Inter-American Development Bank

Is Shorter Project Preparation Time Associated with Longer Project Execution Time?

Office of Strategic Planning and Development Effectiveness

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Is Shorter Project Preparation Time Associated with Longer Project Execution Time?

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Abstract

It has been argued that there might be a trade-off between project preparation and execution times, meaning that projects that take less time to prepare, all else being equal, would take more time to execute. This paper explores this claim by studying the relationship between the chronological time elapsed during preparation and execution periods for sovereign-guaranteed projects supported by the Inter-American Development Bank (IDB). The empirical analysis shows that after controlling for several factors that could affect the time elapsed executing a project, there is no systematic evidence that links project preparation time with project execution time.

The key takeaways of this paper are:

- Preparation time for sovereign-guaranteed operations supported by the IDB has been decreasing in recent years.
- The unconditional relationship between preparation and execution time suggests a positive correlation between both variables.
- After controlling for project characteristics, country effects, and aggregate factors, there is no systematic evidence that supports the existence of a trade-off between preparation and execution times in sovereign-guaranteed investment loan projects.

JEL codes: O21, O22
Keywords: investment projects, preparation time, execution time

Introduction

In striving to optimize its practices, the Inter-American Development Bank (IDB) continuously looks for ways to increase the efficiency of its project preparation and execution processes.[1] When efficiency gains refer to shorter process times, it is imperative to ensure that the time reduction of one process does not have negative consequences on the subsequent process. In other words, while a quicker project preparation process may be perceived as an improvement in the IDB's efficiency, the shortening of that period time may raise the concern that projects are being rushed into approval by postponing preparation requirements to the execution phase, in turn increasing execution times.

The IDB tracks its project preparation performance in its Corporate Results Framework (CRF), which shows that in 2019 at least 87 percent of the IDB's sovereign-guaranteed investment loan projects will be prepared in 12 months or less.[2] This indicator has been improving steadily since 2014, when it stood at 83 percent, and the improvement has been on or above the target since 2015. A cursory look at data on project preparation time for completed projects confirms that the median preparation time from project start to approval has been decreasing over time. While the median time from the start of project preparation to completion of the project profile[3] has been roughly constant since 2010,[4] the median time between project profile and project approval has been decreasing. Figure 1 shows the time elapsed between the completed project profile and project approval. The fact that the preliminary information shows a decrease in IDB project preparation time led us to explore the consequences of this reduction for project execution time.

The relationship between project preparation time and execution time has also been addressed in a report by the IDB's Office of Evaluation and Oversight (OVE) (Soriano et al. 2013). That report points out that although there have been improvements in the average speed of project preparation in recent years, those improvements have been minor for projects in high-middle-income countries (HMICs).[5] That is, the reduction in IDB project preparation time has mainly been driven by projects in countries other than HMICs. However, project execution time in HMICs has improved more than in other countries, according to the same OVE report. This association of results prompted OVE to question whether faster preparation time in non-HMIC projects resulted in the approval of projects that were not quite ready for implementation.

[1] The IDB project preparation process encompasses products and activities related to the design and approval of operations to finance economic and social development through loans and grants to public entities. The project execution period refers to the activities related to project supervision from the project's approval to its closing date.

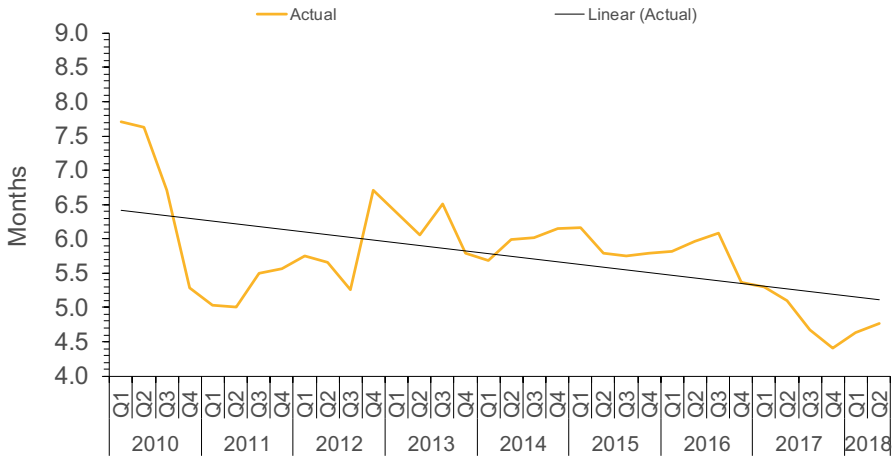
[2] Performance Indicators are available on the Corporate Results Framework website at https://crf.iadb.org/idbg-performance.

[3] The project profile is the first milestone in project preparation. It is a document that provides basic information on the project, including its justification and objectives, technical aspects, relevant sector background, proposed environmental and social safeguards, fiduciary evaluation, projected funding amounts, and a preliminary agenda for project execution.

[4] The median time between the completion of a project profile and the start of the project has fluctuated at around 130 days since 2010.

[5] Argentina, Brazil, Chile, Colombia, Mexico, Panama, Peru, Trinidad and Tobago, Uruguay, and Venezuela.

Figure 1: Time Elapsed from Project Profile to Approval for Sovereign-Guaranteed Investment Projects



Source: Prepared by the authors.

This paper empirically examines the relationship between preparation and execution time for a sample of IDB sovereign-guaranteed investment projects. The paper first describes the dataset and its main features, and then presents the methodology to determine the link between project preparation and execution time. Finally, the paper discusses the estimation results and their implications.

Data

To study the link between project preparation and execution time, this paper uses project-level data for IDB sovereign-guaranteed loans. “Preparation time” is hereafter defined as the number of days elapsed from the date a project profile is completed until the day the project is approved by the IDB Board of Executive Directors. “Execution time” is defined as the time elapsed between project approval and project closing (completion) dates. The sample includes data on projects from five modalities currently used by the IDB: Specific Investment Operations (ESP), Global Credit Programs (GCR), Global Multiple Works Operations (GOM), Multiphase Operations (PFM), and Technical Cooperation Loans (TCR). Tables 1 and 2 present the descriptive statistics of these data.

Table 1. Closed Projects by Country, Department, Modality, Environmental Classification, Approval and Closing Year

Country	Frequency
Argentina	33
Barbados	6
Bahamas	3
Belize	7
Bolivia	27
Brazil	56
Chile	10
Colombia	27
Costa Rica	5
Dominican Republic	16
Ecuador	21
EL Salvador	6
Guatemala	8
Guyana	12
Haiti	15
Honduras	31
Jamaica	10
Mexico	34
Nicaragua	32
Peru	18
Panama	27
Paraguay	13
Suriname	10
Trinidad and Tobago	5
Uruguay	21
Venezuela	10
Total	463

Department	Frequency
CSD	19
IFD	151
INE	198
INT	8
SCL	87
Total	463

Project's Modality	Frequency
ESP	357
GCR	14
GOM	27
PFM	56
TCR	9
Total	463

Environmental Classification	Frequency
A	10
B	182
B13	48
C	164
Total	404

Approval Year	Frequency
2002	33
2003	26
2004	38
2005	35
2006	50
2007	42
2008	60
2009	63
2010	51
2011	37
2012	19
2013	5
2014	2
2015	1
Total	462

Projects by Closing Year	Frequency
2010	41
2011	43
2012	44
2013	49
2014	83
2015	57
2016	75
2017	71
Total	463

Source: Prepared by the authors.

Note: IDB Departments: CSD: Climate Change and Sustainable Development Sector; IFD: Institutions for Development Sector; INE: Infrastructure and Energy Sector; INT: Integration and Trade Sector; SCL: Social Sector. Project modalities: ESP: Specific Investment Operations; GCR: Global Credit Programs; GOM: Global Multiple Works Operations; PFM: Multiphase Operations; TCR: Technical Cooperation Loans. Environmental Classifications: A: Likely to cause significant negative impacts or have profound implications affecting natural resources; B: Likely to cause mostly local and short-term negative environmental and associated social impacts for which effective mitigation measures are readily available; B13: Uncategorized Directive B.13 (environmental classification does not apply); C: Likely to cause minimal or no negative environmental and associated social impacts.

Table 2. Preparation Times, Execution Times and Relative Size of Closed Projects

Variable	Mean	Standard Deviation	Minimum	Maximum	Observations
Time between project profile and approval dates (in months)	12.253	11.196	1.414	87.500	391
Time between approval and first disbursement dates (in months)	14.338	9.755	0.230	71.984	462
Time between eligibility to closing dates (in months)	67.127	23.464	0.099	131.581	448
Time between approval to eligibility dates (in months)	12.490	8.904	0.131	68.534	462
Time between approval and closing dates (in months)	79.778	25.812	5.954	151.941	448
Time between first disbursement and closing dates (in months)	65.251	23.959	0.033	129.938	448
Relative size od the approved amount (%)	42.765	34.210	0.442	100.000	463

Source: Prepared by the authors.

Note: The relative size of the approved amount is the approved amount of a project as a percentage of the total approved amount of the projects in a country during the project's approval year.

There are 463 projects in the sample that were closed (completed) between 2010 and 2017. Table 2 presents the descriptive statistics for the time elapsed between projects' milestones dates, such as project profile approval, project approval, eligibility,[6] first disbursement, and closing.

This dataset raises the issue of self-selection, since only completed projects are included. To the extent that the excluded projects still under execution are older (i.e., they were approved earlier in time), we may introduce bias in the ordinary least square (OLS) estimates, since by construction we might be leaving out projects with execution difficulties. To address this issue, we now consider the set of all active projects in execution. To exploit these extended data we move from OLS to duration analysis, as explained below. Tables 3 and 4 present the descriptive statistics for the active projects (466 projects).

[6] The first date on which the loan contract conditions are partially or totally met, allowing for the partial or total disbursement of funds.

Table 3. Portfolio Projects by Country, Department, Modality, Environmental Classification, Approval and Closing Year

Country	Frequency
Argentina	49
Barbados	6
Bahamas	7
Belize	4
Bolivia	27
Brazil	82
Chile	7
Colombia	23
Costa Rica	8
Dominican Republic	11
Ecuador	27
EL Salvador	8
Guatemala	7
Guyana	11
Haiti	34
Honduras	15
Jamaica	9
Mexico	13
Nicaragua	20
Peru	19
Panama	10
Paraguay	18
Suriname	7
Trinidad and Tobago	8
Uruguay	32
Venezuela	4
Total	466

Department	Frequency
CSD	93
IFD	113
INE	170
INT	15
SCL	75
Total	466

Project's Modality	Frequency
ESP	357
GCR	23
GOM	65
PFM	16
TCR	5
Total	466

Environmental Class	Frequency
A	29
B	271
B13	32
C	125
Total	457

Approval Year	Frequency
1998	1
2005	1
2006	4
2007	6
2008	9
2009	22
2010	50
2011	50
2012	77
2013	74
2014	69
2015	50
2016	47
2017	6
Total	466

Source: Prepared by the authors.

Note: IDB Departments: CSD: Climate Change and Sustainable Development Sector; IFD: Institutions for Development Sector; INE: Infrastructure and Energy Sector; INT: Integration and Trade Sector; SCL: Social Sector. Project modalities: ESP: Specific Investment Operations; GCR: Global Credit Programs; GOM: Global Multiple Works Operations; PFM: Multiphase Operations; TCR: Technical Cooperation Loans. Environmental Classifications: A: Likely to cause significant negative impacts or have profound implications affecting natural resources; B: Likely to cause mostly local and short-term negative environmental and associated social impacts for which effective mitigation measures are readily available; B13: Uncategorized Directive B.13 (environmental classification does not apply); C: Likely to cause minimal or no negative environmental and associated social impacts.

Table 4. Preparation Times, Execution Times and Relative Size of Portfolio Projects

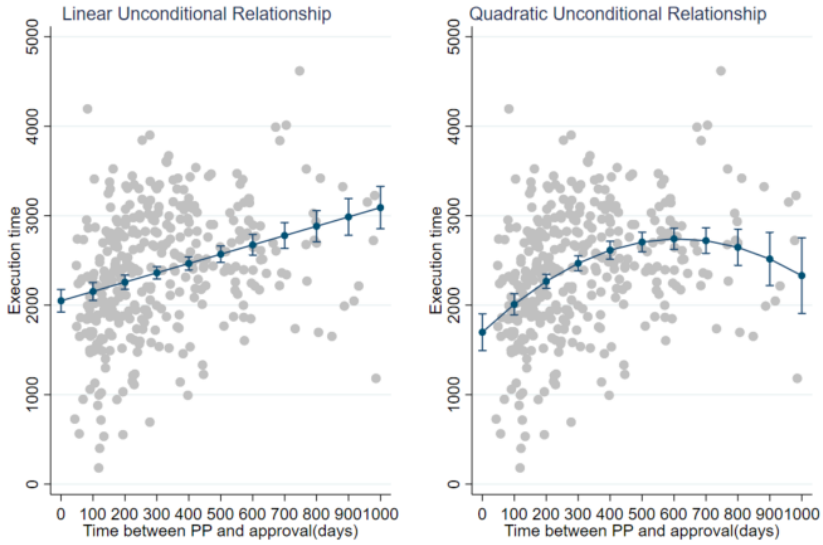
Variable	Mean	Median	Standard Deviation	Minimum	Maximum	Observations
Time between project profile and approval dates (in months)	8.463	6.020	7.321	1.579	51.711	421
Time between approval and first disbursement dates (in months)	15.899	12.632	11.254	0.197	83.158	460
Time between approval to eligibility dates (in months)	12.990	10.691	9.358	0.164	80.789	466
Relative size of the approved amount (%)	19.264	12.121	22.550	0.214	100.000	465

Source: Prepared by the authors.

Note: The relative size of the approved amount is the approved amount of a project as a percentage of the total approved amount of the projects in a country during the project's approval year.

To prevent outliers from distorting the regression results, we exclude from the sample projects with preparation time greater than 1,000 days (the top 5 percent outliers, approximately) and also exclude those projects that have missing information on preparation and/or execution time variables. We then have 364 projects left out of the initial 463. Figure 2 shows the linear (left panel) and quadratic (right panel) unconditional relationships between execution time (days from approval to closure) and approval time (days from project profile to approval) using project-level data. When imposing a linear relationship, we see that the longer it takes for a project to be prepared, the longer it takes to be executed. When allowing for the relationship to be quadratic, we find that the positive relationship weakens but remains significant.

Figure 2. Unconditional Relationship between Execution and Preparation Times



Source: Prepared by the authors.

Note: The figure shows the predicted project execution time (y axis) with 95% confidence intervals at fixed values of preparation time (x axis). Both preparation time and execution time are measured in days. The relationship is set to be linear on the left-hand side panel, and quadratic on the right-hand side panel. Projects with more than 1,000 days of preparation (top 5 percent) have been excluded from the analysis. PP: Project Profile.

The above relationships are unconditional and do not account for other factors that influence both preparation and execution times, including country-specific characteristics[7] such as institutional development, absorption capacity, aggregate changes (e.g., macroeconomic shocks), and others. They also omit project characteristics that could explain the length of preparation and execution time length for operations such as sector or loan modality projects. Preparing and executing an infrastructure project is not the same as a social sector project. Similarly, a multi-phase lending project may not require the same preparation and execution time as a technical cooperation loan. For example, a project in the social or the climate change and sustainable development sectors takes, on average, three months less to prepare than a project in the integration and trade, infrastructure and energy, or institutions for development sectors.[8] These sectoral differences seem to also be present in the execution stage, when projects in the social and climate change and sustainable development sectors take, on average, 6.5 months less time to complete.[9] Along these same lines, the average preparation time for a global credit operation is not significantly different from other modalities, but the average time to execute is 20 months shorter than for the other project modalities.[10] Moreover, a specific country could prioritize some projects more than others, and this also might influence the time that it takes for a given project to be prepared or executed.

In sum, any of these omitted variables could be correlated with preparation and execution time, and not accounting for them may be driving the unconditional positive association shown above. The next section therefore uses regression and duration analysis to measure the association between preparation and execution times, controlling for the aforementioned factors.

Methodology

We estimate the following regression equation:

$$y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + \in_i ,$$

where the observed variable of interest y_i, which is the execution time of each project i, and the observed project characteristics $X_{1i}, X_{2i}, \ldots, X_{ki}$, which are k the covariates representing the project information considered in the model that are used to estimate the parameters $\beta_1, \beta_2, \ldots, \beta_k$. Covariates include country effects, project modality, the project's corresponding IDB department, project preparation time, quadratic project preparation time, the project's normalized

[7] For example, the IDB's 2018 *Development Effectiveness Overview* report reported that in 2017, "organizational and managerial dimensions were most often cited as contributing to issues in execution. In particular, adjustments in government priorities and weak institutional capacity impeded the physical and financial progress of certain projects and limited the achievement of their expected development results" (IDB 2018, p. 72)

[8] The average preparation time in the former group (social or the climate change and sustainable development sectors) is almost 10 months, while for the latter (integration and trade, infrastructure and energy, or institutions for development sectors) it is almost 13 months.

[9] The average execution time for projects in the social or climate change and sustainable development sectors is 74.77 months, while for projects in the integration and trade, infrastructure and energy, and institutions for development sectors the average project execution time is 81.29 months.

[10] The average execution time for a specific investment operation is 80.6 months; for a global multiple works operation, 82.2 months; for a multi-phase lending project, 77.9 months; for a technical cooperation loan, 81 months; and for a global credit operation, 60.39 months.

size,[11] the approved amount, and project approval year. These parameters are the respective coefficient that quantifies the association between the project characteristics and the variable of interest. The parameter β_0 is the linear intercept of the regression model and $\in_i$ is the error term.

We initially define execution time as the time elapsed from project approval to closing date. However, it can be argued that this definition of execution time is not an accurate measure because it includes the period when the approved project undergoes administrative processes in the borrowing country, then starts disbursing afterward. For this reason, we re-estimate the model redefining the execution time variable from expenditure eligibility to closing date and from first disbursement to closing date.

These regression analyses only use the sample of completed projects – that is, we exclude all projects that were approved in the past but were still being executed by the end of 2017. This could be problematic because it creates a sample selection problem, as we only observe completed projects in the sample and not the ones still in execution, and hence exclude operations with longer execution periods that are more likely to present execution/design problems. As a result, estimates could be biased. To overcome this data problem, we expand our sample by adding the set of approved projects that are still being executed. However, to use this bigger sample we need to move away from regression analysis because the completion time is missing in the additional observations.

Instead, we compute a duration model to estimate the effect of the covariates on the probability that a project "suffers" a completion event. In this context, the hazard is the intensity with which the "closing (completed) project" event occurs. We are interested in estimating whether more preparation time makes it more likely that the project is completed.

We choose a Cox proportional hazards model with shared frailty (Vaupel 1979, Cleves et al. 2010). In survival analysis, the term "shared frailty" describes a regression model with random effects. This specification is more suitable if one suspects that there might be a correlation in duration times within a group. In this case we assume that the duration is correlated by country: execution times for a set of projects within a country are correlated because there are factors within a given country that make the execution of projects either faster or slower compared to execution in other countries.

Under this specification the hazard can be expressed as:

$$h_{ij}(t) = h_0(t)\exp(x_{ij}\beta + v_i),$$

where x_{ij} is the vector of covariates containing project information and v_i is the shared frailty, which is equivalent to a random effect at the country level in standard linear models. This model assumes that the baseline hazard, $h_0(t)$, is the same for every project and no functional form needs to be assumed.

[11] To capture the relative financial relevance of a project within a country, we compute the share of the project approved amount in the total approvals for the country during the approval year.

Results

We use regression analyses to study the relationship between preparation and execution times controlling for project and country characteristics. The estimation results are presented in Table 5. The results in the table refer to three different specifications of the regression model presented in the previous section: column (1) only controls for preparation time, column (2) considers quadratic preparation time, and column (3) includes project information as covariates. In column (1) we observe a positive and significant relationship between preparation and execution times. Once we allow this relationship to be quadratic, we still find a positive and significant relationship between the two variables, but concave (column (2)). Once we control for country and approval year fixed effects, sector and modality fixed effects, and the relative size of the project's approved amount, the relationship between preparation and execution times becomes non-significant (column (3)).

If we redefine execution time as days between the project's first disbursement and closing date or between eligibility[12] and closing, the unconditional relationship with preparation time is still positive, but once we control for the above-mentioned variables it loses significance as well. The results for the series of regressions considering these alternative execution times as the dependent variable in our regression analyses are presented in Tables 6 and 7, respectively.

[12] An approved project reaches "eligibility" when it has legal or administrative approval by the beneficiary country and the fulfillment of the clauses for the first project disbursement.

Table 5. Relationship between Preparation and Execution Times Measured from Project Approval to Closure

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Preparation Time (days)	1.042***	3.400***	0.230
	(0.169)	(0.582)	(0.155)
Quadratic Preparation Time (days)		-0.00277***	
		(0.000655)	
Relative size of the approved amount (%)			102.1
			(143.5)
Department			
CSD			
IFD			-534.4***
			(178.1)
INE			-532.7***
			(177.9)
INT			-171.4
			(271.2)
SCL			-622.0***
			(185.0)
Project Modality			
ESP			
GCR			-329.8**
			(166.3)
GOM			14.32
			(118.0)
PFM			104.2
			(90.44)
TCR			-129.6
			(188.3)
Approval Year			
2002			
2003			-34.09
			(145.9)
2004			-321.3**
			(129.8)
2005			-457.1***
			(134.0)
2006			-466.6***
			(133.4)
2007			-755.6***
			(142.0)
2008			-859.7***
			(119.7)
2009			-963.4***
			(126.4)
2010			-1,135***
			(135.8)
2011			-1,207***
			(141.8)
2012			-1,369***
			(185.5)
2013			-1,556***
			(280.6)
2014			-1,793***
			(389.1)
2015			-2,030***
			(521.6)
Observations	364	364	363
R-squared	0.095	0.138	0.575

Source: Prepared by the authors.

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The table reports the relationship between preparation and execution times, and the results are estimated using country effects. Column (1) reports the linear unconditional relationship; Column (2) reports the quadratic unconditional relationship; Column (3) reports the linear relationship controlling for a set of covariates. Preparation time is measured as the days between project profile and approval dates. Execution time is measured as the time between project approval and closure. IDB Departments: CSD: Climate Change and Sustainable Development Sector; IFD: Institutions for Development Sector; INE: Infrastructure and Energy Sector; INT: Integration and Trade Sector; SCL: Social Sector. Project modalities: ESP: Specific Investment Operations; GCR: Global Credit Programs; GOM: Global Multiple Works Operations; PFM: Multiphase Operations; TCR: Technical Cooperation Loans.

Table 6. Relationship between Preparation Time and Execution Times Measured from Project Eligibility to Closure

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Approval to Eligibility Dates (days)	-0.0623	-0.113	-0.428***
	(0.149)	(0.147)	(0.137)
Preparation Time (days)	0.948***	3.020***	0.214
	(0.161)	(0.559)	(0.151)
Quadratic Preparation Time (days)		-0.00243***	
		(0.000628)	
Relative size of the approved amount (%)			101.2
			(139.9)
Department			
CSD			
IFD			-556.5***
			(173.7)
INE			-558.7***
			(173.5)
INT			-169.0
			(264.3)
SCL			-641.4***
			(180.4)
Project Modality			
ESP			
GCR			-354.7**
			(162.2)
GOM			39.77
			(115.1)
PFM			110.0
			(88.16)
TCR			-108.3
			(183.6)
Approval Year			
2002			
2003			-38.49
			(142.2)
2004			-341.5***
			(126.6)
2005			-460.6***
			(130.6)
2006			-469.3***
			(130.0)
2007			-761.9***
			(138.4)
2008			-837.0***
			(116.8)
2009			-994.7***
			(123.4)
2010			-1,083***
			(133.0)
2011			-1,155***
			(138.8)
2012			-1,319***
			(181.2)
2013			-1,451***
			(274.6)
2014			-1,740***
			(379.5)
2015			-1,949***
			(508.8)
Observations	364	364	363
R-squared	0.087	0.124	0.550

Source: Prepared by the authors.

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The table reports the relationship between preparation and execution times, and the results are estimated using country effects. Column (1) reports the linear unconditional relationship; Column (2) reports the quadratic unconditional relationship; Column (3) reports the linear relationship controlling for a set of covariates. Preparation time is measured as the days between project profile and approval dates. Execution time is measured as the time between project eligibility and closure. IDB Departments: CSD: Climate Change and Sustainable Development Sector; IFD: Institutions for Development Sector; INE: Infrastructure and Energy Sector; INT: Integration and Trade Sector; SCL: Social Sector. Project modalities: ESP: Specific Investment Operations; GCR: Global Credit Programs; GOM: Global Multiple Works Operations; PFM: Multiphase Operations; TCR: Technical Cooperation Loans.

Table 7. Relationship between Preparation Time and Execution Time (Measured from First Disbursement to Closure)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Approval to First Disbursement Dates (days)	-0.379***	-0.414***	-0.553***
	(0.135)	(0.133)	(0.119)
Preparation Time (days)	0.961***	3.167***	0.202
	(0.165)	(0.570)	(0.152)
Quadratic Preparation Time (days)		-0.00258***	
		(0.000640)	
Relative size of the approved amount (%)			107.6
			(140.6)
Department			
CSD			
IFD			-571.7***
			(174.8)
INE			-583.3***
			(174.8)
INT			-169.7
			(265.7)
SCL			-640.6***
			(181.3)
Project Modality			
ESP			
GCR			-336.6**
			(162.9)
GOM			49.39
			(116.0)
PFM			95.61
			(88.64)
TCR			-147.4
			(184.6)
Approval Year			
2002			
2003			-57.63
			(143.1)
2004			-373.1***
			(127.9)
2005			-491.5***
			(131.6)
2006			-503.0***
			(131.1)
2007			-808.7***
			(139.8)
2008			-868.4***
			(117.3)
2009			-1,023***
			(124.8)
2010			-1,141***
			(133.1)
2011			-1,220***
			(139.0)
2012			-1,391***
			(181.9)
2013			-1,515***
			(275.1)
2014			-1,765***
			(381.3)
2015			-2,014***
			(511.1)
Observations	364	364	363
R-squared	0.087	0.124	0.550

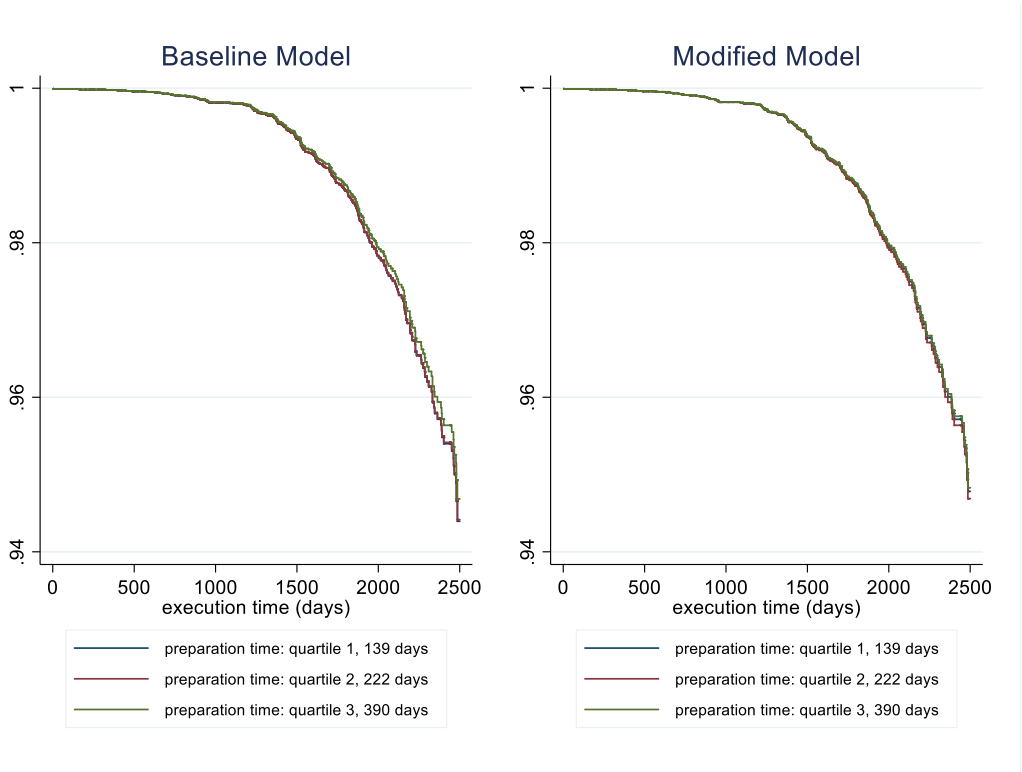
Source: Prepared by the authors.

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The table reports the relationship between preparation time and execution time and the results are estimated using country effects. Column (1) reports the linear unconditional relationship; Column (2) reports the quadratic unconditional relationship; Column (3) reports the linear relationship controlling for a set of covariates. Preparation time is measured as the days between project profile and approval dates. Execution time is measured as the days between the first disbursement and approval dates. IDB Departments: CSD: Climate Change and Sustainable Development Sector; IFD: Institutions for Development Sector; INE: Infrastructure and Energy Sector; INT: Integration and Trade Sector; SCL: Social Sector. Project modalities: ESP: Specific Investment Operations; GCR: Global Credit Programs; GOM: Global Multiple Works Operations; PFM: Multiphase Operations; TCR: Technical Cooperation Loans.

We now use the expanded sample including the set of projects being executed as of the end of 2017 to estimate the Cox model to avoid any sample selection problems, as explained earlier.[13] To eliminate outliers, we exclude from the analysis projects with preparation time greater than 848 days (above the 95th percentile). The final sample of sovereign-guaranteed investment projects (approvals starting in 2007 and completed between 2010 and 2017) has 628 observations, of which 220 had a completion event as of 2017. The remaining 428 projects were in execution at the end of 2017.

Table 8 shows the estimation results for the duration analysis and confirms that the preparation time is not significant – that is, the calendar time elapsed preparing a project has no effect on the probability that the project is completed at any point in time during the execution stage. Figure 3 shows this result, as it plots the survival function (the probability that a project remains in execution) as a function of the execution days. We compute the survival function for different quartiles in the preparation times and find no significant difference between them.

Figure 3. Cox Proportional Hazard Regression



Source: Prepared by the authors.

Note: The vertical axis represents the "survival probability," which is the probability of a project closing. The blue, red, and green lines represent different times in project preparation and the respective probability of the projects closing according to their execution time. The baseline includes as control variables sector department, project modality, relative size of the approved amount (in percent), approval year, preparation time, and quadratic preparation time. In addition to the baseline control variables, the modified model also includes the time from eligibility to approval.

[13] Because our data set of completed projects starts in 2010, we restrict the sample for the duration models to include projects approved in or after 2007, as these projects were very likely not completed before 2010.

Table 8. Hazard Proportions

VARIABLES	
Preparation Time (days)	0.000323
	(0.00180)
Quadratic Preparation Time (days)	-1.02e-06
	(2.33e-06)
Approval to Eligibility Dates (days)	
(Approval to Eligibility Time)*(Preparation Time)	
Relative size of the approved amount (%)	-0.00738*
	(0.00397)
Department	
CSD	-1.300***
	(0.366)
IFD	-0.0295
	(0.186)
INE	
INT	-0.354
	(0.452)
SCL	0.430**
	(0.200)
Project Modality	
ESP	
GCR	1.617***
	(0.391)
GOM	0.173
	(0.275)
PFM	0.252
	(0.238)
TCR	0.549
	(0.625)
Approval Year	
2007	
2008	-0.255
	(0.278)
2009	-0.127
	(0.288)
2010	-0.463
	(0.301)
2011	-0.116
	(0.314)
2012	-0.949**
	(0.396)
2013	-0.868
	(0.589)
2014	-0.445
	(0.783)
2015	0.264
	(1.097)
2016	-43.75
	(0)
2017	-39.63
	(0)
Observations	629
Number of groups	26

Source: Prepared by the authors.

Note: To avoid the effect of potential outliers in the estimation of this model, projects with preparation time among the highest 5 percent of the distribution are disregarded for the estimation. Therefore, the projects considered in the estimation have 848 days of preparation time or less. The model considers the execution time starting at the project's eligibility date. Preparation time is measured as the days between project profile and approval dates. IDB Departments: CSD: Climate Change and Sustainable Development Sector; IFD: Institutions for Development Sector; INE: Infrastructure and Energy Sector; INT: Integration and Trade Sector; SCL: Social Sector. Project modalities: ESP: Specific Investment Operations; GCR: Global Credit Programs; GOM: Global Multiple Works Operations; PFM: Multiphase Operations; TCR: Technical Cooperation Loans.

Final Remarks and Future Steps

In the aggregate, IDB project preparation times have decreased. Using project-level data, this paper studied whether there is a trade-off between preparation and execution times. After controlling for several factors that could affect preparation and execution times, we find no systematic evidence that links the time elapsed during project preparation with the time elapsed during execution. The result suggests that any perceived association between preparation and execution times could be mainly driven either by country or project characteristics – such as loan modality and/or sector fixed effects – but not by the time spent preparing an operation.

What do these results tell us regarding the Bank's project preparation process? They tell us that on and by itself, there doesn't seem to be a direct link between project preparation and execution time, and that any apparent positive association is just the result of omitted variables bias. Hence the suspicion that the decrease in preparation time could be the culprit behind the extension of execution time, may be unfounded.

There are several possible extensions for this study. For example, estimates might be more precise if they took into account the staff effort and intensity in preparing an operation when measuring preparation time. If preparation effort spikes around project preparation milestones – that is, if the distribution of staff time preparing an operation is not uniformly distributed during the project preparation stage – then a different metric other than preparation time needs to be used to capture the "effective time" preparing a project, since using the number of days elapsed until project approval is misleading because it includes periods in which project preparation was idle. Similarly, more insight could be gained by breaking the execution calendar time of sovereign-guaranteed operations into smaller disbursement milestones in order to capture different execution stages along the project lifecycle. Another possible extension would be to include the cancellation of projects in the duration analysis as a competing risk.

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