

## MEASURING EFFICIENCY IN INTERNATIONAL PUBLIC PROCUREMENT

Anjali Kumar, Arvind Nair and Juliane Piecha\*

**ABSTRACT.** Procurement efficiency as an element of public performance management can contribute to achieving Value for Money by reducing administrative overhead costs and directing resources to support more complex procurement processes. This paper highlights empirical techniques to understand determinants of efficiency in the procurement cycle focusing on elapsed time taken and drawing on a unique dataset on the procurement process within the World Bank. The study finds that different methods of bidding, whether international or domestic, and contract attributes partially explain differences in the duration of procurement processes.

### INTRODUCTION

Getting good value out of public procurement is not just a question of getting goods at the best price, but also involves considerations of the costs incurred during the procurement process (Burger & Hawkesworth, 2011). The concept of Value for Money (VfM) in public procurement, while not having a commonly accepted definition, typically involves considerations of “what a government judges to be an optimal combination of quantity, quality, features and cost, expected over the whole of the project’s lifetime” (Burger & Hawkesworth, 2011, p. 2). The definition of VfM is now being

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\* Anjali Kumar, Ph.D., is a Lead Economist at the World Bank, where she undertakes Global and Corporate evaluations for the Bank's Independent Evaluation Group. Her research interests include economic development and finance, the public sector and governance, and evaluation methodology. Arvind Nair, M.Sc., is an economist working for the World Bank and is currently based in Jakarta, Indonesia. His interests include natural resources management and growth, climate change and public sector and governance. Juliane Piecha, M.Sc., is an economist working with the World Bank's Independent Evaluation Group. Her research interests include public policy design and governance.

broadened to include measures that reduce the administrative overhead cost of procurement (DfID, 2011). In keeping with the broadened definition, from the perspective of public sector performance management, Boland and Fowler (2000, p. 427) describe the concept of VfM as the “simultaneous optimization of both outcome effectiveness and resource use efficiency.”

Public procurement also operates in a field of substantial political tension between performance and compliance, being tasked to fulfill public expectations of both transparency and efficiency. On the one hand, focus on compliance in transactions may distract from a focus on outcomes and need not ensure the containment of fraud and corruption, which could be a systemic rather than only project level issue. On the other hand, transaction cost reducing measures need to be balanced with demands for transparency and accountability.

This underlying tension between performance and compliance, and its effect on efficiency of the public procurement process, has been discussed extensively (see for example Schapper, Veiga Malta, & Gilbert, 2006). Similar issues are also addressed in the vast body of literature on performance management. Kloot and Martin (2000, p. 242) stress the need for consistency in public management between accountability and service delivery in a “cost-effective, high-quality manner.” Reviewing performance management issues in local government in Australia they identify the “lack of measures to determine internal process performance as a hindrance to managing them”. Their findings indicate that inability to estimate effects of process change effectively hampers reform, leaving personnel involved uncertain about how to proceed.

Time taken in the procurement process has also been discussed in a number of studies concerned with transition to more efficient procurement systems. In their review of procurement reform in the Greek governmental purchasing system, Panayiotou, Gayialis, and Tasiopoulos (2004) analyze the average elapsed times for procurement activities based on data collected from historical tender documentation and procurement plans. Findings suggest delays in the procurement cycle with maximum lead times extending to two years, which is attributed largely to “idle time between activities” and leads the study to identify the time taken in the process as a key performance indicator for reform. Pagnato (2009, p. 75) describes the reduction of the time needed to award contracts “an indirect goal

of almost every reform.” Understanding time taken in specific steps throughout the procurement cycle helps illuminate where bottlenecks need to be addressed and where resources need to be freed up to be put towards support of more complex procurement processes and professional development of best practices in the use of available options of procurement methods.

There remains a gap in the literature with regard to empirical measurement of efficiency in the procurement cycle, in the sense of elapsed time taken, which this paper seeks to address. This paper highlights some empirical techniques to understand determinants of this aspect of procurement efficiency drawing on a unique dataset on the procurement process within the World Bank collected as part of a review of World Bank Procurement, conducted by the World Bank’s Independent Evaluation Group (IEG). In summary, the study finds that different methods of bidding, whether international or domestic, and differences in review processes that accompany these methods, partially explain differences in procurement outcomes.

While the techniques and exercises used to measure procurement efficiency may not be fully generalizable to other public procurement contexts, they may still be salient as the WB procurement system shares the tension of compliance and efficiency with other public procurement systems. The World Bank’s Guidelines for procurement of works and goods were generally seen, in the IEG evaluation (IEG, 2014), as reasonable and adding value, however the Bank’s procurement processes were perceived to be time consuming and rigid. Further, the World Bank’s procurement guidelines were perceived to place more emphasis on safeguarding against risks to the integrity of the process than on efficiency and the cost of time lost.

The paper provides a brief overview of the procurement framework of the World Bank, describes the data collected and highlights some of the techniques used in measuring procurement efficiency. A brief discussion of potential generalizability to other public procurement contexts concludes the paper.

#### **THE WORLD BANK PROCUREMENT FRAMEWORK**

The responsibility for the implementation of a project funded, in part or whole, by World Bank rests with the borrowing country and its

implementing agencies. The World Bank is, however, required by its Articles of Agreement to “ensure that the proceeds of any loan are used only for the purposes for which the loan was granted, with due attention to considerations of economy and efficiency and without regard to political or other non-economic influences or considerations.” In light of this fiduciary responsibility, the World Bank has established detailed guidelines for the procurement of goods and works and the selection of consultant services that need to be complied with by the borrowing country.<sup>1</sup>

Apart from fiduciary responsibility, the Bank’s procurement guidelines also intend to apply best practices in public procurement, meant to achieve open and fair competition and a good level of market access. Many aspects of Value for Money principles are already implicit in Bank procurement; the Bank’s guidelines make economy and efficiency the basis for project implementation of the project and point out the Bank’s interest in giving all eligible bidders the same information and equal opportunity to compete. They encourage the development of domestic contracting and manufacturing industries in the borrowing country and emphasize the importance of transparency in the procurement process (World Bank, 2011a). In this regard, World Bank’s procurement guidelines are often seen as shaping procurement practices around the world (see Debevoise & Yukins, 2010).

Within the framework of the World Bank procurement guidelines, the Implementing Agencies of borrowing countries can use a variety of procurement methods in World Bank funded projects. The method selected depends on a number of factors including the type and value of the good, work or service procured, risk perceptions of project or country entities and the state of development of local markets (World Bank, 2011b). For example, for goods and civil works, for contracts below a certain specified value threshold, procurement is conducted through National Competitive Bidding (NCB) while contracts above the threshold need to be procured using International Competitive Bidding (ICB).<sup>2</sup> One feature distinguishing ICB and NCB is described in Paragraph 3.4 of World Bank’s procurement guidelines, stipulating that borrowers may limit advertising to the local press for NCB processes (World Bank, 2011c). NCB as a proportion of procurement methods applied has risen over time as countries’ domestic supply capacities mature, i.e. NCB method threshold are higher to reflect the

greater extent to which local suppliers are able to meet a given need of the contracts (see IEG, 2014).

The World Bank's role in procurement is enhanced for projects above certain monetary thresholds, as the procurement system requires the World Bank to review certain steps in the borrower's procurement process and furnish its "No-Objection" in accordance with the guidelines (see Table 1). This "prior-review" process is carried out by country office procurement staff, regional procurement managers or a central World Bank apex unit, depending on the complexity of the contract. Prior-review thresholds sometimes coincide with method thresholds for ICB and NCB. In most countries, however, large NCB contracts can also be subject to prior-review.

**TABLE 1**  
**"No-Objection" Steps for Prior Reviewed Contracts**

<b>Simple Goods &amp; Works (ICB/NCB)</b>	<b>Two-Stage Goods &amp; Works (ICB/NCB)</b>	<b>Consultant Services (Quality and Cost Based Selection QCBS)</b>
Specific Procurement Notice	Specific Procurement Notice	Expression of Interest
		Terms of Reference/Short List
<i>Draft Bid Documents</i>	<i>Draft Bid Document</i>	<i>Short List and Draft Request for Proposals</i>
Bid Documents as Issued	Bid Documents as Issued	Request for Proposals as Issued
Bid Opening/ Minutes	Technical Bids	Opening of Technical Proposals/ Minutes
	<i>Stage 1 Evaluation - Report/Minutes/ Amended Bid Documents</i>	<i>Evaluation of Technical Proposals</i>
	Invitation to Stage 2 as Issued	
	Stage 2 Bidding	Opening of Financial Proposals/Minutes

TABLE 1 (Continued)

<b>Simple Goods &amp; Works (ICB/NCB)</b>	<b>Two-Stage Goods &amp; Works (ICB/NCB)</b>	<b>Consultant Services (Quality and Cost Based Selection QCBS)</b>
<i>Bid Evaluation Report and Recommendation for Award</i>	<i>Bid Evaluation Report and Recommendation for Award</i>	<i>Combined Evaluation Report and Draft Negotiated Contract</i>
Signed Contract	Signed Contract	Signed Contract
<i>Contract Amendment (in some cases)</i>	<i>Contract Amendment (in some cases)</i>	<i>Contract Amendment (in some cases)</i>
Contract Completion	Contract Completion	Contract Completion

Note: Steps requiring a “no-objection” are in italic font.  
Source: World Bank, IEG.

In addition, prior-review contracts are also subject to clearance thresholds, which determine who, in the Bank’s procurement hierarchy gives the relevant no-objections, with the largest contracts with values above \$50 million being subject to clearance by the Operational Procurement Review Committee (OPRC). IEG (2014) analysis of Africa Region data finds that clearance at OPRC level implies longer processing times, partially reflecting the increased complexity of such cases. It has, however, been pointed out more generally in client interviews that referrals to higher levels in the clearance chain are perceived to cause delays (ibid.).

The recent review of Bank procurement found that Bank processes of review and issuing of “No Objections” have been viewed as cumbersome, time consuming, prone to delay, and inflexible in interpretation. The Bank’s procurement system thus may not be achieving value for money despite sound guidelines, on account of the procurement process. Measuring the perceived inefficiency of the Bank’s procurement process thus becomes critical (see also Dener, Watkins, & Dorotinsky, 2011). In the next section, we highlight a unique dataset used to measure the efficiency of the Bank’s procurement process, using the time take taken and the frequency of delays. Description of the data is followed by a discussion of some empirical techniques to interpret the underlying

factors driving inefficiency in procurement, and their relative importance.

#### **WORLD BANK PROCUREMENT EFFICIENCY DATA**

Current World Bank procurement tracking systems only partially capture data that would permit the tracking of procurement efficiency and bottlenecks that may occur at different stages of procurement execution.<sup>3</sup> The principal World Bank-wide source of procurement data is a web-based interface for entering contract information for World Bank-funded contracts. The key purpose is fiduciary: to ensure that a no-objection to the final bid evaluation report and a signed contract exist before disbursements are made. It also records the procurement method and contract award information including supplier names, nationality and eligibility status. The interface, however, does not cover all contracts and captures only the final stage of the procurement process: the date of the Bank's no-objection to the contract award, and the date of contract signature. In effect, the interface does not provide information capable of tracking processing time at different stages of the procurement cycle, a requirement vital to tracking efficiency.

Some World Bank regions, such as Latin America and Caribbean, use the Procurement Plan Execution System (alluded to by the acronym, SEPA), that focuses primarily on the monitoring and execution of procurement plans related to World Bank funded projects. SEPA's objective is to promote transparency in World Bank operations and to offer a procurement management tool to borrower governments. SEPA requires the input of core procurement dates and provides the option of tracking additional procurement steps. It is, however, a standalone system and some dates are inputted at the discretion of the borrower, thus introducing a high level of variability in available information by project and country, rendering the dataset unsuitable for global analysis of procurement efficiency.

The Procurement Cycle Tracking system developed in the World Bank Africa region, PROCYS, is a platform of communications between the principal parties involved in the procurement process on procurement processes for contracts subject to prior review. Each interaction or stage in the process is recorded, in terms of the number of days taken from the previous to the present stage. It thus tracks not only the total elapsed time between a borrower's first

request for a no-objection, and receipt of the Bank's final no objection, but also the numbers of iterations between the Team Leader and borrower, between the Team Leader and different levels of procurement staff; from the field procurement specialist to the regional procurement manager and the Central Procurement Board. It currently covers over 460 projects in over 40 countries in the Africa region. PROCYS is principally used as a management information system that measures responsiveness of different participants in the procurement process.

The procurement portfolio dashboard that serves as a tool for the management of the Middle East & North Africa procurement unit's resources (referred to as MNA-dash) emphasizes the execution of the region's loan portfolio rather than the recording of individual transactions. This data repository is not interactive. Information is uploaded manually as reported. Contract level data, if any, is available only as a byproduct of other monitoring objectives.

In sum, the World Bank's principal centralized procurement system and the three regional procurement systems each have different objectives and architecture. While there is a wealth of information collected and analyzed for specific monitoring needs, the systems do not provide necessary data to analyze efficiency of the procurement process across the World Bank. Specifically, the systems are unable to provide organization wide data to track elapsed times of realized individual procurement process steps.

Given the fragmented and regionally diverse information on procurement processes, a unique dataset was constructed to measure the efficiency of the World Bank's procurement process with respect to the process of issuing 'No Objections' described in Table 1. The data sought to measure procurement efficiency in terms of the overall elapsed time in the procurement process, aggregated from the time elapsed between successive 'No Objection' steps, in each contract. The dataset also records other country and contract attributes that could potentially affect overall procurement efficiency. The sample for data on prior-reviewed contracts was constructed from a questionnaire surveyed in eleven client countries (Azerbaijan, Bangladesh, Ethiopia, Indonesia, Mexico, Morocco, Peru, Philippines, Senegal, Tanzania, Turkey), with at least two in each of the World Bank's six borrowing regions, except the Middle East on account of its relatively smaller size. Based on a standardized template, data

requested included, primarily, information on the dates of each step in the procurement process where the Bank is required to provide a “no-objection” to a client, in order to be able to track elapsed time between and across successive phases of procurement.

A representative stratified sample was attempted, by procurement method and category, by size, and across a sample of fiscal years from 2007 to the present. However, the response rate from country offices was highly variable in quantity and quality, ranging from 107 contracts for Azerbaijan to four from Tanzania. Out of 502 contracts for which data were received, only 201 had information on all date fields from the Issue of the Specific Procurement Notice to Contract Signature. Where possible, missing dates were filled in with information provided in the Bank-wide tracking system. The limitations of the dataset, in terms of selective response from countries and lack of complete information on dates, needs to be taken into account, when interpreting the analysis of procurement efficiency highlighted in the next section.

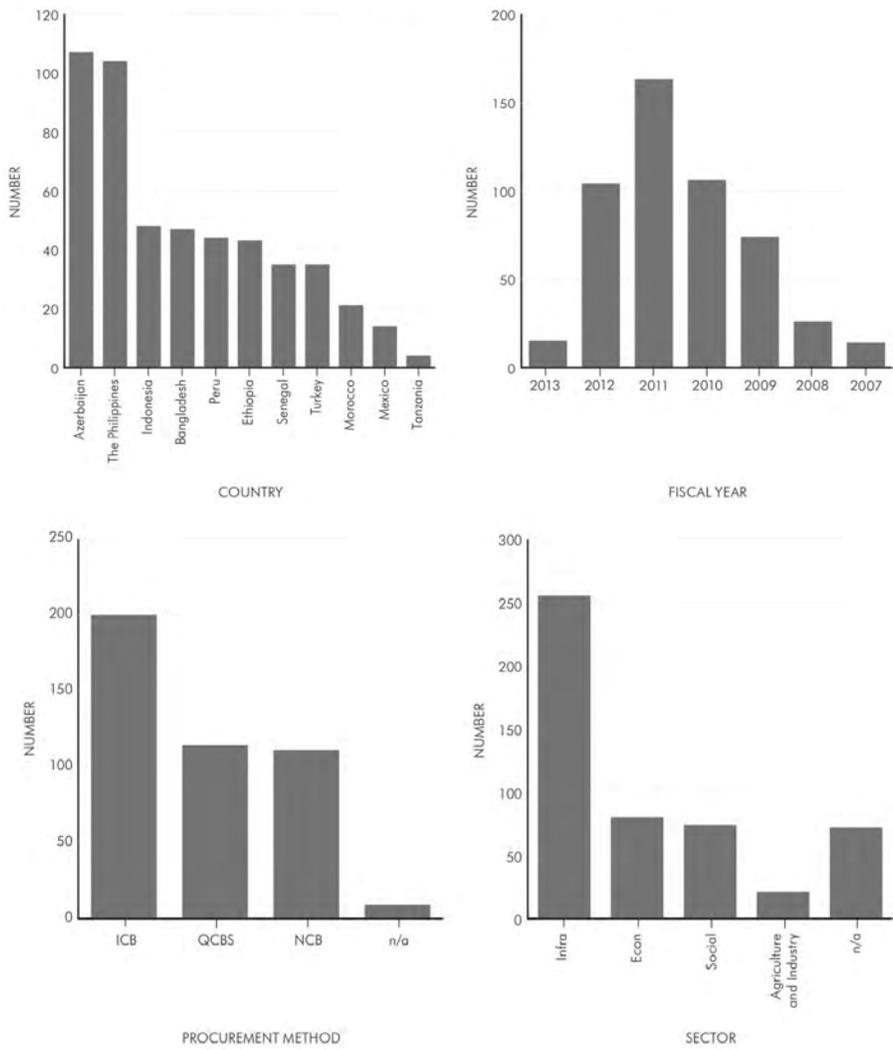
## **ANALYSIS OF WORLD BANK PROCUREMENT EFFICIENCY**

### **Basic Sample Characteristics**

In terms of sector categories, basic sample statistics show that the dataset is skewed towards infrastructure contracts. Data are distributed more evenly by procurement category, with Consultant Services, Goods and Civil Works each accounting for roughly one third of observations. In terms of procurement methods, contracts using International Competitive Bidding (ICB) form around 40 percent of the sample, while National Competitive Bidding (NCB) and Quality and Cost Based Selection of Consultants (QCBS) each contribute about 22 percent of observations (see Figure 1). Due to data limitations, results for different intervals may refer to different subsets in the data.

The request for contract sample data sent to the survey countries was separated by key processing dates for Goods and Works (ICB, ICB with pre-Qualification; NCB, NCB with pre-Qualification), Goods and Works (ICB/NCB Two-Stage) and large value Consultant Services (QCBS, QBS, FBS, LCS, CQS, SSS). The respective dates for each

**FIGURE 1**  
**Number of Observations by Country, Fiscal Year, Procurement Category and Sector**



Source: IEG analysis of Sample of Contract Data.

procurement step were then merged across ICB/NCB, ICB/NCB Two-Stage and Consultant Services allowing for a global data set as well as preliminary subset analysis. Due to a low response rate for information on contracts involving ICB/NCB Two-Stage and Pre-Qualification (Evaluation Reports), data provided for these groups was integrated with the overall ICB/NCB data. For all contracts the dates for Final Bid Evaluation Reports were used when constructing time intervals. Contract values were converted to USD using monthly average exchange rates. The fiscal year of the contract was determined based on the date of the Bank's No-Objection to the Bid Evaluation Report. Data were clustered by country, sector, procurement category and method. Country groupings focused on identifying the poorest countries in the data set, eligible for concessional IDA lending, and those eligible for IBRD loans available to middle-income and credit-worthy poor countries.<sup>4</sup>

### **Analysis of Procurement Efficiency**

To explore the time taken to process a contract, the analysis focused mainly on two overall elapsed times: (1) Borrower Issue of Specific Procurement Notice, to Contract Signature, and (2) First Submission to the Bank of Draft Bid Documents, to Bank's No-Objection to the Bid Evaluation Report. Two further intermediate steps in the procurement process are selectively reviewed to the extent that data permits: (3) First Submission to the Bank of Draft Bid Documents to Bank's final No-Objection to the Draft Bid Documents; and (4) Borrower Submission to the Bank of Bid Evaluation Report to the Bank's No-Objection to the Bid Evaluation Report.

### **Select Findings: Average Elapsed Times**

Measured from the time when the borrower first submits draft bidding document to the Bank, results show that, looking at all contracts together, it takes on average 286 days until a prior reviewed contract is signed (Table 2). Separating contracts by category, Civil Works take the longest (307 days), though there are similar overall processing times for Goods (287 days) and Consultant Services (290 days) (Table 3). However the variable displayed a high dispersion from the average with a standard deviation of 160. While 50 percent of the contracts included in this analysis go from the submission of bid documents to the No-Objection to the bid

**TABLE 2**  
**Average Elapsed Time between Steps in the Procurement Process All Contracts (Days)**

PROCUREMENT PROCESS STEPS	(2) Borrower first Submission to Bank of draft Bid (PreQ) documents	(3) Bank final No-Objection to draft Bid (PreQ) Documents	(4) Borrower issue of Bid (PreQ) Documents	(5) Borrower Bid (PreQ) opening date/Minutes	(6) Borrower Submission to Bank of Bid Evaluation Report	(7) Bank No-Objection to Bid Evaluation Report	Date of Contract Signature
(1)	171.9	169.0	135.1	126.7	226.4	253.0	269.5
(2)		56.6	66.0	121.8	224.3	252.9	286.1
(3)			24.6	77.7	178.3	199.8	231.8
(4)				59.7	170.6	190.4	223.3
(5)					118.4	144.9	178.0
(6)						37.4	73.7
(7)							48.2

Notes:

- (1) = Issue of Specific Procurement Notice
- (2) = Borrower first Submission to Bank of draft Bid (preQ) Documents
- (3) = Bank final No Objection to draft Bid (PreQ) Documents
- (4) = Borrower issue of Bid (PreQ) Documents
- (5) = Borrower Bid (PreQ) Opening date/ Minutes
- (6) = Borrower Submission to Bank of Bid Evaluation Report
- (7) = Bank No-Objection to Bid Evaluation Report

Source: IEG analysis of a sample of contract data

evaluation report in less than 208 days, there are contracts with significant longer duration, for two contracts even more than 900 days, driving up average processing times.

Looking at critical shorter intervals, on average, the Bank's No Objection to the Bidding Documents is issued 56 days after the Borrower submits a first draft, considerably longer than what Bank procedures recommend as a business standard for reviewing or providing comments to bidding documents. Documents presented for review may be returned for revision several times, which affects

duration. While more than 45 percent of the contracts reviewed underwent just a single iteration of draft Bidding Documents review, another 44 percent of contracts required two or more rounds of review and some (less than 10 percent in the sample) required three, four or five iterations.

**TABLE 3**  
**Average Elapsed Time and Contract Value by Procurement Category**  
**(Days, USD)**

<b>Procurement Category</b>	<b>Number of Contracts (1)</b>	<b>Average Elapsed Time (days)(2)</b>	<b>Average Contract Value (US\$)</b>
Civil Works	137	307.2	15,000,000
Goods	124	287.8	4,709,600
Consultant Services (QCBS)	99	290.5	2,804,025

Notes: (1) Number of Contracts in dataset (where Contract Value is available) (Nos); (2) Average Elapsed Time from Borrower first submission to Bank of draft bid (preQ) documents to Contract Signature (days)

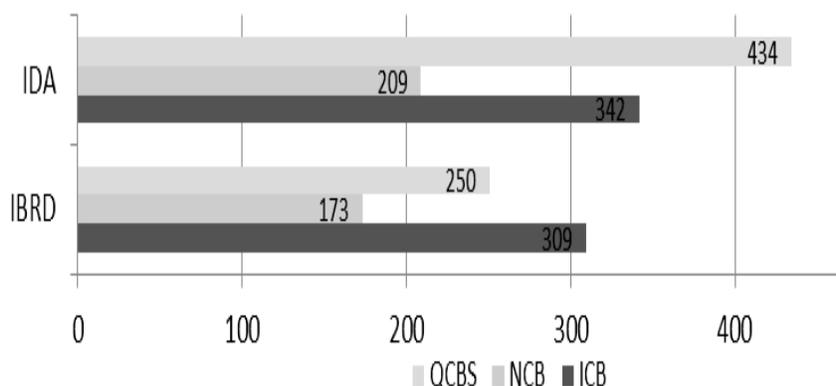
Source: IEG analysis of a sample of contract data.

More than a quarter of the processing time from submission of bid documents until contract award is due to the preparation of the Bid Evaluation Report after Bid Opening. In the case of Consultant Services more than forty percent of processing time is dedicated to this step in the procurement process, likely due to the fact that for the QCBS procurement method two documents need to be prepared by the borrower; an evaluation of technical proposals and, after subsequent opening of financial proposals, a Combined Evaluation Report. Both reports require a No-Objection by the Bank. This remains true even after excluding the contracts that bring in the highest five percent of elapsed times per category.

The analysis of relative performance of IBRD and IDA countries shows that average processing times are longer for contracts in IDA countries, and most of the difference in processing time stems from the very long time taken to procure Consultant Services (Figure 2).

Together these results highlight that some procurement methods, notably for consultants, are more prone to delays, and that country capacity factors are likely a contributing factor.

**FIGURE 2**  
**IBRD and IDA Countries – Elapsed Procurement Times by Procurement Method (Days)**



Note: The time interval measured is from the Borrower's first submission to the Bank of draft bid (pre-Qualification) documents to Contract Signature.

Source: IEG analysis of a sample of contract data.

### **Analysis and Findings: Variation in elapsed Times – Frequency Distributions**

Average elapsed times do not tell a complete story; the degree of variation around the average describes the proportion of contracts that may take longer to process. For example, although on average 253 days were needed from the Borrower's first Submission of draft Bidding Documents to the Bank's final No Objection to the final Bid Evaluation Report of the contract, this variable displayed a high dispersion from the average. Half the contracts completed this process in less than 208 days, but contracts at the 75th percentile of

the distribution took 331 days and contracts at the 95th percentile took 611 days (Table 4). The five largest processing times in this sample took from 690 to 941 days to process.

**TABLE 4**  
**Summary Statistics for Variable Submission of Draft Bid Documents to Bank's No-Objection to Final Bid Evaluation Report**

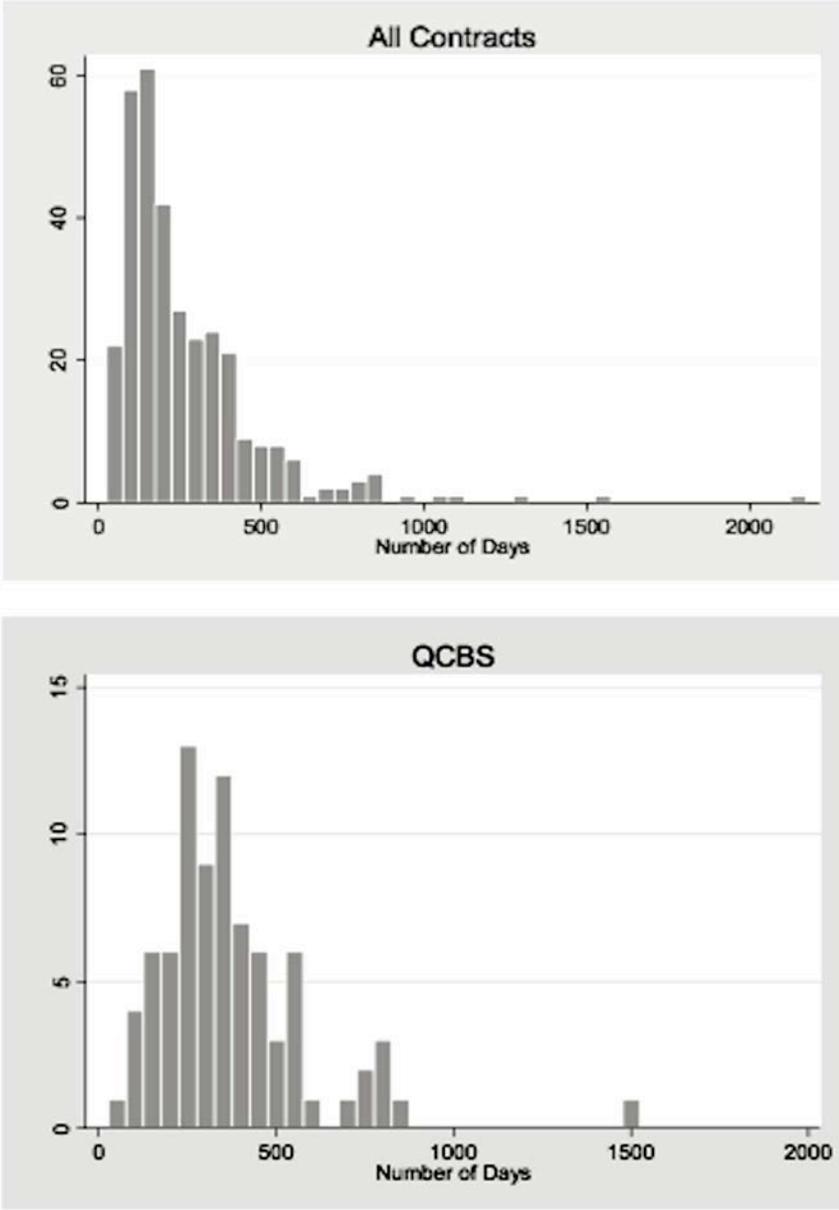
Percentiles		Smallest		
1%	48	44		
5%	80	46		
10%	109	48		
25%	147	49	Obs	249
50%	208		Sum of Weighted.	249
		Largest	Mean	252.8
75%	331	690	Std. Dev.	160.7
90%	507	832	Variance	25825.8
95%	611	932	Skewness	1.56
99%	832	941	Kurtosis	5.67

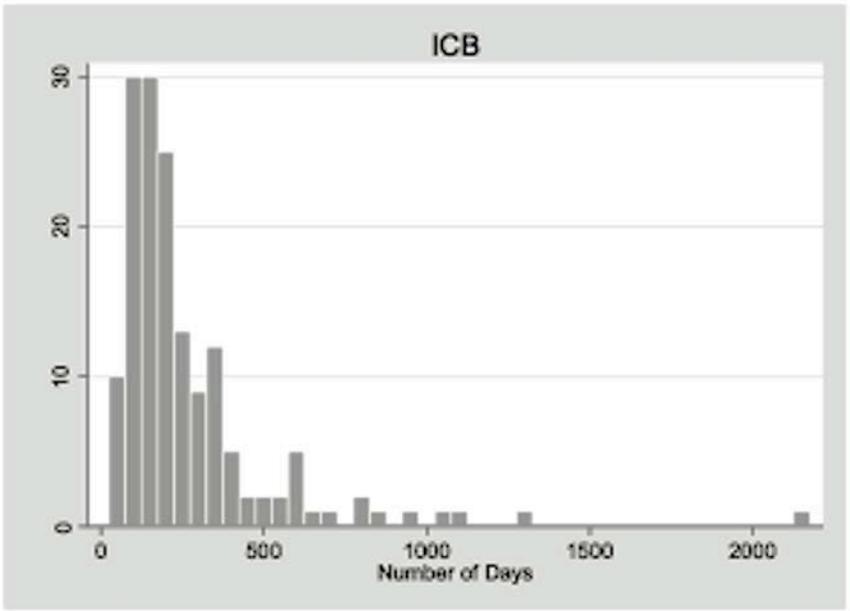
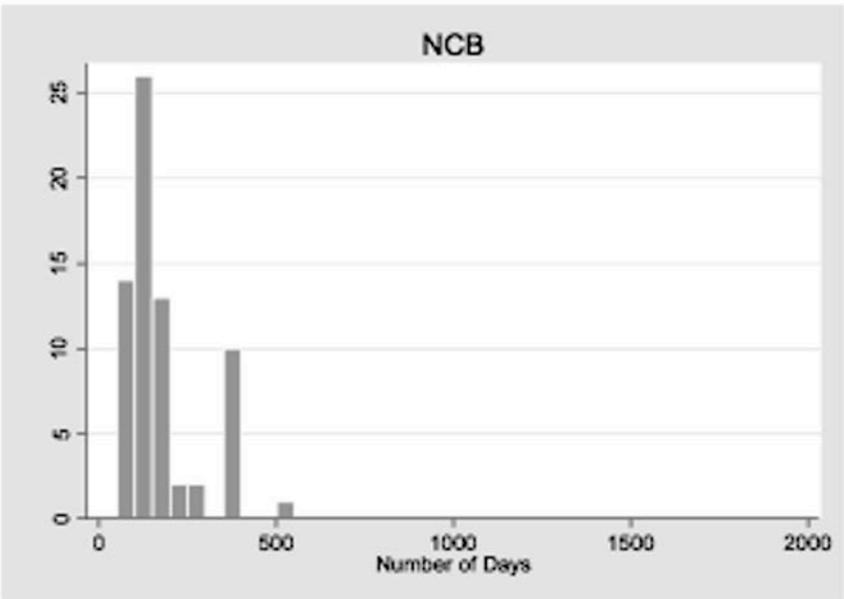
Source: IEG analysis of a sample of contract data.

Comparing the arithmetic mean and the mode of the distributions, the former is typically higher, due to a proportion of contracts that are more time consuming. A key finding is that from the time the borrower issues the Specific Procurement Notice to signature of contract, the procurement process takes more time, on average, for the QCBS method used for the selection of consultant services, as compared to ICB and NCB. On average, the processing time to procure consultant services are more than 100 percent greater than for contracts awarded using NCB. Differences are not merely that of average time taken, but also in number of outliers (Figure 3).

The distribution of elapsed times for the intermediate procurement step from submission of draft bid documents to the bank's no-objection to the final bid evaluation report shows the existence of extreme values for all procurement methods, with especially high values for ICB and QCBS contracts. Consultant

**FIGURE 3**  
**Distribution of Days from Issue of Specific Procurement Notice to Contract Signature**





Source: IEG analysis of a sample of contract data.

services and ICB contracts differ only by a few days in average processing time taken for this interval. The contracts that contribute the upper five percent of processing time for consultant services selected through QCBS take more than three times longer than the bottom fifty percent of contracts.

### **What Explains the Time Taken to Process a Contract? Findings from Statistical Analysis**

Many factors can affect procurement process times and it is difficult to know what the most important determinants of elapsed time may be. A multiple regression helps understanding the relative influence of different factors that affect procurement processing time, including contract attributes, (procurement method, category of good or service procured, major sector, and contract value), together with country specific control variables (governance indicators as proxied by the Bank's CPIA, levels of GDP and the poverty rate).

The distribution of residuals in the regressions exhibits deviation from the normal distribution, possibly due to some high leverage data points in the 'long tail' discussed in previous sections. This clearly affects the interpretation of regression results, as the normality of residuals cannot be consistently assumed. This analysis therefore focused on the correlation relationships that emerged between analyzed variables using robust standard errors in the regressions presented. While the non-normality of residuals does not affect the consistency of the estimate it may affect its statistical significance. Suggestive correlations found need therefore be weighed against the fact that errors are not normally distributed.

Two time intervals were examined, in terms of the time taken from: (1) the Issue of the Specific Procurement Notice to Contract Signature; and (2) the Submission of Draft Bidding Documents to the Final no-Objection to the Bid Evaluation Report. One key relationship that emerged from both specifications is that processing time is clearly associated with increased contract value. Explanatory variables included contract attributes (contract value, procurement method, category of work, good or service procured and major sector); control variables included country specific variables (GDP, poverty rate).

Results indicate a statistically significant positive relationship between contract value and processing time, robust to the

introduction of controls (Table 1). This may be explained by the fact that larger contract values require higher clearance thresholds as briefly discussed above. Field procurement officers have to request clearance from hub coordinators, regional procurement managers, etc. The significant correlation between contract value and elapsed times is present even while controlling for regions, sectors, country attributes and GDP. Other variables may also be important, and data limitations may prevent statistically significant results. It is also true that contracts procured using National Competitive Bidding (NCB) appear to take less time than those using ICB, and finally, governance considerations in the countries concerned may make a statistically significant difference to processing time.

The first interval analyzed was the time taken from the *Issue of the Specific Procurement Notice to Contract Signature*. Explanatory variables included contract attributes: (contract value, procurement method, category of good or service being procured and major sector); control variables included country specific variables (GDP, poverty rate). Results indicate a statistically significant positive relationship between contract value and processing time, robust to the introduction of controls (Appendix Table 1). Coefficients denote marginal effects, and results suggest (Appendix Table 1) that for every \$10m increase in contract value, the number of days for processing increases by 14.6 days, *independent of all other contract attributes and across all countries and regional offices*. Results also indicate significantly lower elapsed times for NCB contracts compared to ICB.

For a second interval from *Submission of Draft Bid Documents to No-Objection to the Bid Evaluation Report* data on this time interval was available for 213 contracts.<sup>5</sup> The positive relationship between contract value and elapsed time remained statistically significant, and robust to the addition of controls (Appendix Table 2). Marginal effects were broadly similar - the regression coefficient implies that for every \$10m increase in contract value, the number of days for Bank No Objection increases by 10.6 days, *independent of all other contract attributes and across all countries and regional offices*. The coefficient for method - National Competitive Bidding - as compared to other methods, was also significant, and the coefficient implies that it takes the World Bank, on average, 65 days less to issue no objection for NCB method contracts as compared to ICB.

The second specification also adds country governance as a control variable, in the form of the CPIA. Results indicate that country level governance factors have a powerful influence on elapsed time, with lower elapsed times for countries with higher CPIA scores.

Although only illustrative, the preceding analysis suggests a number of factors that may impact process efficiency, and may at least pave the way for more comprehensive and systematic work in this area. First, average time taken is clearly much longer than Bank norms, but second, there is a high level of variability in processing times, typically with a 'long tail' of contracts that take considerably longer than average times. Third, in terms of procurement methods, national competitive bidding is notably quicker than ICB, and conversely, consultant contract processing through quality and cost based methods is particularly time consuming. Fourth, the size of a contract in terms of its value is perhaps the single most important determinant of elapsed time. This is likely explained by the implied clearance thresholds and at least partially reflecting greater complexity of the contract. And finally, country capacity and governance matter. Countries with lower CPIAs, or IDA countries compared to IBRD countries, appear to require longer processing times.

There are caveats to the interpretation of these results. First, the analysis here breaks down elapsed time by process step, but does not separate the time taken by World Bank procurement staff, other World Bank staff, and country officials. Therefore it is not possible to identify which set of players in the procurement process was responsible for any excesses in time taken. Data collected in this exercise did not permit the identification of elapsed time per iteration. Such data are available for the Africa region in the PROCYS database described above, but not on a global basis.<sup>6</sup>

Another caveat in interpretation is that longer times in some procurement processing clearly could reflect potentially justifiable delays due to significant problems encountered in the procurement execution process for individual contracts. The preceding analysis does not permit the separation of total elapsed time into justifiable delays and overruns that may be due to more mundane reasons.

### **CONCLUSION: GENERALIZABILITY TO OTHER PUBLIC PROCUREMENT CONTEXTS**

To what extent are these methods of analysis generalizable to other contexts of public procurement? First, public procurement at most multilateral development banks and some other international financial institutions has to deal with issues of compliance and review in recipient countries. Given that procurement inefficiency reduces Value for Money, entities involved in international public procurement need to take steps to measure and analyze the source of the inefficiency. Measuring and analyzing procurement inefficiency, as highlighted in our analysis, requires data to be collected on dates of each step of procurement process. This data permits an analysis of not only average elapsed time for each step of the process, but also the distribution of time taken as this can reveal interesting information in addition to the average. Studying the drivers of procurement efficiency also requires contract and country attribute data, which, data permitting, can be used to conduct statistical regression analysis to highlight the relative importance of different potential sources of procurement inefficiency.

Beyond international agencies, to the extent that any public procurement process requires several 'no objections' it can potentially introduce inefficiency in the time elapsed for each step. The present analysis is therefore also relevant for any procurement process that requires several steps of review and clearance. The analysis shows that there is scope for increasing efficiency by streamlining the review process, which could produce time savings and hence, potential cost savings, and therefore, that a process of tracking and monitoring such steps could help maintain discipline towards the achievement of value for money.

Other efficiency increasing (and transaction cost reducing) measures could also expand value for money. In the World Bank context, greater scope for integrated data management, and better availability and transparency of data emerged as relevant examples. Further steps could be taken to address efficiency aspects, such as the identification of an inventory of standardized procurement outcomes to use as benchmarks for process efficiency analysis, or risk and complexity adjusted measures that try to quantify the trade-off between performance and compliance.

Overall improvements in the collection of contract data can meet wider objectives. Used effectively, tracking and monitoring systems could collect information not only on the contract process but also on the prices paid, time taken, and whether value for money is achieved in public procurement. Multilateral Development Banks and other large public sector organizations are in a unique position to collect contract data on transactions and prices, which, if shared, could provide a wealth of data to administrations and development agencies. The pooled data can then be utilized for benchmarking purposes to eventually improve procurement efficiency, for example, benchmarking against internal best practices; against best practice in other similar organizations, or among specific supplier pools in a country/region, and finally, benchmarking using different procurement methodologies and criteria.

#### NOTES

1. Most countries also set monetary thresholds for the use of shopping procurement method.
2. These systems are under review at the World Bank and improvements in system architecture are expected.
3. The International Development Association (IDA) is the part of the World Bank and one of the largest sources of assistance for the world's 82 poorest countries, 40 of which are in Africa. IDA lends money on concessional terms. IDA also provides grants to countries at risk of debt distress.
4. For the regression analysis of average processing times from Submission of draft Bid Documents to No Objection to final Bid Evaluation Report only QCBS procurement is considered for Consultant Services contracts.
5. The complete report of the Independent Evaluation Group's evaluation of the World Bank's procurement systems and practices (IEG 2014) includes an analysis of the Africa regional data.

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## APPENDIX

**TABLE 1**  
**Analysis of Processing Time from Issuing of Notice to Contract Signature (N = 272)**

Variables	SPN to Contract Signature	Variables	SPN to Contract Signature
Contract	1.46e-06***	Contracts	(63.01)
Value	(1.01e-07)	NCB Method	-113.5***
Social Sector	-27.32		(39.52)
	(52.15)	Cons. Method	93.17
Infrastructure Sector	64.89		(66.99)
	(52.47)	GDP	0.0121*
Economic Sector	-49.65		(0.00626)
	(47.34)	Average	-0.725
Civil Works Contracts	48.90	Poverty Rate	(4.488)
	(66.33)	Constant	158.0*
Consultant Contracts	70.51		(91.97)
	(75.10)	Observations	272
Goods	34.09	R-squared	0.346

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\*

$p < 0.05$ , \*  $p < 0.1$ . All Country and Regional Controls Have Been Included. The regression specifications were tested for multicollinearity using the “variance inflation factor” method, and all variables had a VIF score significantly less than 10, suggesting that multicollinearity is not a concern with the specification. Source: IEG analysis of sample contract data.

**TABLE 2**  
**Analysis of Processing Time from Submission of draft Bid Documents to Bank’s No Objection to Final Bid Evaluation Report (N=213)**

Variables	Processing Time for Bank No Objection	Variables	Processing Time for Bank No Objection
NCB Method	-64.61*	Contracts	(35.93)
	(27.69)	Goods	-76.20*
QCBS Method	21.90	Contracts	(40.35)
	(34.87)	GDP Level	0.0352***
Contract Value	1.06e-06***	Average	(0.00962)
	(1.78e-07)		-1.816
Social Sector	-36.42	Poverty Rate	(2.819)
	(41.27)	CPIA	-335.33***
Infrastructure Sector	-21.86	score	(112.82)
	(35.25)	Constant	1,533***
Economic Sector	-58.11	Observations	(410.6)
	(44.20)		213
Civil Works	-51.14	R-squared	0.445

Notes: Specification includes country and regional level controls. The regression specifications were tested for multicollinearity using the “variance inflation factor” method, and all variables had a VIF score significantly less than 10, suggesting that multicollinearity is not a concern with the specification.

Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Source: IEG analysis of sample contract data.