 2 shows that the yellow area corresponds to the probability that a project remains in the pipeline (survival function). The two other areas reflect the partition between the competing events of being approved (blue area) or being classified as off-pipeline (purple area). During the first month of creation, 100 percent of projects are classified as pending approval. As expected, this fraction decreases over time. Situated at 18 months after creation, 60 percent of projects are classified as approved and 18 percent as off-pipeline. Situated at 40 months after creation, we observe a pronounced reduction in projects pending approval, which increasingly become off-pipeline. The proportion of projects approved remains relatively constant, around 70 percent, while the share of projects off-pipeline is around 21 percent.

This analysis abstracts from a project- or country-specific characteristics that affect approval times. Nevertheless, there is an important lesson to highlight: after 40 months of creation, the fraction of projects approved remains relatively constant, and around 70%. This suggests that the reduction observed in the fraction of projects in the pipeline after 40 months is mainly due to an increased fraction of off-pipeline projects. This finding is in line with Avellán and León-Díaz (2019), who find that, in the case of projects listed in the Operational Program Report (OPR), the likelihood of approval decreases for projects that remain in the pipeline for an extended

[2] This graph uses the fact that the survival and incidence functions add up to one and that the survival function can be obtained from Kaplan-Meier or as the complement of the sum of the incidence functions.

period.

3. Quantitative Analysis

We extend the analysis of the previous section to study the factors explaining the time to approval. We examine the effect of project-specific characteristics on the probability of approval. The first characteristic pertains to the role of projects' size. We test whether the distinction between bigger and smaller projects results in significant differences in approval time. In our baseline scenario, we define the *relative size* of a project as the ratio between its value (measured in U.S dollars) over approvals' total value. Thus, *relative size* becomes a measure of how big a project is with respect to the overall IDB's envelope. However, this measure is fixed and positively correlated with country size since larger countries tend to have bigger projects. We consider alternative measures in our robustness exercises, where we compute the relative size of a project relative to the total value of projects approved by country or sector.

The second characteristic considered in this paper is the *change in team leaders*. We compute the number of team leaders registered for each project before its approval. The third characteristic is the *cumulative hours*. This variable corresponds to the total number of hours reported in preparation at each month of the project after its creation and before its approval; it allows us to assess whether preparation times affect approval speed. The fourth characteristic is the cumulative sum of total *non-personal costs* added to the project. This variable aims to capture the role of preparation costs in the time to approval. The fifth dimension considered in this study is *significance.* We proxy the degree of significance of projects by the share of time, between the project's creation and approval dates, in which the project was classified in the pipeline A.

Finally, we include country characteristics and a dummy variable for election years. This dummy takes the value of 1 when a country has either presidential or parliamentary elections, given by its specific government type. We also include a lag of the elections to assess any non-immediate effects of elections in the time to approval. We also include a dummy to account for countries that are part of the Fund for Special Operation (FSO): Bolivia, Guyana, Honduras, and Nicaragua. Additional controls include country and sector fixed effects and the month of creation of the project. All standard errors are clustered at the country-sector level.

We study how these project- and country-level variables affect the time to approve a project. Our analysis provides insights into two interrelated questions. First, which factors affect the rate at which approvals and projects off-pipeline occur? We resort to estimating the cause-specific hazard, which depicts the effect of covariates on the rate at which events occur for projects currently on the pipeline. In this context, the Cox model's use gives us unbiased estimates of the hazard in the presence of competing risks. We can also provide a direct interpretation of the estimated coefficients as the impact on the rate of occurrence of the event of interest.

Second, What is the probability of approval of a project with a specific set of characteristics? And how these probabilities evolve with time? However, as not all projects created are approved, we must accommodate our empirical strategy to address the presence of this competing event; this is because variables affecting the rate at which a project is cataloged as off-pipeline influence indirectly the probability of the project’s approval. Therefore, to calculate the probability of approval, we first compute the cumulative incidence function (CIF).

The CIF describes the incidence of occurrence of an event while taking competing risks into account. The computed CIF functions are a helpful tool to create a metric characterizing all projects that would require further assistance in their approval process.[3]

3.1 Baseline Results

What determines the rate of approval? To answer this question, we resort to our estimates of standard Cox models reported in columns (1) and (4) of Table 1. The estimated cause-specific hazard ratios for approvals are 1.049 for a 1% increase in the size of the project (relative to the IDB’s total pipeline). However, this value is not significantly different from zero. These results remain unchanged after controlling for country and sector fixed effects, as shown in column (4).

We find evidence that changes in the number of team leaders negatively affect the rate at which approvals occur. The coefficient of 0.730 for a change in the number of team leaders before approval reported in column (1) implies that the hazard of approval is 27 percentage points lower for projects with one change in team leader than for projects with no changes. As reported in column (4), these results are not driven by country- or sector-specific characteristics, as the coefficient remains significative in that specification.

Total cumulative hours and non-personal costs have a significant but small impact on approval rate, as reported in columns (1) and (4). Besides, we find that a 1% increase in the time that a project is cataloged as pipeline A is associated with a 2.5% increase in approval hazard. Column (4) shows that this hazard remains stable after including sector and country fixed effects.

The coefficient for parliamentary or presidential elections is 1.269 in the baseline specification

[3] The CIF is computed based on the sub-hazard ratios used in Fine and Grey (1999). The coefficients obtained from the estimation of this model are not directly interpretable. However, they have a direct mapping with the CIF, which helps compute the probability of approval.

and 1.275 in the specification with fixed effects, both statistically different from zero. Thus, elections years are associated with a 26% increase in approvals rate; this rate goes up to 27% after including fixed effects. There a no lagged effects of election years in the rate of approval, as the coefficient associated with the lagged elections dummy variable is not significant. There is no difference in the approval rate of projects in countries that are part of the FSO program.

What determines the rate at which off-pipeline projects occur? Following the same approach for approvals, column (2) and column (5) in Table 1 present the estimated cause-specific hazard ratios for off-pipeline projects. The estimated coefficients for the size of a project is 1.046 in the baseline specification and 1.119 after including fixed effects. Like the case of approval, size does not play a significant role in the rate at which projects are off-pipeline. The total amount of hours used in the preparation and the cumulative cost are significant, but the magnitude of the impact on the off-pipeline rate is negligible.

Changes in team leaders are negatively associated with the rate at which projects are off-pipeline. Based on the results of columns (2) and (5) in Table 1, we can conclude that the project's team leader's changes reduce by 30%, the rate at which the project is off-pipeline. Moreover, these results remain unchanged after controlling for country and sector fixed effects. Also, a 1% increase in the time a project is cataloged as pipeline A reduces the rate at which a project is off-pipeline by 0.7%. We do not find an effect of elections years in the rate of off-pipeline. The rate of off-pipeline projects for countries in the FSO is 53% higher than for countries outside it; however, this difference in the rate dissipates when controlling for sector and country fixed effects.

What is the probability of the occurrence of approvals? To answer this question, we should consider the Sub-Distribution Hazard (SDH). The SDH reports the relative change in the instantaneous *rate* of the occurrence of approval in those projects that are not being approved or that have experienced a competing event (off-pipeline). We estimate the SDH using the Fine and Gray (1999) model for competing risk events. Although there are no direct interpretations of the estimated coefficients, there is a direct mapping between the coefficients estimated and the CIF. This means that variables that are associated with an increase (decrease) in the SDH will be also associated with an increase (decrease) in the incidence of the event (Austin and Fine, 2017).

We focus on the specification with country and sector fixed effects reported in column (6) of Table 1. Changes in team leader, the relevance of the project, and periods of election have a non-marginal impact on approvals' incidence. Total hours and total non-personal costs have incidence, but their magnitudes are negligible. To better assess how the covariates affect the incidence of approval, we report the CIF functions for different numbers of team leaders, relevance, and elections years.[4]

Changes in team leaders reduce the probability of approval over time. Figure 3 compares the probabilities of approval for a project with only one team leader versus a project with three team leaders before approval. By month ten after creation, the probability of approval for a project with one team leader is 22%. With three team leaders 17%; by month 20 after creation, this probability is 44% for a project with one team leader and 32% for three team leaders.

More significant projects have a higher probability of approval. While this seems obvious, we wanted to know the quantitative differences. Figure 4 reports the bands of approval in terms of relevance. The upper bound corresponds to the probability of approval for a project which has been classified as pipeline A during its lifetime, and the lower bound to the probability of approval of a project that has never been classified as pipeline A. By month 10 after registration, the probability of approval of a project depending on their relevance ranges between 7% and 31%. Moreover, by month 20 after registration, the probability that the project has been approved ranges between 9% and 59%.

Finally, election years have a higher incidence on approvals. Figure 5 presents the CIF of approval for projects in election and non-election years. By month 10 after creation, a project in no election year has a probability of 20% approval, while the same project in election year has a probability of 22%. By month 20 after creation, the probability of a project's approval when there are no presidential/parliamentary elections is 41%, while the probability for the same project is 46%.

3.2 An Application to the Operative Program Report (OPR) 2020

We use the framework developed in the previous section in two ways: first, to define a metric to detect projects that could require further attention to complete their approval process. Second, to predict the probability of approval by Jan-2020 in a subset of 49 projects listed in the OPR.[5]

Our metric to compare projects relies on estimating the incidence curves for all projects

[4] All graphs reported in this section correspond to projects for a given country, sector, and creation month. The remaining variables which are not changing in the graphs are taken at their mean observation.

[5] The projects considered are BH-L1048, BL-L1032, BO-L1202, BO-L1203, BO-L1205, BO-L1209, BO-L1212, BO-L1213, BR-L1512, BR-L1523, BR-L1535, CH-L1141, CO-L1240, CO-L1242, CO-L1245, CO-L1248, CO-L1255, CO-L1256, CR-L1140, EC-L1253, EC-L1257, EC-L1261, ES-L1136, ES-L1138, GU-L1165, GU-L1171, HO-L1194, HO-L1203, JA-L1083, ME-L1288, NI-L1147, NI-L1149, NI-L1154, NI-L1155, PE-L1250, PE-L1251, PE-L1252, PE-L1254, PR-L1159, PR-L1165, PR-L1166, PR-L1172, PR-L1173, SU-L1058, SU-L1059, TT-L1053, TT-L1056, UR-L1090 and UR-L1163.

already approved in the sample of these incidence curves.[6] Figure 7 summarizes these curves by presenting the median (dark blue line) and percentiles 25 and 75 (light-blue shaded area) of the historical approval

In addition, we evaluate the position of each project listed in OPR in the historical incidence curve. Yellow dots correspond to the combination of age and probability of approval of the 49 projects listed in the OPR with information in December 2020. The average probability of approval for these projects is 55%; however, this value masks considerable heterogeneity among projects. These probabilities correspond to a specific point in time and a specific set of project characteristics, but we do not expect them to change considerably. This is because, as stated in the previous section, project conditions that are more in hand to be modified by a team leader, such as total hours in the preparation or non-personal total costs, have little incidence in the rate of approval.

There are two additional facts to point out in Figure 7. First, the average age of projects in our OPR sample between January and December 2020 will oscillate between 13 and 25 months. These numbers are in range with the average age of approval of 16 months, discussed previously. Moreover, Second, projects of the same age exhibit considerable variability in their probability of approval. This reinforces our view that the combination of specific project characteristics and electoral conditions impacts approval times at the Bank.

A Monitoring tool for the Approval Process. We divide the incidence curves into three regions based on their slopes. Each region condenses project and country information in a unique metric based on estimates of Table 1. These regions also depict information about projects' age, current probabilities of approval, the chances that this probability will increase in the future, and how they compare with similar age projects. Projects within shaded areas are more aligned to historical patterns of the approval process. However, focusing on projects outside the shaded areas allows us to identify those requiring further assistance to complete the approval process.

The first region (Region I) in Figure 7 is an early-warning area. Projects in this region are below the average age of approval and have an increasing probability of it. Projects in Region I and above (below) the shaded area are young projects with a high (low) probability of approval. Projects below the shaded area still have a positive prospect of increasing their probability of approval

[6] Based on the latest information available, and the information concerning presidential/parliamentary elections in 2020Elections in 2020 are scheduled in Belize, Bolivia, Dominican Republic, Guyana, Suriname, and Trinidad and Tobago.

in the future. These projects should be subject to early monitoring as they exhibit probabilities subpar relative to projects of the same age.

The second region (Region II) is a Warning area. Projects in this area are above the average age of approval at the Bank, and they have an almost flat probability of approval. Nevertheless, projects above the shaded area already have a large probability of approval. Thus, the main focus in this region should be given to projects below the shaded area. These projects will require higher monitoring as their chances of approval will barely increase over time.

Finally, the third region (Region III) is a structural-review area. A fully flat probability of approval characterizes it. This means that over time, only the probability of being classified as off-pipeline is increasing. Projects above the shaded area have a large tenure in the pipeline and a high probability of approval; thus, it is necessary to analyze the factors preventing the approval of these projects. Projects below the shaded area have a large tenure in the pipeline, low probability of approval, and no chance of it increasing over time. This would require a reassessment of the initial conditions under which these projects were conceived to verify its current significance.

4. Robustness Checks

4.1 Sample Redefinition

In our sample, approximately 20% of all approved projects were approved within the same year of their creation. To assess whether projects with a fast approval history drive the results presented in our previous section, we redo our estimates, excluding all created and approved projects within the same year. The results of this estimation are reported in Table 2.

In Table 2, we observe that the exclusion of fast approved projects does not substantially affect how covariates impact approvals' rate. One important exception is total non-personal costs, which become not statistically different from zero. However, the rest of our previous conclusions remain unaltered; for projects with more than 12 months from creation, the approval rate is increasing in years of election and decreasing with changes in team leaders before approval. Also, projects that remain classified as pipeline A for a more extended period have a higher rate of approvals. Since this sample redefinition involves only excluding projects that were approved, there are no changes in the hazard rates associated with projects being classified as off-pipeline.

Since the coefficients of the sub-hazard rate reported in columns (3) and (6) are statistically and quantitatively similar to those reported in Table 1, we do not find sizable variations in the probabilities of approval reported in our previous sections.

4.2 Alternative Project-Size Measures

In section 3.1 we did not find an association between the size of a project (relative to the total amount approved by the Bank during the year the project was created) and the rate of occurrence of approvals, off-pipeline projects, or for the overall probability of approvals. However, since the size of a project is tightly associated with the country's size, we might not be capturing any additional information beyond any fixed country characteristics.

We modify our variable of scale and introduce some alternative measures for the size of projects relative to different scales at the sector and the country level. First, we define a project's size relative to approvals' total value in its corresponding sector or country during the year. Second, we define the size of a project relative to all projects' value in the pipeline in its corresponding country.

We report only the results, including country and sector fixed effects in Table 3. Columns (1) to (3) report the results for variables scaled at the sector level. We find that a project's size relative to the amount approved during the year in its corresponding sector does not affect either the hazard rate of approvals, the hazard rate of off-pipeline, or directly the sub-hazard rate and the probability of approval. Columns (4) to (6) in Table 3 report the results for variables scaled at the country level. We find that a project's size measured in terms of a country is negatively associated with approvals' rate and probability. At the same time, it does not affect the rate of projects classified as off-pipeline.

Why bigger projects at the country level have a lower probability of approval? This result appears counterintuitive, but it could result from the mechanic relationship between approvals and a project's size. To see this, consider the case of a year in which total approvals for a given country are lower. When fewer projects are approved, the project's relative size in the pipeline is bigger, creating a positive link between fewer approvals and bigger projects.

To overcome this problem, we introduce the relative size of a project in terms of the value of the pipeline of the country. This measure reduces the influence of approvals in the relative size of projects and introduces dynamics in the measure. This is the case as the total value of projects in the pipeline at any given point in time is variant due to approvals, projects becoming off-pipeline, and the creation of new projects. The results for approvals are presented in columns (7)-(8); in this context, a bigger project has a higher rate and probability of approval.

5. Project Profile Approval

Up to this point, we have modeled that projects could be considered for approval since the moment they are created. However, the approval process includes the completion of several milestones, and the failure to complete one of those prevents the approval of a project. In other words, projects just created are almost impossible to be approved. We validate how important this modeling choice is for our results by modifying the point at which a project is created -and possibly ready to be considered for approval- as the date after the project profile (PP) is completed. This date gets closer to reflect a more precise point for projects to be considered for approval; however, using this point in time comes at the cost of reducing the number of observations for our estimation since PP is not available for all projects in the sample. Our baseline model was estimated using 13,337 observations, while the model using the project profile includes 5,657 observations.

The results using the date of PP approval as the date for creation are reported in Table 4. One general observation is that the standard errors reported are larger since we have a smaller number of observations. By comparing column (1) and column (4), we observe no significant changes in the hazard rates of approval. Changes in team leaders, the time remaining in pipeline A and election years are still relevant to understanding the approval rate. We observe that the sub-distribution hazard coefficients reported in columns (3) and (6) are similar to the ones reported in Table 1. Hence, the probabilities of approval are similar to the ones obtained previously.

However, based on the results reported in column (2) and column (5), we observe that no variable is significant to predict off-pipeline projects after the project profile is approved. This result is explained in part because only a small fraction of projects become off-pipeline after the project profile approval. To see this, Figure 8 depicts the frequencies of project classification after PP approval as a function of their time in the pipeline. The purple area, which represents projects off-pipeline only increases slightly after ten months of PP approval. Then, after 25 months, it stabilizes around 7%. Thus, the yellow area reduction representing projects pending approval is mainly accounted for the increase of the blue area representing approved projects.

In summary, we find that the rates at which different covariates affect the approval process and the overall probabilities of approval are not affected by our definition of project creation. However, when we use the PP approval as the creation date, we do not find any relevant association between the variables included in this paper and the rate at which projects become off-pipeline.

6. Final Remarks

The time it takes to approve a project can vary systematically due to the very nature of the approval process and the specific characteristics of the projects presented. These characteristics can include the number of team leader changes before approval, the relevance of the project, the year of approval and whether there are presidential/parliamentary elections, and the size of a project relative to a country's pipeline. These findings are an essential element that should be considered when assessing the time to prepare any project.

The results suggest that there are factors beyond the Bank control that are associated with longer preparation times. The project's specific country and sector characteristics can influence its approval, making it faster or slower depending on the circumstances. Besides, we find evidence that during years of presidential or parliamentary elections, the time required to approve a project decline.

However, the fact that team leader changes are associated with lower approval probabilities (longer preparation times) suggest the existence of levers that the Bank could use to shorten the approval process. For example, suppose changes in team leaders result from significant project design changes or changing priorities once the project is registered. In that case, one could argue that maybe the project request was at a preliminary stage and that there could be gains to manage the programming dialogue to more mature or less volatile projects. This paper has not looked into what drives team leaders' changes to better understand these underlying factors but is a fruitful research avenue.

There are additional extensions to understand better what mechanisms are driving the interaction observed in the data. In particular, the causal forces behind the relevance or not of project size. This analysis is part of our future research agenda.

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Table 1. Baseline Estimation Model

	No Fixed-Effects			Fixed-Effects		
	Cause-Specific Hazards		SDH	Cause-Specific Hazards		SDH
	Approvals	Off-Pipeline		Approvals	Off-Pipeline	
	(1)	(2)	(3)	(4)	(5)	(6)
Relative size	1.049	1.046	1.029	1.039	1.119*	1.022
	(0.04)	(0.04)	(0.04)	(0.04)	(0.07)	(0.04)
Changes Team Leader	0.730***	0.689***	0.833***	0.677***	0.707***	0.777***
	(0.04)	(0.07)	(0.06)	(0.04)	(0.07)	(0.06)
Cumulative Hours	1.001***	1.000***	1.001***	1.001***	0.999***	1.001***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Cumulative Non-Personal Costs	1.000**	1	1.000***	1.000**	1	1.000**
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Relevance	1.025***	0.993**	1.022***	1.024***	0.994**	1.021***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Dummy Elections	1.269**	0.816	1.245*	1.275**	0.864	1.248**
	(0.12)	(0.18)	(0.15)	(0.13)	(0.18)	(0.14)
Lag Dummy Elections	0.944	0.839	0.973	0.979	0.872	0.979
	(0.11)	(0.14)	(0.11)	(0.12)	(0.14)	(0.12)
FSO	0.984	1.535**	0.955	0.883	1.413	0.889
	(0.13)	(0.28)	(0.14)	(0.18)	(0.67)	(0.23)
Country Fixed Effects	No	No	No	Yes	Yes	Yes
Sector Fixed Effects	No	No	No	Yes	Yes	Yes
Observations	13,337	13,337	13,337	13,337	13,337	13,337

Note: SDH stands for Subdistribution Hazard Ratios. Standard errors are reported in parenthesis. *** (**) [*] denotes significance at the 1 (5) [10] percent level.

Table 2. Robustness I: Excluding Project with an Age less than One Year

	No Fixed-Effects			Fixed-Effects		
	Cause-Specific Hazards		SDH	Cause-Specific Hazards		SDH
	Approvals	Off-Pipeline		Approvals	Off-Pipeline	
	(1)	(2)	(3)	(4)	(5)	(6)
Relative size	1.047	1.047	1.024	1.037	1.124**	1.018
	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.05)
Changes Team Leader	0.767***	0.683***	0.883*	0.721***	0.707***	0.821**
	(0.04)	(0.07)	(0.07)	(0.05)	(0.07)	(0.07)
Cumulative Hours	1.001***	1.000***	1.001***	1.001***	1.000***	1.001***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Cumulative Non-Personal Costs	1	1	1	1	1	1
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Relevance	1.028***	0.993**	1.024***	1.025***	0.994**	1.023***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Dummy Elections	1.368***	0.826	1.329**	1.371***	0.845	1.292**
	(0.14)	(0.18)	(0.17)	(0.16)	(0.17)	(0.16)
Lag Dummy Elections	0.877	0.846	0.906	0.866	0.908	0.864
	(0.1)	(0.14)	(0.1)	(0.1)	(0.14)	(0.1)
FSO	1.016	1.537**	0.979	0.921	1.392	0.907
	(0.16)	(0.28)	(0.16)	(0.22)	(0.64)	(0.28)
Country Fixed Effects	No	No	No	Yes	Yes	Yes
Sector Fixed Effects	No	No	No	Yes	Yes	Yes
Observations	12,313	12,313	12,313	12,313	12,313	12,313

Note: SDH stands for Subdistribution Hazard Ratios. Standard errors are reported in parenthesis. *** (**) [*] denotes significance at the 1 (5) [10] percent level.

Table 3. Robustness II: Alternative Measures of Size

	Sector			Country				
				Total Approvals			Total Pipeline	
	Cause-Specific Hazards		SDH	Cause-Specific Hazards		SDH	Cause-Specific Hazards	SDH
	Approvals	Off-Pipeline		Approvals	Off-Pipeline		Approvals	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Relative size: Total Sector Approvals	1.003	1.119	1.022					
	(0.04)	(0.07)	(0.04)					
Relative size: Total Country Approvals				0.996**	1.001	0.997**		
				(<0.01)	(<0.01)	(<0.01)		
Relative size: Total Country Pipeline							1.110***	1.106***
							(0.04)	(0.04)
Changes Team Leader	0.677***	0.707***	0.777***	0.676***	0.740***	0.780***	0.666***	0.771***
	(0.04)	(0.07)	(0.06)	(0.04)	(0.07)	(0.06)	(0.04)	(0.06)
Cumulative Hours	1.001***	0.999***	1.001***	1.001***	0.999***	1.001***	1.001***	1.001***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Cumulative Non-Personal Costs	1.000**	1	1.000**	1.000***	1	1.000**	1.000***	1.000**
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Relevance	1.024***	0.993**	1.021***	1.023***	0.993***	1.021***	1.023***	1.021***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Dummy Elections	1.275***	0.864	1.248**	1.247**	0.813	1.218*	1.280**	1.250**
	(0.13)	(0.18)	(0.14)	(0.13)	(0.17)	(0.13)	(0.13)	(0.13)
Lag Dummy Elections	1.012	0.905	1.007	0.979	0.872	0.972	1.008	1.005
	(0.12)	(0.14)	(0.12)	(0.11)	(0.15)	(0.11)	(0.12)	(0.12)
FSO	0.867	1.373	0.873	1.211	0.948	0.831	0.831	0.858
	(0.16)	(0.66)	(0.22)	(0.16)	(0.40)	(0.21)	(0.15)	(0.21)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,337	13,337	13,337	13,337	13,337	13,337	13,337	13,337

Note: SDH stands for Subdistribution Hazard Ratios. Standard errors are reported in parenthesis. *** (**) [*] denotes significance at the 1 (5) [10] percent level.

Table 4. Project Profile

	No Fixed-Effects			Fixed-Effects		
	Cause-Specific Hazards		SDH	Cause-Specific Hazards		SDH
	Approvals	Off-Pipeline		Approvals	Off-Pipeline	
	(1)	(2)	(3)	(4)	(5)	(6)
Relative size	0.993	1.092	0.995	1.004	1.365	0.997
	(0.06)	(0.12)	(0.05)	(0.05)	(0.34)	(0.05)
Changes Team Leader	0.849***	0.766	0.902*	0.847***	0.902	0.891*
	(0.05)	(0.13)	(0.05)	(0.05)	(0.20)	(0.05)
Cumulative Hours	1.000***	1	1.000***	1.000***	1	1.001*
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Cumulative Non-Personal Costs	1.000**	1.000***	1	1.000**	1.00**	1.000*
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Relevance	1.021***	0.986**	1.021***	1.019***	0.981	1.019*
	(<0.01)	(0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Dummy Elections	1.119	1.098	1.142*	1.200**	0.899	1.229*
	(0.09)	(0.32)	(0.09)	(0.11)	(0.32)	(0.11)
Lag Dummy Elections	0.978	1.031	1.008	1.022	0.774	1.079
	(0.09)	(0.27)	(0.10)	(0.10)	(0.28)	(0.11)
FSO	1.075	2.206*	1.054	0.79	3.707	0.729
	(0.16)	(0.98)	(0.16)	(0.23)	(4.52)	(0.23)
Country Fixed Effects	No	No	No	Yes	Yes	Yes
Sector Fixed Effects	No	No	No	Yes	Yes	Yes
Observations	5,657	5,657	5,657	5,657	5,657	5,657

Note: SDH stands for Subdistribution Hazard Ratios. Standard errors are reported in parenthesis. *** (**) [*] denotes significance at the 1 (5) [10] percent level.

Figure 1

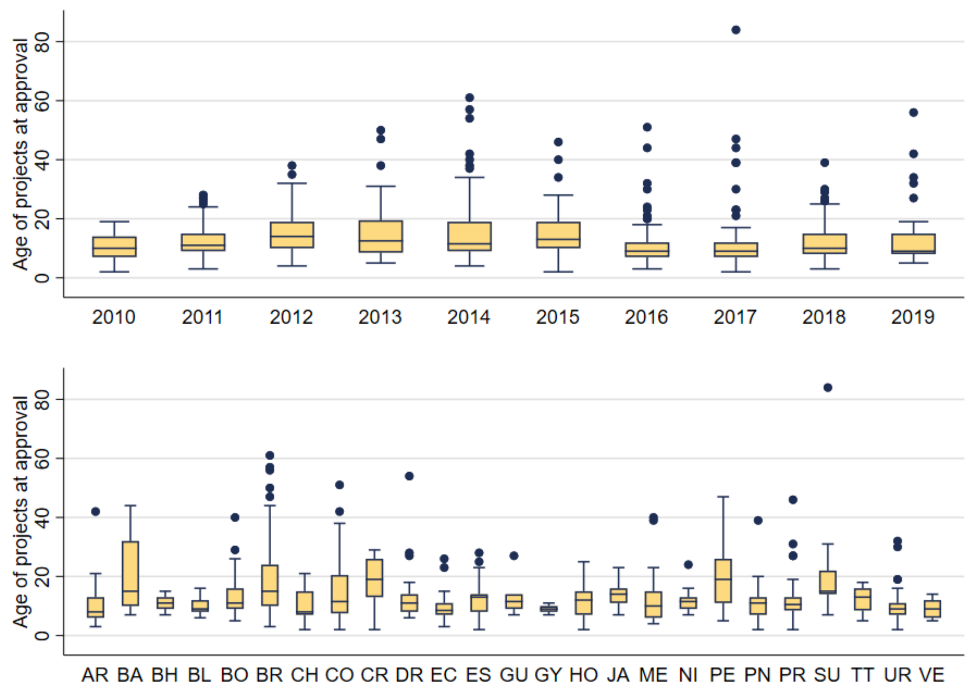


Figure 2

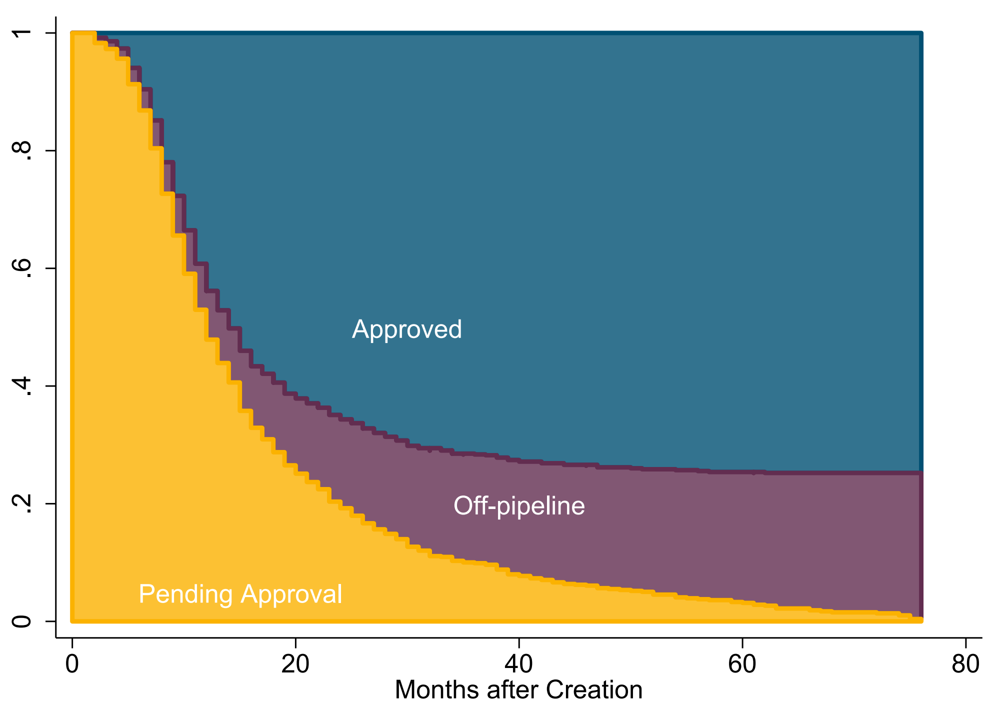


Figure 3

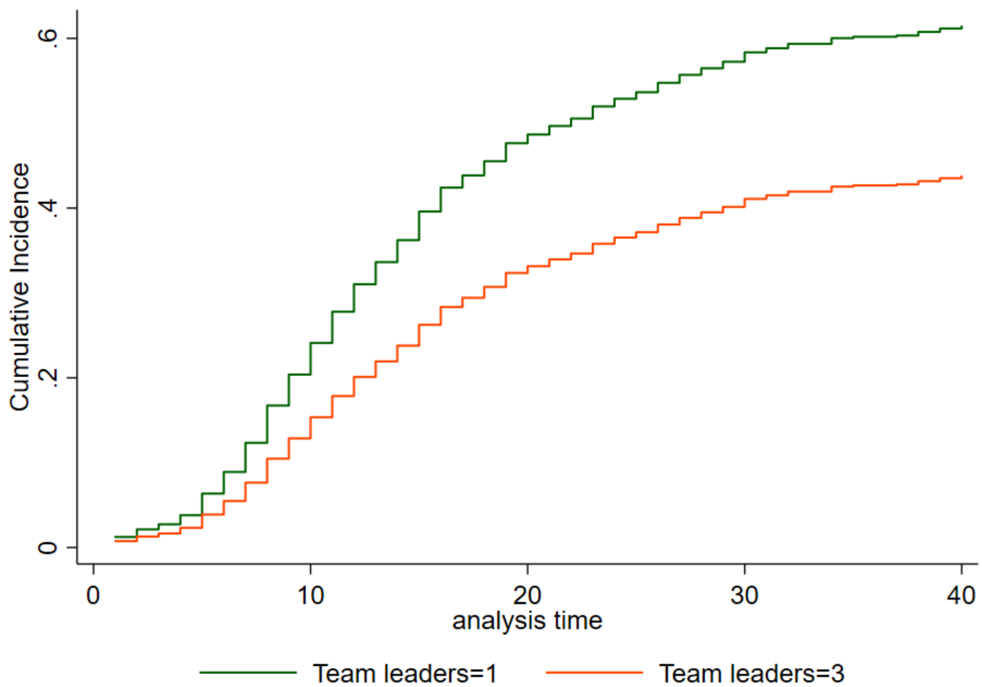


Figure 4

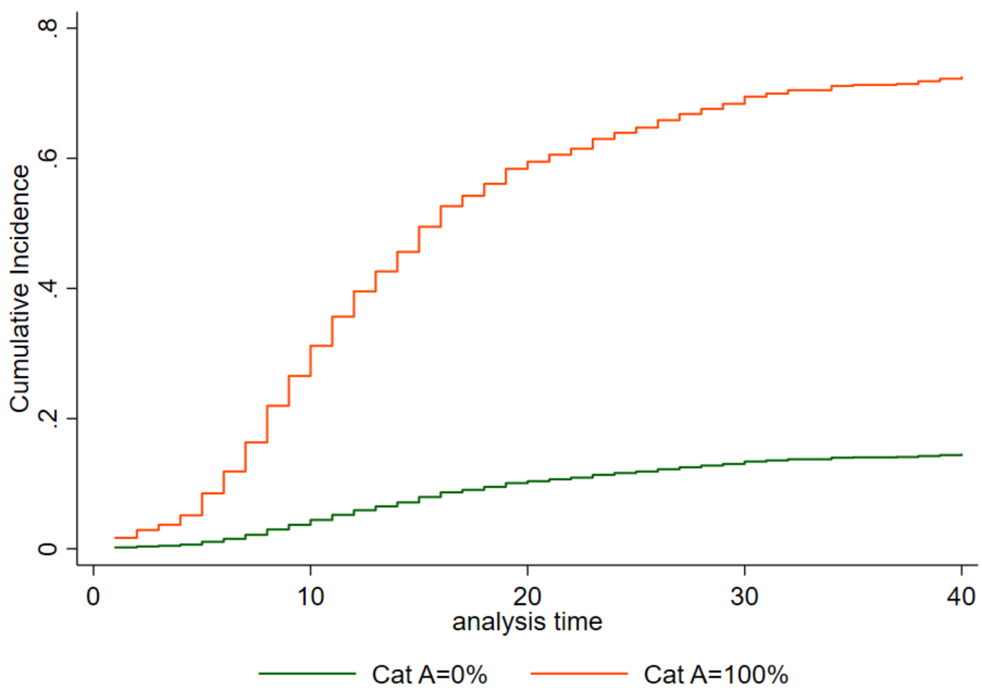
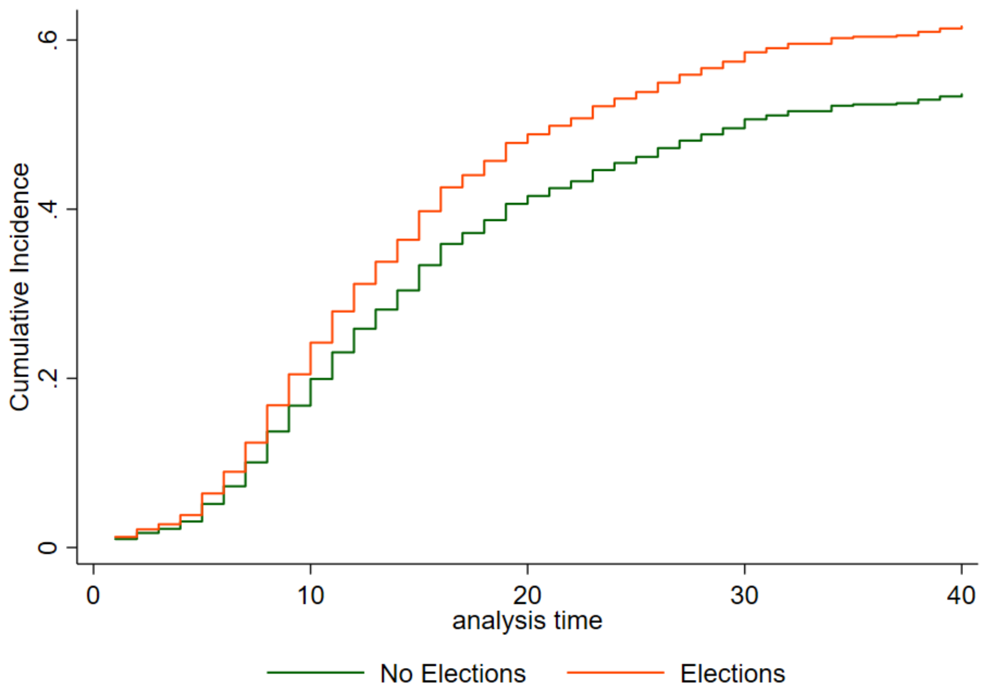


Figure 6



Cumulative Incidence
0
.2
.4
.6
0
10
20
30
40
analysis time
No Elections
Elections

Figure 7

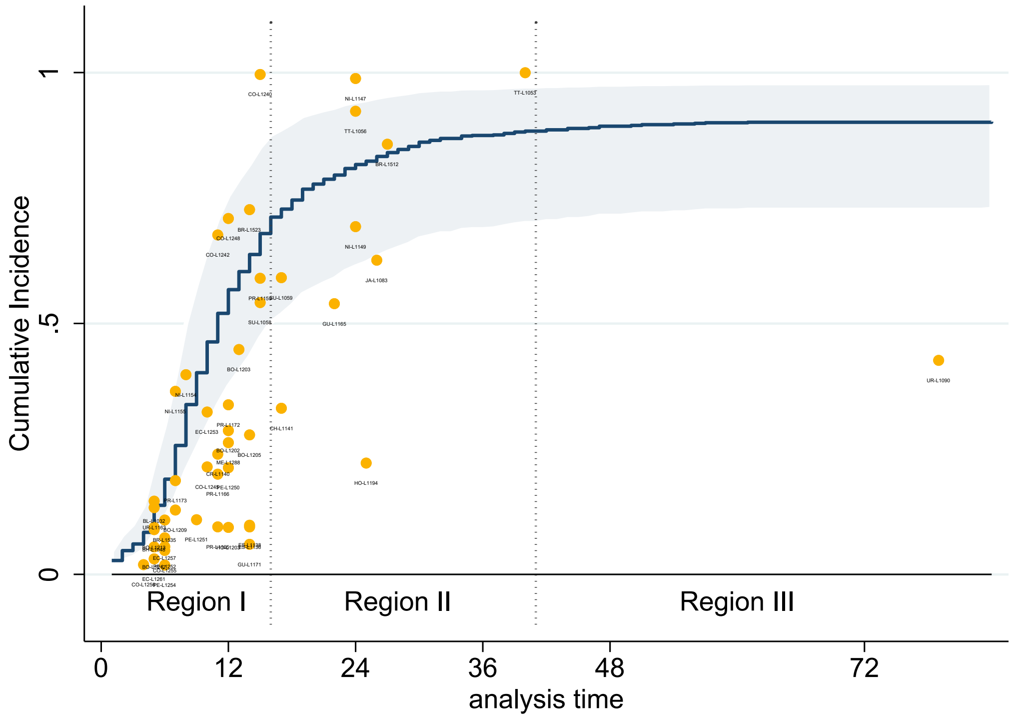
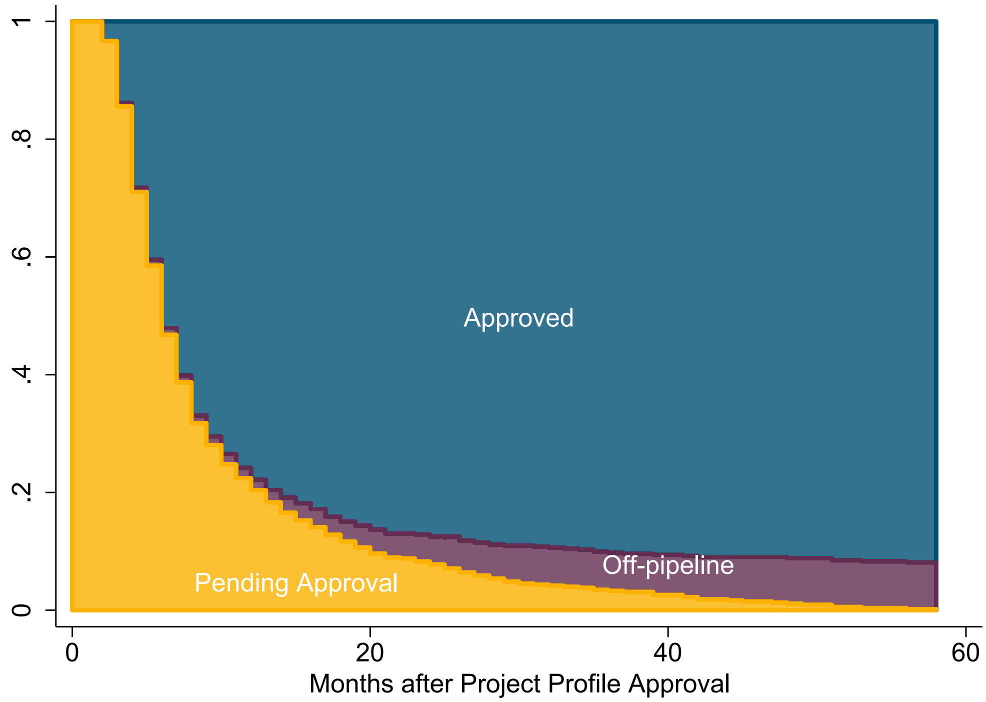

Cumulative Incidence
0
.5
1
Region I
Region II
Region III
0
12
24
36
48
72
analysis time

Figure 8


Approved
Off-pipeline
Pending Approval
0
.2
.4
.6
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1
0
20
40
60
Months after Project Profile Approval