

ELEMENTS OF PUBLIC PROCUREMENT REFORM AND THEIR EFFECT ON THE PUBLIC SECTOR IN LAC¹

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ABSTRACT. Between 2007 and 2013, public procurement systems in Latin America and the Caribbean underwent a critical reform process. However, not much is known about the elements of reform and their effect on the public sector. In order to assess this gap in knowledge, this study used an institutional evaluation multivariate tool developed and carried out by the Inter-American Development Bank called PRODEV. Based on a sample panel of countries, effects on the development of public procurement systems were calculated. The results indicated that, of the three main areas of procurement reform evaluated, the creation of a procurement agency² had the largest impact. At the same time, evidence was found that backed the hypothesis that creating these agencies had a positive effect on the perception of public sector performance.

INTRODUCTION

Public Procurement Reform (PPR) in Latin America and the Caribbean (LAC) has been part of the transformation of the public sector movement that started in the 1990s in the region. Although PPR was originally conceived as just a small piece of broader overarching reforms, in areas such as public financial management

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or anti-corruption and transparency, after the year 2000, PPR gained in relevance in its own right. As countries increasingly realized the potential economic and strategic value of public procurement, PPR grew from being perceived as a mere administrative task that needed to be streamlined, to a stand-alone reform area that while connected to the overall PFM system, was a sector with its own agenda and particularities. This is particularly the case given that it is one of the few functions in government that is truly at the intersection of public policy, citizen services and the private sector, with all the political and technical challenges that those factors involve.

Two decades have passed since these efforts began in LAC, and since then there have been great strides in the modernization and reform of public procurement systems. These advances have included the creation of e-procurement platforms, the establishment of more comprehensive legal frameworks, the professionalization of procurement officer, use of procurement to promote social objectives, and the inclusion of green criteria in tendering opportunities. PPRs in the region have been analyzed extensively, including for example the impetus for reform, issues and constraints affecting the reforms, partial evaluations of outputs that these reforms aimed to accomplish, and specific country case studies. However, little has been written to identify and analyze the outcomes of the reforms and impact that such reforms have had on the perception of public sector performance.

This paper seeks to address those gaps in knowledge by providing a conceptual framework for understanding the context under which public procurement reforms are carried out and examining what the authors are calling for the purposes of this paper “first generation public procurement reform elements.” This includes: i) legal framework for public procurement, ii) procurement agency and iii) electronic government procurement (eGP). The impact of those elements are then analyzed as part of procurement reforms that were carried out over the 2007-2013 period and their impact on public sector performance through a set of indicators that will be described in Section 3. This paper is not meant to be a comprehensive review of the Public Sector Reform (PSR) literature; however, it is the first study that examines whether or not there is evidence of a relationship between PPR and improved performance in the public sector.

The rest of the paper is organized as follows. Section 2 provides a background with a conceptual introduction to public procurement reform and a description of the first generation public procurement reform elements. Section 3 describes the methodology, including a description of the indicator database that was used and the authors' empirical approach. Section 4 analyzes the results and Section 5 provides conclusions for the paper and suggestions for future areas of research.

BACKGROUND

Conceptual Introduction to Public Procurement Reform

The years after 1990 have brought important transformation to the public sector in the LAC region, with newspaper headlines dominated by buzzwords such as globalization, decentralization, highly indebted economies, corruption, crisis, and liberalization. In the first years of Public Sector Reform (PSR) in the region during the early 1990s, there was significant pressure to reduce public spending and implement market solutions. In addition, there was a growing disenchantment with the effectiveness of state intervention. This contributed to a questioning of whether the configuration of the public sector was suitable given the specific context of the market and requirements of citizens (Carneiro & Rocha, 1999; Echebarria and Cortazar, 2006).

PSR emerged as an attempt to strengthen the way that the public sector was designed and managed as it was considered to be overextended, attempting to do too much with limited resources and capacity. The literature describes how before PSR, governments were not well-organized, with irrational decision-making processes, mismanaged staff, weak accountability, badly designed public programs and poorly delivered public services (Schacter, 2000; Tommasi, 2003; Lora, 2006; World Bank, 2009). PSR did not appear as a trend just in the OECD countries, but also in the developing world. In LAC for example, it was carried out as part of other reforms such as public financial management, administrative and civil service, revenue administration, and anti-corruption and transparency (World Bank, 2009). Activities in these areas were undertaken either as part of a comprehensive program of PSR that covered many or all government departments and agencies, or a narrower program that

focused on only one agency or a limited number of agencies (Schacter, 2000).

PSR can be divided in two phases, including first and second generation reforms. First generation reforms, which tended to occur in the early nineties, were essentially measures to address monetary and fiscal imbalances related to the direct role of government in the economy and were aimed at resolving issues in the short-term. Second generation reforms which tended to occur in the 2000s involved institutional change designed to enhance the overall efficiency of government regulation and public policy and had a medium and long-term focus. (Naim, 1994; Lora, 2006; Panizza & Philip, 2005; Garcia, 2003).

Second-generation reforms have been regarded as both necessary to complement first generation ones and at the same time are more difficult to implement. Given their complexity, it is useful to disentangle three types of second-generation reforms: 1) market-completing measures designed to bring liberalization initiatives started under the first reform phase to fuller fruition; and 2) equity-oriented programs designed to address the increasing income gap in the region; and 3) institution-building initiatives aimed at “good governance” (Pastor & Wise, 1999). First and second generation reforms are not necessarily sequential; indeed, the institution-building typically associated with the second generation often can and should occur in parallel with the first generation.

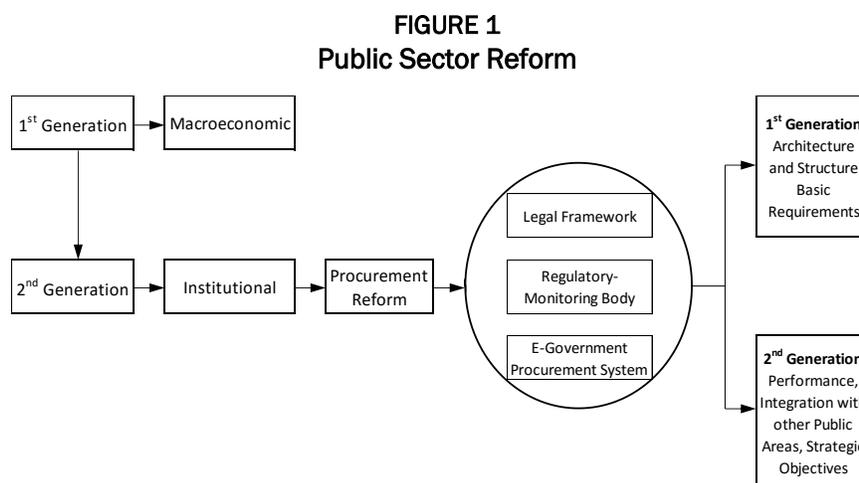
PPR can be considered part of the PSR second generation reforms given that they aim to provide more transparency and efficiency to the public sector, better governance and improved economic performance. PPR has traditionally tended to be a small part of a bigger reform such as one geared towards public financial management. This was the case as its importance was not fully recognized in the beginning. However, this has been changing, at least in the LAC region where on average by 2011, general government spending via public procurement represented 26% of total government expenditures (OECD, 2014). This has sparked interest in the topic and the literature on PPR has been growing as it gains relevance. This is particularly true as it becomes more closely integrated with and critical to other relevant aspects of public sector performance including revenue administration, effectiveness of spending and overall fiscal management.

That brings us to another relevant point for understanding PPRs. As with public sector reforms, PPRs can also be divided into first and second generation reforms. First generation PPRs are the initial steps that a country takes when seeking to modernize its public procurement system, typically encompassing a set of reforms that focus on the institutional architecture. Once basic structures are in place, countries often start implementing second generation reforms, which tend to be more focused on performance and integration to other systems in the public sector (Calderon, 2016). However, there is no blueprint for the reform process. Every country has taken its own approach depending on local context, and in some countries elements of both types of reforms coexist, having blurred the lines regarding the prioritization of the activities carried out.

Multiple motives can explain how these reforms started in the region. The first generation PPRs that were launched in LAC countries in the late 1990s and early 2000s, tended to respond to the needs of aligning procurement systems more closely with the donors' vision of what a PPR should entail, such as commercial integration trends, market developments, the use of communication technologies and transparency (Ladipo, Sanchez & Sopher, 2009; Sanchez, 2013; Pimenta & Rezai, 2015). Then, at a later stage, second generation PPRs tended to be sparked by pressure to address how public resources were being managed. This can be the result of budget constraints, which led to a desire for more efficient use of public resources; civil society demands and increased participation of certain groups such as Small and Medium-Sized Enterprises (SMEs) or women owned businesses; and pressure from international organizations to achieve efficiency, competition and fairness.

For the purposes of this paper, the authors analyzed three first generation PPR elements in LAC, including improvements in legal and regulatory frameworks, setting up of new policy and monitoring entity for the management of procurement and the introduction of eGP. They did not take into account second generation PPRs that often include for example, upholding the integrity of the system, performance management, links to other public sector reforms, and the promotion of strategic objectives (Mohan, 2012; Hunja, 2010). Further study analyzing the effects of second generation reforms would be a very useful contribution to the public procurement

literature. A summary of first and second generation reform elements is presented in Figure 1 (Calderon, 2016).



Source: Based on Calderon (2016)

In terms of financing, in the region PPRs can be financed completely by the countries (e.g., Chile, Brazil and Mexico), or with help from donors (e.g., Colombia, Jamaica, Nicaragua and Panama). Over the last decade, donors have increased their support to this area given the pressures for reform in development aid. This has been underpinned in international agreements, including the Paris Declaration (2005), the Accra Agenda for Action (2008) and the Busan Partnership for Effective Development Cooperation (2011) (Gutman, 2013; Sanchez, 2013; Ladipo et al, 2009). In the case of the Inter-American Development Bank (IDB)³ both advisory services (technical cooperation) and lending support for procurement reform and modernization amounting to around US \$270 million was provided over the period covered by this paper.

In order to monitor reform in the region, procurement diagnostic assessments were supported first through Country Procurement Assessment Reports (CPARs) and later through the internationally recognized Methodology for Assessing Procurement Systems (MAPS)⁴ (World Bank, 2014). More integrated diagnostic assessments of public procurement and public financial management systems were

also carried out through the Public Expenditure and Financial Accountability (PEFA) instrument. Additionally, the IDB developed an evaluation methodology known as PET (PRODEV Evaluation tool), which was applied in 2007 and then again in 2013. It is an instrument that analyzes a country's institutional capacities to implement results-based public management. The PET divides the management cycle for public policies into five pillars: (i) results-oriented planning, (ii) results-based budgeting, (iii) financial management, auditing, and procurement, (iv) program and project management, and (v) monitoring and evaluation (Kaufmann, Sangines & Garcia Moreno, 2015). Additional information about this instrument will be covered in the methodology section.

First Generation Public Procurement Reform Elements

Legal Framework

When countries start discussing procurement reform, the first change that is typically mentioned is the establishment of a modern legal framework. A clear, concise and comprehensive legislation is critical to having a competitive, efficient and transparent procurement system. Legislation sets and frames the rules of the game for the public and private sector actors participating in the procurement process, whether it is detailed in the main or secondary legislation. At the same time, appropriate legislation can ensure new opportunities for transparency and greater efficiency (Leon de Mariz, 2015). An appropriate legislation creates a balance between limiting the choices of actors (reducing corruption and promoting uniformity of process) and providing an environment where public procurement can be carried out more strategically and efficiently.

Legal reforms tend to focus on the establishment of a stand-alone procurement law and its secondary documents such as regulations, manuals and standard bidding documents. This is usually an attempt to bring the country up to international standards, providing a "clear, comprehensive framework with rules for the process of acquiring goods, works and services as well as an appeals mechanism to address complaints from bidders." In the Caribbean, there is a mixture of civil (e.g., Haiti) and common law. In the common law system, this has typically meant going from dispersed clauses in different financial acts to a dedicated procurement law. In Latin American countries, which come from a civil law perspective, many countries had

dedicated procurement laws, but they were outdated and overly legalistic and complicated. The trend has been towards the establishment of new and simplified laws which enshrine overarching principles (value for money, transparency, efficiency) in the primary legislation and details in the secondary legislation. The legislative reform has provided updates such as allowing for electronic transactions, new procurement modalities (reverse auctions and framework agreement) and increasing fairness of the process through complaints mechanisms. The first wave of countries in the region to implement new procurement laws started in the early 2000s including Argentina (2001), Chile (2003), El Salvador (2000) and Guyana (2003). Then there was a second wave (analyzed in this paper) that includes countries such as Bolivia (2009), Haiti (2008), and Peru (2009) as presented in Annex I.

To that regard, the first element that was analyzed was the legal framework for the procurement system. A reform was considered to have occurred if the legal framework was shown to consistently and comprehensively regulate the public procurement and contracting process, based on competition and transparency in awarding public contracts.

Procurement Agency

The second public procurement element that was considered in this study was the establishment of a procurement agency. Experience from the region has shown that it is critical to have an agency with a dedicated policy and monitoring role that drives change by ensuring that new rules and regulations as part of the modernization of legal frameworks are implemented.

To cover some of the functions implemented by a procurement agency, the first offices that were created as part of PPRs in the Latin American region were lesser offices within the Ministry of Finance.⁵ They did not have any autonomy either for their budget or administration and at times tended to have split functions among different entities.⁶ Indeed, when the reforms started at the end of the 90s, they were more focused on the legal and procedural aspects than institutional (Claro, 2007; Ladipo, et al, 2009). Additionally, at that time the benefits of having proper entities with autonomy and capacity were not widely known, thus it was not a priority to invest in the establishment of sophisticated agencies for public procurement.

However, in 2003 the creation of a procurement agency in Chile changed the way countries in the region, and donors viewed procurement agencies. While Brazil and Mexico, were champions in the management of the procurement market and e-procurement system, ChileCompra was the first entity with both the mandate for policy and monitoring and the operation of market functions, with the capacity and autonomy to do so in a unitary Latin country (Calderon, 2016). Its success along with its massive branding strategy, increased the institutional isomorphic pressure in the region, giving way to a phenomenon that Calderon (2016) has called “the second wave: public procurement agencification.”⁷ This is a period that covers the years between 2006 and 2012 in which the establishment of organizations with similar characteristics of ChileCompra started to appear throughout Latin America (for example in Colombia, Ecuador, Panama, Paraguay, Peru and Uruguay). Some of these organizations have similar organization, functions and procedures, others even more sophisticated, in charge not just of the monitoring and regulation of public procurement system, but also in some cases with audit and control functions (Suarez, 2013).⁸

In the case of Caribbean countries, given that public procurement tends to be highly decentralized, it has been difficult for many of the countries to envision the benefits that an entity in charge of policy and monitoring could bring. Additionally, as some of the countries are still resolving pending issues in their legal frameworks (particularly the passage of a dedicated procurement law), there have not been many attempts to review how to institutionalize regulatory changes.

Currently, some of these countries already have in place centralized offices in charge of monitoring and regulation of the system, like the Procurement Policy Implementation Unit in the Ministry of Finance in Jamaica (established in 1999), while others are in the planning stages for these type of offices in the short and medium-term (e.g. Barbados, Bahamas, Guyana, Suriname and Trinidad). In the meantime, the person in charge of the topic in those countries is the head of the tenders’ board, with an administrative function (i.e. overseeing the tender process); the Contractor-Generals (in the case of Belize) with a control and audit role (i.e. monitoring and investigating the award and implementation of government contracts, in order to ensure that they are awarded impartially); or a high-level official in the Ministry of Finance (closer to the policy design function).

This second reform element was considered to have occurred if a country has a regulatory or policy-setting body that has a defined set of responsibilities for government procurement (including a sustainable training strategy for contracting entities and the private sector, covering the rules of government procurement and their application).

Electronic Government Procurement (eGP)⁹

Finally, the last procurement reform element that was analyzed in this paper is the development and implementation of eGP. This type of technological reform usually has the objective of increasing transparency and efficiency in terms of cost (greater competition and lowered transaction costs) and time savings (streamlined processes) (World Bank, 2003). Calculating savings in public procurement is notoriously difficult given all the factors that could potentially contribute to the savings, but estimates with eGP implementation range from 5% to 20% (ADB, 2013).

To that regard, over the last twenty years there has been a tremendous amount of investment in these types of systems. Platforms range from basic informational procurement portals, which are essentially procurement notice boards to transactional platforms. They include business models that benefit from the aggregation of demand and increased savings, such as framework agreements (e.g., Chile, Colombia, Panama) and reverse auctions (for example Brazil and Paraguay). In some countries the governments have been using electronic platforms to implement business intelligence modules that are generating critical data that can assist policy makers and public officials to make decisions regarding their public procurement requirements and increase accountability of the public procurement function with regard to civil society. All these advances have resulted in LAC being one of the regions with the most progress over the last few years in eGP (OECD, 2014).

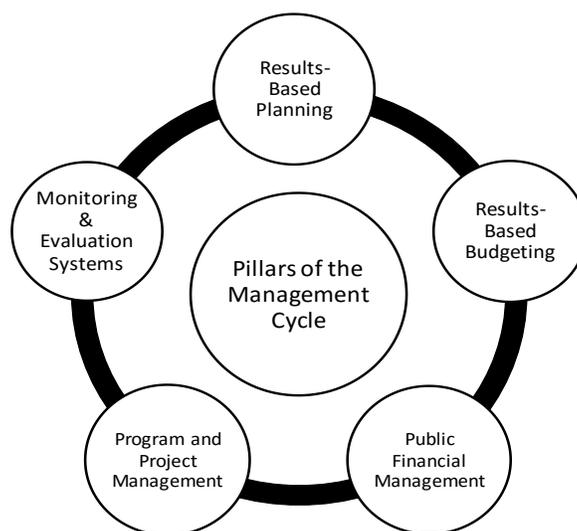
To that regard, the third type of reform that was considered in this paper was whether or not the country implemented eGP. This was considered accomplished if the country has a mechanism with procurement statistics that are accessible to public institutions, an electronic system for collecting and disseminating information on procurement processes to the public, and finally whether or not eGP is integrated into the electronic financial management system.

METHODOLOGY

Data Base

One of the contributions of PRODEV was the development of an evaluation tool known as PET (PRODEV Evaluation Tool), whose objective is to analyze the degree of progress and institutionalization of the practices and instruments of Management for Results (GpRD) in the public sector in LAC. PET is a diagnostic tool that enables users to evaluate the institutional management capacity of a country. It was designed in accordance with the conceptual module of GpRD, which provides a framework for understanding the role that the institutional capacity of a particular country to implement such a management approach in the public sector.¹⁰ The PET tool focuses on evaluating five pillars of GpRD: i) results-based planning, ii) results-based budgeting, iii) public financial management, including financial, audit and procurement in the public sector, iv) program and project management (including the public investment system), and v) monitoring and evaluation of public management (see Figure 2).

FIGURE 2
PET Pillars



Source: Garcia Roberto and Garcia Mauricio (2010).

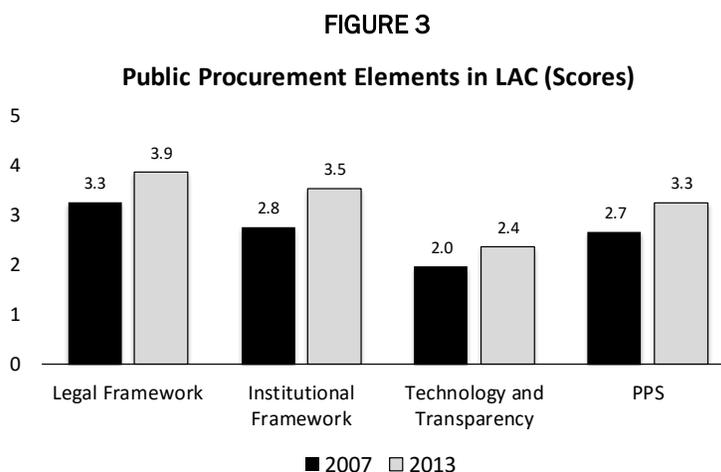
These elements are known as pillars of the management cycle, and are subdivided into a set of components (18) that describe the maturity of the institutional system of a country. At the same time, these components have a set of indicators (37) and requirements (142) that reflect an integral approach to GpRD. These indicators are classified using a scale of 1 to 5, where 5 represents the optimal score of the indicator. The components and pillars of PET use the same scale.

PET was applied for the first time between 2007 and 2009 in an analysis of central governments in the following 25 LAC countries: Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Mexico, Panama, Paraguay, Peru, Dominican Republic, Suriname, Trinidad and Tobago and Uruguay.¹¹ The same instrument was applied between 2007 and 2009 and was repeated again between 2012 and 2013. This enabled a comparison between the two periods, the identification of advances and declines in the institutional development of the public sector, and facilitated at the same time, the building of a sampling panel that enables an investigation into some of the stylized facts.

Empirical Approach

In this document the authors build a panel sample database for component #2: *Public Procurement System*, from the public financial management, audit and procurement in the public sector section of PRODEV, which uses two broad indicators which include eleven requirements that measure procurement.¹² For the purposes of this paper, the authors have regrouped the indicators into three categories (see Figure 3): (i) Legal Framework, (ii) Institutional Framework and (iii) Technology and Transparency. The following section provides a summary of the PET database results for the public procurement component in Latin America and the Caribbean region. For these three events, three dummy variables were created, which have the value of "1" if the event occurred between 2007 and 2013 and "0" if not.

The effects of the reform on the development of the procurement systems in the region were estimated using a panel model for the



PPS: Public Procurement Global Score

Source: Based on the authors own calculations

sample of countries where PRODEV was evaluated between 2007 and 2013. For which, we can assume that y_{it} represents the scoring for the public procurement elements (PPS) at the i -th country ($i = 1, \dots, 25$) between $t = 2007, 2013$. In symbols, consider the model:

$$y_{it} = \beta_{11} + \beta_{12t} + \beta_{13t} + \sum_j \beta_{2j} x_{jit} + u_{it} \quad (1)$$

where β_{12t} gathers the time invariant effects by country, β_{13t} the temporal effect between both transversal samples (2007 and 2013), β_{11} is a constant term, and β_{2j} is the j -th coefficient that multiplies the j -th exogenous variable of the model (x_{jit}).

These variables are the dummy variables that capture the reforms (new agency, new legal framework and new electronic platform) carried out in the public procurement systems between 2007 and 2013, as well as the effect of the IDB support on the development of the procurement systems in LAC region during the period of analysis.

On the other hand, the effects of the PPS reform between 2007 and 2013 on indicators related to the perception of public sector performance were estimated by using a three stage process, in order to approach a transmission mechanism of these effects.

First of all, the authors calculated the predicted values of the extended equation (1), then they used these values to estimate the impact of the PPS reform on a variable they called a “bridge” variable, which allowed them to pinpoint the final effect of the reform on the variables of interest exogenously. They used as a “bridge” variable the regulatory quality score (z) from the Global Competitive Report, and the variables of interest (I) were those that fulfilled two requirements: the availability for the years of analysis, and a relationship with the perception of public sector performance. These indicators were: (i) the Global Competitiveness Index (GCI), (ii) transparency of government policy making, (iii) favoritism in the decisions of government officials, (iv) burden of government regulation, (v) extent of market dominance, (vi) intensity of local competition, (vii) government procurement of advanced technological products. In symbols, consider the following expected value:

$$E(y_{it} | x_{jit}) = \beta_{11} + \beta_{12t} + \beta_{13t} + \sum_j \beta_{2j} x_{jit}$$

Which in matrix form can be represented as,

$$E(y | \mathbf{X}_1, \mathbf{X}_2) = \mathbf{X}_1 \boldsymbol{\beta}_1 + \mathbf{X}_2 \boldsymbol{\beta}_2 \quad \text{Stage 1}$$

The authors defined z , the bridge variable, as:

$$z = \mathbf{X}_1 \boldsymbol{\alpha}_1 + E(y | \mathbf{X}_1, \mathbf{X}_2) \boldsymbol{\alpha}_2 + \boldsymbol{\mu}$$

$$\begin{aligned} E(z | E(y | \mathbf{X}_1, \mathbf{X}_2)) &= E(z | \mathbf{X}_1, \mathbf{X}_2) \\ &= \mathbf{X}_1 \boldsymbol{\alpha}_1 + E(\mathbf{Y} | \mathbf{X}_1, \mathbf{X}_2) \otimes \boldsymbol{\alpha}_2 \\ &= \mathbf{X}_1 \boldsymbol{\alpha}_1 + (\mathbf{X}_1 \boldsymbol{\beta}_1 + \mathbf{X}_2 \boldsymbol{\beta}_2) \otimes \boldsymbol{\alpha}_2 \end{aligned} \quad \text{Stage 2}$$

Then they pinpointed the effect of the PPS reform on the l -th indicator by using the following equation:

$$\begin{aligned} I &= \mathbf{X}_1 \boldsymbol{\kappa}_l + E(z | \mathbf{X}_1, \mathbf{X}_2) \otimes \boldsymbol{\kappa}_l + \boldsymbol{\varepsilon}_l \quad (2) \\ &= \mathbf{X}_1 \boldsymbol{\kappa}_l + [\mathbf{X}_1 \boldsymbol{\alpha}_1 + (\mathbf{X}_1 \boldsymbol{\beta}_1 + \mathbf{X}_2 \boldsymbol{\beta}_2) \otimes \boldsymbol{\alpha}_2] \otimes \boldsymbol{\kappa}_l + \boldsymbol{\varepsilon}_l \\ &= \mathbf{X}_1 \boldsymbol{\kappa}_l + \mathbf{X}_1 \boldsymbol{\alpha}_1 \otimes \boldsymbol{\kappa}_l + \mathbf{X}_1 (\boldsymbol{\beta}_1 \otimes \boldsymbol{\alpha}_2) \otimes \boldsymbol{\kappa}_l + \mathbf{X}_2 (\boldsymbol{\beta}_2 \otimes \boldsymbol{\alpha}_2) \otimes \boldsymbol{\kappa}_l + \boldsymbol{\varepsilon}_l \\ &= \mathbf{X}_1 \boldsymbol{\kappa}_l + \mathbf{X}_1 \boldsymbol{\phi}_l + \mathbf{X}_1 \boldsymbol{\lambda}_l \otimes \boldsymbol{\kappa}_l + \mathbf{X}_2 \boldsymbol{\lambda}_2 \otimes \boldsymbol{\kappa}_l + \boldsymbol{\varepsilon}_l \\ &= \mathbf{X}_1 \boldsymbol{\kappa}_l + \mathbf{X}_1 \boldsymbol{\phi}_l + \mathbf{X}_1 \boldsymbol{\omega}_l + \mathbf{X}_2 \boldsymbol{\omega}_2 + \boldsymbol{\varepsilon}_l \\ I &= \mathbf{X}_1 (\boldsymbol{\kappa}_l + \boldsymbol{\phi}_l + \boldsymbol{\omega}_l)_l + \mathbf{X}_2 \boldsymbol{\omega}_2 + \boldsymbol{\varepsilon}_l \end{aligned} \quad \text{Stage 3}$$

Where: $\boldsymbol{\phi}_l = \boldsymbol{\alpha}_1 \otimes \boldsymbol{\kappa}_l$; $\boldsymbol{\omega}_1 = (\boldsymbol{\beta}_1 \otimes \boldsymbol{\alpha}_2) \otimes \boldsymbol{\kappa}_l$; and $\boldsymbol{\omega}_2 = (\boldsymbol{\beta}_2 \otimes \boldsymbol{\alpha}_2) \otimes \boldsymbol{\kappa}_l$.

The marginal effects come from the following expression:

$$\partial E(I | E(z | X_1, X_2)) / \partial E(z | X_2) = \partial E(I | X_1, X_2) / \partial X_2 = \omega_{2l} = (\beta_2 \otimes \alpha_2) \otimes \kappa_{2l}$$

This expression reflects the effect of a change in the j -th variable (x_{jit}) of X_2 on the l -th indicator of interest I . As can be seen, the effect of a change in x_{jit} on I (given by κ_{2l}) is affected by the effect of x_{jit} on z (given by α_{2j}), and by the effect of x_{jit} on y (given by β_{2j}), which means that the effect of the PPS reform on I is automatically controlled by the effect of the PPS reform on the regulatory quality observed in the i -th country.

Finally, to estimate the gross impact of creating a procurement agency (agencification) on the l -th indicator I , the authors used the following expressions:

$$E(z | x_{1it} = 1) = z_{t=1} \text{ (agencies created between 2007 and 2013)}$$

$$E(z | x_{1it} = 0) = z_{t=0} \text{ (otherwise)}$$

$$E(I | z_{t=1}) = E(I | x_{1it} = 1) = I_{t=1}$$

$$E(I | z_{t=0}) = E(I | x_{1it} = 0) = I_{t=0}$$

Thus, the expected change on the l -th indicator I due to the agencification process between 2007 and 2013 is defined as:

$$\Delta I = I_{t=1} - I_{t=0}$$

$$\Delta \% I = (I_{t=1} - I_{t=0}) / I_{t=0} \quad (3)$$

RESULTS

Table 1 shows the results of equation 1. As can be observed, in all the estimated equations, the coefficient that accompanies the creation of the procurement agency was always statistically significant and had the expected sign. After carrying out the Breusch-Pagan (BP) test for random effects and the Hausman test, the results indicated that, of the three main areas of the procurement reform evaluated, the creation of a procurement agency had the largest impact on the development of the PPS. Indeed, the increase in the scoring of the PPS in the countries where a public procurement agency was created between 2007 and 2013 was about 0.5 points above the scoring of the PPS in those countries where an agency was

TABLE 1
Impact of the Institutional Development of the Public Procurement Elements
in Latin America and the Caribbean

Variable	Dependent variable: Public Procurement Global Score (PPS)									
	PPS	Log (PPS)	PPS	Log (PPS)	PPS	Log (PPS)	PPS	Log (PPS)	PPS	Log (PPS)
Dummy (2013)	0.455/a (0.089)	0.283/a (0.067)	0.475/a (0.076)	0.272/a (0.055)	0.428/a (0.079)	0.244/a (0.054)	0.455/a (0.091)	0.283/a (0.068)	0.359/a (0.088)	0.233/a (0.064)
New Legal Framework	0.195 (0.173)	-0.026 (0.093)	-	-	-	-	-0.022 (0.124)	-0.104 (0.086)	0.057 (0.132)	-0.068 (0.090)
New e-procurement	-	-	0.267 (0.274)	0.021 (0.129)	-	-	-0.067 (0.166)	-0.015 (0.080)	-0.06 (0.173)	-0.008 (0.083)
New Agency (Nag)	-	-	-	-	0.559/b (0.182)	0.192/c (0.121)	0.5/a (0.166)	0.172/b (0.080)	0.508/a (0.173)	0.18/b (0.083)
IDB Support (IDBs)	-	-	-	-	-	-	-	-	4.9e-09/b (2.1e-09)	4e-09/b (2.0e-09)
(Nag)*(IDBs)	-	-	-	-	-	-	-	-	7e-09/b (2.3e-09)	-3.21e-09 (2.3e-09)
Constant	2.226/a (0.083)	0.685/a (0.036)	2.261/a (0.066)	0.671/a (0.031)	2.169/a (0.075)	0.628/a (0.112)	2.203/a (0.069)	0.678/a (0.033)	2.169/a (0.073)	0.659/a (0.036)
Number of obs.	50	50	50	50	50	50	50	50	50	50
Number of groups	25	25	25	25	25	25	25	25	25	25
F stat	22.33	16.63	23.01	15.04	25.45	15.99	55.84	2079	464.33	22.56
Prob > F stat	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Estimator	FE (within)	FE (within)	FE (within)	FE (within)	RE	RE	FE (within)	FE (within)	FE (within)	FE (within)
LR stat (BP for RE)	13.67	13.11	18.24	17.38	20.04	18.04	10.78	11.31	11.08	11.56
Prob > LR stat	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hausman Chi2	8.52	57.32	6.48	5.03	2.63	3.49	11.44	104.84	11.13	9.47
Prob > Chi2	0.003	0.000	0.039	0.080	0.269	0.174	0.009	0.000	0.025	0.050

Notes: Robust standard errors in parenthesis using a Huber/White/sandwich estimator.

FE (within): Fixed effects; RE: Random Effects

BP: Breusch-Pagan test for RE

a(b)[c]: 99%(95%)[90%]

not created, the difference represented 18% between both groups of countries. For each million dollars that the IDB provided to the countries, the PPS scores increased by an average 0.4%.

Table 2 shows the results for the three stages shown in the methodology, particularly results for equations (2) and (3). The results of the model show good statistical quality, and the expected signs according to the authors' hypothesis. The transmission mechanism they tested allowed them to find a link between the creation of a public procurement agency and other variables of interest related to the perception of public sector performance, and the competitiveness of the countries as well (see Appendix II for a detailed description of

TABLE 2
Gross Impact of Creating a Public Procurement Agency on other Variables of Interest

Dependent variable/d	Explanatory variable			Pr[L < ω_j < U] = 95%		$\Delta\%I_j$	LR stat (BP)	Hausman stats	Estimator
	Dummy (2013)	$g[f(A-gency)]$	Constant	Lower	Upper				
GCI Global Competitiveness Index	0.174/a (0.036)	0.131/a (0.023)	3.863/a (0.018)	0.087	0.175				
Transparency of gov. policymaking	0.639/a (0.155)	0.558/a (0.092)	3.576/a (0.091)	0.379	0.737	9.9	9.62 [0.001]	3.25 [0.196]	RE
Favoritism in decisions of gov. officials	0.121 (0.117)	0.106/c (0.055)	2.68/a (0.143)	-0.001	0.213	2.6	7.06 [0.003]	10.62 [0.004]	FE (within)
Burden of gov. regulation	0.52/a (0.081)	0.162/a (0.046)	2.715/a (0.087)	0.072	0.251	3.7	8.94 [0.001]	4.22 [0.121]	RE
Extent of market dominance	0.391/a (0.07)	0.343/a (0.043)	3.15/a (0.038)	0.259	0.427	7.0	7.06 [0.003]	2.15 [0.342]	RE
Intensity of local competition	0.225/b (0.108)	0.13/b (0.045)	4.456/a (0.122)	0.042	0.218	1.9	10.79 [0.001]	0.4 [0.818]	RE
Gov. procurement of advance tech products	0.146 (0.104)	0.343/a (0.064)	3.245/a (0.056)	0.217	0.468	7.1	5.88 [0.007]	5.67 [0.058]	FE (within)

Notes: Robust standard errors in parenthesis using a Huber/White/sandwich estimator
 FE (within): Fixed effects; RE: Random Effects
 BP: Breusch-Pagan test for RE
 P-values in square brackets
 d: Variable scaled between 1-7 (best)
 a(b)[c]: 99%(95%)90%

each of the indicators). Indeed, the effects of creating a new procurement agency on regulation quality were also statistically significant to explain variables such as favoritism in decisions of government officials, transparency of government official, the government procurement of advanced technological products and the competitive index among others.

With regard to the perception of public sector performance, the study analyzed the impact of the creation of an agency on the perception of transparency, favoritism and burden of regulation. The creation of an agency had a gross impact of 9.9% on improving transparency of government policymaking. This effect may be explained by the development and monitoring of technological tools when public procurement agencies are fully functional and complying with transparency regulations. With regard to the perception of favoritism in the decisions of government officials, the creation of an

agency may have helped to improve this indicator by 2.6% as a consequence of its monitoring role ensuring that procurement processes are carried out in accordance with the country's legal and regulatory framework in a fair and non-partial manner. In addition, by lowering the cost for entry, the procurement process becomes more competitive and less likely to be perceived as biased towards a particular individual or firm. Finally, the creation of an agency shows an impact on the burden of regulation of about 3.7%, as it brings more transparency and competition when a procurement process is planned. Because of its strategic vision and understanding of the issues, the procurement regulatory agency is able to develop clear and appropriate regulation increasing private sector trust in public procurement and generating increased participation in the public procurement market place.

Likewise, the creation of an agency was analyzed regarding its impact on the private sector and innovation through the following indicators: extent of market dominance, local competition and government practices in the procurement of advanced technological products. The establishment of the procurement agency was related to the improvement of market dominance by about 7%, due to the fact that one of its functions is to encourage more suppliers to participate in the procurement market, sometimes through special programs that target specific groups such as SMEs and women-owned businesses. For example, by carrying out market studies, or monitoring the usual suppliers for specific items, the agency is able to understand if a company has achieved market dominance, making it harder for other businesses, to enter into competition in a particular market. Then, the agency could take measures to divert this effect and provide and/or create opportunities for other suppliers interested in offering the same products, sometimes at more advantageous prices and with better quality. In the case of local competition, it was affected by the "agencification" by about 1.9%. In this case, the establishment of the entity has a positive impact as it can promote the involvement of more local suppliers in the market. As one of the agency's functions is to establish sustainable training for the private sector on issues related to how to offer products in the public procurement market, local firms can understand better the specifications and procedures needed for supplying to the government and are more motivated to compete for contracts with the public sector. With regard to the indicator government practices in

the procurement of advanced technological product, the affect was about 7.1%. As the agencies obtain more knowledge regarding international experiences in and outside the region on how to procure this type of products, they can train several buyers in diverse public sectors (communications, education, tourism) on the methods and procedures needed to acquired them. This can include for example, a correct planning process, developing appropriate procurement methods and evaluation criteria, and adopting adequate specifications. If the public sector entities are more knowledgeable in these types of procurement, they will be more interested in investing public resources in innovative technologies for development.

Finally, the authors found statistically significant effects of creating a procurement agency on the competitiveness (based on the Global Competitiveness Index) of the countries. Indeed, "agencification" may have contributed to an increase in competitiveness in the LAC region of about 2.2%, a result which could be explained by the improvement of the public sector performance as described above.

CONCLUSIONS

Public procurement is at a crossroads between public policy, bureaucracy, citizens and the private sector, which makes it extremely complex. Public procurement reform in LAC has come a long way since the early years when it was a minor part of PSR. The LAC region has made incredible progress in all three elements analyzed in this paper, much more so than other developed regions of the world. Particularly noteworthy are the advances in the development of procurement agencies as drivers of change.

As this paper has shown, having a public procurement agency is absolutely critical for the reform process itself, as well as the impact it will have on the public sector performance in a particular country. An agency that is responsible for policy and monitoring is needed to balance the, at times, competing goals that a country has whether its combatting corruption, promoting transparency, value for money, effectiveness and efficiency. An office with mere administrative functions and no strategic mandate, focusing only on transactions, is not going to be able to or have the incentives to advocate for deep and sustained reforms. Legislative and technological reforms are important, but without an agency that can provide the strategic

direction, leadership and vision to leverage those changes in a holistic fashion, the reforms are going to stall or be implemented in a disjointed and piecemeal way.

Another point that is important to mention is that it is also critical to have an environment that is conducive to reforms, including strong institutions, effective regulations, good investment climate, and a political context that supports reforms. A reform that is carried out in isolation, without these supporting factors is not going to be successful.

This analysis can explain perhaps why reforms have stalled in many Caribbean countries. In most countries in that sub-region, the person responsible for public procurement is the head of the tenders board, which is a more administrative function. For procurement reform to really take root, what is needed is a policy and monitoring function. This is reflected in the fact that many countries have struggled either approve a standalone procurement law or see that it is effectively implemented.

On the basis of this study, the authors believe that there are four critical areas where further research is needed, including: an in-depth look at reform in the Caribbean to analyze why those countries have taken a slower path than Latin America and how change could be supported, the quantitative impact of the reforms that have been achieved (up until now mostly anecdotal), the degree of autonomy (administrative and financial) of procurement agencies and the impact of that autonomy on efficiency and effectiveness of public procurement outcomes and finally, an analysis of the second generation reforms in public procurement.

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NOTES

1. Caribbean refers to IDB Caribbean member countries (Bahamas, Barbados, Guyana, Haiti, Jamaica, Suriname, and Trinidad and Tobago) and Belize.
2. The authors define “procurement agency” as a central body in charge of the regulation and monitoring of a country’s public procurement system. The authors are not referring to bodies that purchase on behalf of the public sectors entities, with the exception of framework agreements and reverse auctions.
3. The IDB is the oldest and largest multilateral lender in the LAC region.
4. These are self-diagnostic assessments, which are carried out when a country formally requests them. Coverage in LAC is not complete, in many countries there is no assessment or one exists but it is more than 7 years old.
5. For example, in Peru (CONSUCODE), El Salvador (UNAC) in 2000, Nicaragua (DGCE) in 2000, Costa Rica (DGABCA), in 2001, and Honduras (ONCAE) in 2001.
6. For example, with regard to eGP in some countries the Ministry of Information Technology is in charge of the e-procurement portal. In the case of training, there is often no overall and sustainable strategy for the public and private sectors, instead different procurement units provide training in an ad hoc fashion. Legislation is often dispersed among different acts or in the case of regulations or manuals, entities create their own (for example, a procurement manual produced for the Ministry of Education that is different or at times contradictory to other ministries and not necessarily in line with national policy).
7. According to Beblavy (2011), agencification is shorthand for the process of delegation and devolution, in which more autonomy, particularly in personnel and financial issues, is granted to public bodies, which either remain legally part of the state or acquire their own legal status. It can also mean creating or moving functions to bodies, which are subsidiary or separate from ministries/departments.

8. The Suarez and IDB publication (2013), is the first one that compares different types of agencies in Latin America based on their role and autonomy (budget and administrative).
9. The Multilateral Development Banks e-GP Working Group defines eGP as "... the use of information technology (especially the internet) by governments in conducting their procurement relationships with suppliers for the procurement of works, goods, and consultancy services required by the public sector."
10. For this period, PET was only applied to the central government; the analysis did not include autonomous entities, public enterprises or subnational governments.
11. PET was carried out in four stages, including: i) an analysis of the legal framework related to the functioning and interrelationships among the pillars together with a review and analysis of the available diagnostic assessments and other secondary sources such as studies and research investigations; ii) a series of interviews with key officials of the government in the principal management areas to complement the information from the pillars; iii) assignment of values to the variables based on the information that was collected and the documents obtained during the previous stages, and reports evaluated by peer reviewers; and iv) the results being presented to the authorities in the countries.
12. The PRODEV scoring system is from 0 to 5. For more information regarding the PRODEV indicators and sub-indicators (please see www.iadb.org/en/topics/government/management-for-development-results/diagnostic-tool,8360.html).
13. This is the state of these three elements as of March 2016. Many countries are currently preparing new standalone procurement laws or updates to their legislation.

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APPENDIX I
Public Procurement Reform Elements in LAC*

Country	Law	Entity	Available at
Argentina	Decree N° 1023/2001	National Office of Procurement	www.argentinacompra.gov.ar
	Decree N° 2345/2008		
	Decree N° 1318/2011		
	Decree N° 893/2012		
Bahamas	Financial Administration and Audit Act (Ch.359)	Tenders Board	www.bahamas.gov.bs
Barbados	The Financial Administration and Audit Act of 1964 and its financial rules of 1971	Central Purchasing Department	www.gisbarbados.gov.bb
Belize	Contractor-General Act, - No. 6 of 1993	Ministry of Finance, Public Service, Energy & Public Utilities	www.mof.gov.bz
	Finance and Audit (reform) Act, 2005 (sections 17-27)		
Bolivia	Decree No 28271 of 2005	Directorate for Public Management Regulations	www.sicoes.gob.bo
	Decree No. 0181 of 2009		
	Decree No. 29894 of 2009		
Brazil	Law No. 8,666 of 1993	Secretariat for Logistic and General Services	www.comprasgovernamentais.gov.br
Chile	Law 19.886 of 2003	Chilecompra Directorate	www.chilecompra.cl
	Decree No. 250 of 2004		
Colombia	Law 80 of 1993	Public procurement agency Colombia Compra Eficiente	www.colombiacompra.gov.co
	Law 1150 of 2007		
	Decree 1510 of 2013		
Costa Rica	Law 7494 of 1995	Directorate for Goods and Administrative Procurement	www.sicop.go.cr/index.jsp

Note: This is the state of these three elements as of March 2016. Many countries are currently preparing new standalone procurement laws or updates to their legislation.

APPENDIX II Description of Indicators

The Global Competitive Index. This World Economic Forum (WEF) indicator measures the “set of institutions, policies, and factors that set the sustainable current and medium-term levels of economic prosperity.” (WEF, 2016).

Transparency of government policymaking. This indicator measures how easy is it for businesses in a determined country “to obtain information about changes in government policies and regulations affecting their activities.” (WEF).

Favoritism in decisions of government officials. This indicator measures to what extent do government officials in a determined country “show favoritism to well-connected firms and individuals when deciding upon policies and contracts.” (WEF).

Burden of government regulation. This indicator assesses the extent to which business executives in a country perceive that the government imposes major administrative burdens on businesses. These are factors that ultimately hinder economic growth (www.di.dk/.../3%2009%20Burden%20of%20government%20regulation).

Extent of market dominance. This indicator assesses if the private market in a country is dominated by few groups or if it is spread among many firms.

Local competition indicator. This indicator measures the extent of intensity of competition in local markets. (WEF).

Government practices of procurement of advanced technological products. This indicator measures to what extent do government purchasing decisions foster innovation. (WEF).