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The Evolution of Reforms and the State of Competition in Public Procurement in the Philippines

Adoracion M. Navarro



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CONTACT US:

RESEARCH INFORMATION DEPARTMENT
Philippine Institute for Development Studies

18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, Quezon City, Philippines

publications@pids.gov.ph
(+632) 8877-4000

<https://www.pids.gov.ph>

The Evolution of Reforms and the State of Competition
in Public Procurement in the Philippines

Adoracion M. Navarro

PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES

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Abstract

In the literature on Philippine public procurement, knowledge gaps exist in terms of coverage of period of reform implementation and scope of reform application. This study helps close these gaps by analyzing Philippine public procurement history up to the years of application of the 2016 implementing rules and regulations of the General Procurement Act (GPRA) and using data for the usual three categories of procurement, namely, civil works, consulting services, and goods procurement. It also suggests a logit model of procurement specifically for the Philippines given the available data in the Philippine Government Electronic Procurement System (PhilGEPS). The study finds that persistent issues include delays in procurement, non-conformance with procedures, poor bid design and evaluation, weak capacity to implement procurement procedures, and corruption. It also describes new challenges that have emerged, such as the use of digital payments and the promotion of innovations. Running the logit model using PhilGEPS data, the study finds a general tendency toward weaker competition despite the 2016 reforms. The study then offers recommendations to improve the PhilGEPS, minimize corruption, improve procurement capacity, and address the emerging challenges. It also recommends future areas of research, namely, procurement policies outside the GPRA, bid rigging, red flags of corruption, and procurement of scientific, scholarly, or artistic work.

Keywords: procurement, public procurement, logit model, logistic regression, corruption

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*Adoracion M. Navarro**

1. Introduction

Studies on Philippine public procurement had mostly focused on the implementation experience before the 2016 issuance of the implementing rules and regulations (IRR) of Republic Act (RA) 9184 or the General Procurement Reform Act (GPRA) of 2003. The few studies that emerged since then had limited focus on specific commodities. Knowledge gaps exist in terms of coverage of period of reform implementation and scope of reform application. This study helps close these knowledge gaps by tracking the evolution of procurement reforms and then analyzing the state of competition in public procurement before and after the application of the 2016 IRR. The analysis has a broad scope as it covers the three general categories of procurement, namely, civil works, consulting services, and goods procurement. The study also explores the issues that persist even after the comprehensive revision of the GRPRA IRR in 2016 and the new challenges that have emerged. It also recommends research areas that need more observation and scrutiny in the future.

1.1 Brief review of related literature

Because procurement problem was a frequently cited reason for delays in Philippine government spending or the low absorptive capacity of implementing agencies in the early to mid-2010s, Navarro and Tanghal (2017) investigated the specific issues being encountered by agencies. The study was motivated not only by the spending delays but also by the legislature's proposal in 2015 to grant the president emergency powers and do away with competitive bidding in some infrastructure projects. The study used the analytical framework in Laffont and Tirole (1993) and highlighted the importance of competition in public procurement to elicit production efficiency and to reduce cost. In the key informant interviews and analysis, Navarro and Tanghal uncovered system and capacity problems in government procuring entities. They then recommended the following: (1) pursue deliberate investments on and demonstrate political will for systems change and organizational culture change; (2) allot greater resources for planning and other preparatory activities before the actual procurement; (3) have an innovation orientation in public procurement; and (4) apply value-for-money procurement.

During the conduct of the Navarro and Tanghal (2017) study, the revised IRR of RA 9184, which was issued in 2016, was in the initial stages of adoption by government entities. Thus, the information used in the study, especially the insights from key informant interviews of representatives of government procuring entities, had not yet captured the application of the 2016 IRR. The current study thus helps fill knowledge gaps in terms of timeline coverage as it used

* Senior Research Fellow, Philippine Institute for Development Studies (PIDS). Email: anavarro@pids.gov.ph. The author gratefully acknowledges the valuable research assistance of Jethro El L. Camara, Research Analyst II at the PIDS.

pre-2016 and post-2016 procurement data from the Philippine Government Electronic Procurement System (PhilGEPS).

A few Philippine public procurement studies emerged after the 2016 IRR was issued. Abrigo et al. (2021) documented practices in the public procurement of drugs and medicines and found certain practices in the health sector that are associated with greater propensity for failed procurement. A study by the Asia Pacific Roundtable for Sustainable Consumption and Production and SWITCH-Asia (2022) examined the nascent green public procurement in the Philippines and found that the influence of mainstreaming green products in public procurement is yet to be demonstrated. Moreover, the study concluded that the implementation of green public procurement needs to be strengthened.

A recent study that looked at broad procurement applications where findings can be generalized is World Bank (2023). This is a comprehensive assessment using indicators-based assessment of the whole system of Philippine public procurement and data analytics based on procurement monitoring and evaluation data from 17 procuring entities. Supported by financial resources and technical assistance from the World Bank and the Asian Development Bank, the study followed the Methodology for Assessing Procurement Systems (MAPS), an international standard initiated by a group of countries and institutions called the “MAPS Network”, and applied indicators and criteria grouped under four pillars, namely: (1) legal, regulatory and policy framework; (2) institutional framework and management capacity; (3) public procurement operations and practices; and (4) accountability, integrity and transparency. The study also conducted data analytics based on a comparison of the 2010 Country Procurement Assessment Report data and the 2019 Agency Procurement Compliance and Performance Indicators data of 17 procuring entities. Among other findings, the study found seven priority areas for improvement, namely: (1) rules on participation; (2) procurement methods; (3) support to value for money; (4) complaints review mechanism; (5) sustainable public procurement; (6) strategy and enabling environment for professionalization of procurement function; and (7) e-procurement system (World Bank 2023, p. 18-19).

The Abrigo et al. (2021) and the Asia Pacific Roundtable for Sustainable Consumption and Production and SWITCH-Asia (2022) studies focused narrowly on specific commodities, namely, goods in the health sector and goods that are considered “green” or sustainable. The current study thus contributes to the local literature by covering public procurement data on goods, consulting services, and civil works to be able distill lessons with broader applications. This study differs from the comprehensive assessment in World Bank (2023) in the use of primary research method, that is, econometric regression using PhilGEPS data, which can be replicated in future research that may not have financial support as big as the one for World Bank (2023).

1.2 Research method and data

This study uses desktop research and analysis of qualitative data in tracking the evolution of reforms and examining the issues that persist despite the reforms and new challenges that have emerged. It then uses econometric modeling and regression in checking whether there had there been an improvement in competition for government contracts since the issuance of the 2016 revised IRR of the GPRA. Specifically, it uses data from PhilGEPS to investigate the prevalence

of single calculated responsive bid versus lowest calculated and responsive bid. It explores the awarded contracts database only, that is, it excludes the data on alternative modes of procurement (e.g., limited source bidding, small value procurement, and negotiated procurement). This is because the primary consideration why these alternative modes of procurement are allowed under the GPRA is the lack of depth (or even absence) of competition in the markets for the goods and services to be procured under those modes. PhilGEPS being managed by the DBM-Procurement Service is the source of data. The data are grouped into three categories, namely, (1) goods and services; (2) consultancies; and (3) civil works or infrastructure.

2. The evolution of reforms and the issues and challenges

Before the General Procurement Reform Act (GPRA) of 2003 or RA 9184, public procurement policies in the Philippines had been fragmented for decades. The GPRA consolidated and updated the fragmented laws and institutionalized the administrative issuances originally meant to address the gaps in the laws. But despite the reforms, issues and challenges in Philippine public procurement remain.

2.1 Evolution of procurement-related policies in the Philippines

Table 1 summarizes the evolution of the public procurement policies in the Philippines since 1936. The fragmentation of procurement policies in the earlier years is manifested by the issuance of various specific laws and administrative directives to address particular procurement needs. For instance, advertisements for high-cost projects was required in 1938 and the cost floor for this requirement was progressively raised over the years. Preferential treatment for contractors at least 60 percent Filipino-owned started in 1967 and rules on other forms of preferential treatment were formulated henceforth. Public procurement rules for infrastructure projects also evolved from the simple rules on *pakyaw*¹ system (fixed price contracts for labor-intensive civil works projects) to more complicated rules on private financing of public infrastructure and right-of-way procurement.

Table 1. Evolution of procurement-related policies in the Philippines, 1936 to present

Date	Policy	Key reform introduced
November 7, 1936	CA 138	Provided preference for goods and services from the Philippines and the United States in government purchases, if goods and services from other countries are not significantly cheaper.
August 22, 1938	CA 362	Required advertisements for public bidding on national government contracts estimated at PHP3,000.00 or more, unless otherwise waived by the President.

¹ "Pakyaw" is Filipino term for wholesale purchase, purchase of all available stocks, or hiring of labor for the whole job. As used in old laws, *pakyaw* is the "undertaking of public works projects under the Filipino bayanihan spirit where the workers, moved by a sense of unity, put up a common capital and render services on a cooperative basis" and could be a negotiated contract as long as the negotiated fixed price does not exceed the prescribed ceiling (Presidential Decree (PD) 950 [par.2] and PD 1948 [par.1]).

Date	Policy	Key reform introduced
June 5, 1948	RA 223	Increased the floor for requiring advertisements on government contracts at PHP10,000.00 and extends the requirement to provincial government contracts.
June 20, 1953	RA 912	Required inputs used in government contracts to be produced from the Philippines, whenever available.
August 17, 1960	RA 3019	Penalized government employees for entering into disadvantageous contracts and prohibited their relatives from entering into contracts with the government.
June 19, 1965	RA 4566	Established a Philippine Licensing Board for Contractors and requires contractors to obtain a license from such board before pursuing government contracts.
August 8, 1966	RA 4860	Authorized the President to obtain loans for development projects, provided that 75% of these loans will be used for revenue-producing and self-liquidating projects and that they will not allow foreign debt to exceed USD1 billion in amount.
September 8, 1967	RA 5183	Required goods and consulting services contractors to be citizens of the Philippines and bidders from firms with at least 60% capital owned by Filipino citizens.
December 14, 1972	PD 81	Allowed the foreign loans obtained by the President to be relent to the private sector, provided that 60% should be for utility projects and the remaining 40% for agricultural projects.
March 19, 1974	PD 415	Authorized the Secretary of National Defense to enter into defense contracts.
June 22, 1976	PD 950	Increased the capital outlay ceiling for <i>pakyaw</i> contracts (fixed price contracts for labor-intensive civil works projects) from PHP10,000.00 to PHP50,000.00.
July 30, 1977	PD 1177	Limited the ability of government agencies in public procurement within their appropriations for the fiscal year.
November 22, 1977	LOI 630	Required infrastructure bidders to belong from firms with at least 75% capital owned by Filipino citizens.
June 11, 1978	PD 1445	Limited the auditing of government contracts to the Commission on Audit, subjected claims made by successful bidders to regular review, and prohibited advance payments on awarded contracts.
June 11, 1978	PD 1594	Consolidated rules for government infrastructure contracts through a uniform procurement process with detailed engineering and prequalification requirements as well as prohibitions on

Date	Policy	Key reform introduced
		subcontracting, unless waived by the relevant procuring entity.
October 18, 1978	LOI 755	Established an integrated procurement system for government purchases, creating the Procurement Council.
January 23, 1979	EO 518	Required government-owned and controlled corporations to submit annual reports of financial performance, as well as reports on status of contractual obligations backed by government guarantee.
July 10, 1980	LOI 1042	Established Supply Support Agreements with relevant manufacturers to meet routine military procurement needs.
July 16, 1980	LOI 1043	Established an annual textbook program which would serve as the basis for yearly procurement and distribution of textbooks across the country.
January 11, 1981	PD 764	Required all government contracts to undergo competitive bidding processes.
February 29, 1984	EO 936	Established the Government Corporate Monitoring Committee, which would monitor and assess the financial performance and contractual obligations of government-owned and controlled corporations.
July 18, 1984	PD 1948	Increased the capital outlay limit for <i>pakyaw</i> contracts from PHP50,000.00 to PHP500,000.00.
June 25, 1985	EO 1035	Established the rules for government procurement of private real properties for public use through rights-of-way.
May 5, 1987	EO 164	Set price ceilings for infrastructure contracts awarded by procuring entities through public bidding or through public negotiation (awards beyond the price ceiling set requires approval by the President) and required procuring entities to constitute a Prequalification, Bids and Awards Committees in their offices.
July 25, 1987	EO 285	Abolished the Procurement Council and transferred their functions to the Systems and Procedures Bureau of the Department of Budget and Management.
July 26, 1987	EO 301	Decentralized negotiated contracts entered into by different government agencies and government-owned and controlled corporations by no longer requiring Presidential approval for such contracts unless required by other existing laws and abolishing the Presidential Committee on Negotiated Contracts.
December 12, 1988	RA 6685	Required private contractors to hire at least 50% of the unskilled and at least 30% of the skilled labor from the available residents in the province, city, or municipality where the project is located, except

Date	Policy	Key reform introduced
		for highly technical and highly confidential projects.
February 20, 1989	RA 6713	Required government employees within 60 days, to divest from their shares and/or within 30 days to resign from their positions in any firm once conflicts of interest arise in government procurement processes.
March 10, 1990	RA 6938	Consolidated rules and guidelines on the creation, management, and organization of cooperatives, exempting them from taxes and allowing contracts with cooperatives to remain in effect even before their registration as a cooperative.
March 10, 1990	RA 6939	Created the Cooperative Development Authority, which manages the registration and regulation of cooperatives. Provided the framework for cooperatives' participation in public procurement.
July 9, 1990	RA 6957	Authorized the financing, construction, operation and maintenance of infrastructure projects by the private sector and provided the different contractual arrangements available between the government and the private sector on the management of infrastructure projects.
June 13, 1991	RA 7042	Allowed foreign firms to invest in all projects without requiring participation and ownership of Filipino citizens in their firms, except for areas requiring Filipino ownership by the Constitution.
May 8, 1994	RA 7718	Increased the threshold for foreign financing of private sector development projects through Official Development Assistance to 50% of the project cost, and no longer required preference for Filipino contractors in the public bidding of projects.
February 23, 1995	RA 7898	Organized the AFP Procurement System, considering new requirements under the AFP modernization program.
June 11, 1996	RA 8182	Exempted Official Development Assistance from the foreign debt limit of USD1 billion in RA 4860.
June 11, 1996	RA 8183	Allows parties to settle contractual obligations in any other currency aside from the Philippine currency.
February 26, 1998	RA 8555	Amended the conditions for using the proceeds of Official Development Assistance and the requirement for utilizing Filipino labor and products as a matter of agreement between the government and the lending institution.
July 5, 2000	PD 1594 IRR	Detailed further the provisions, requirements, and processes set in PD 1594 (1978 decree), organizing the Bids and Awards Committee, evaluating the conditions with which bidders pass prequalification requirements, determining the lowest calculated responsive bid, and setting rules for the awarding of contracts.

Date	Policy	Key reform introduced
June 14, 2000	RA 8792	Allowed the use of electronic transactions and documents as binding in contractual agreements and obligations.
November 7, 2000	RA 8794	Put the executive guidelines for acquiring private real properties through rights-of-way into law.
November 7, 2000	RA 8795	Prohibited lower courts from issuing temporary restraining orders, preliminary injunctions or preliminary mandatory injunctions for government infrastructure projects.
January 26, 2003	RA 9184	Reformed the government's procurement system by innovating the whole procurement process through invitation requirements, bid evaluation, and post-qualification, by setting of performance security for awards, by providing options for alternative methods of procurement and for protests in procurement processes, and by establishing the Government Procurement Policy Board (GPPB) to regulate the government's procurement system.
October 8, 2003	RA 9184 IRR	Specified the rules for the government's procurement system by prohibiting government procurement outside of an agency's approved Annual Procurement Plan, including experts and representatives from end-users in the Bids and Awards Committee, requiring reports for all procurement costing PHP50 million and above for goods and infrastructure projects and PHP5 million for consulting services, allowing observers from relevant professional groups in the industry and from non-government organizations, mandating pre-procurement conferences for goods beyond PHP2 million, for infrastructure projects beyond PHP5 million, and for consulting services beyond PHP1 million, detailing the form and contents of bid invitations and of bid security, listing the additional circumstances with which alternative methods of procurement are accepted, and adding warranty security in the awarding of contracts.
February 10, 2004	RA 9242	Prescribes the use of Philippine tropical fabrics for uniforms of public officials and employees.
April 2, 2004	RA 9285	Established the use of alternative dispute resolution systems in arbitration, allowing contractual disagreements and contestations on Bids and Awards Committee rulings to be settled outside of court.
October 28, 2016	RA 9814 revised IRR	Provided additional guidelines for types of procurement with special provisions, such as military, non-government organizations, for public utilities, as well as including rules for blacklisting contractors and insurance companies and for organizing contractors.

Sources: Laws and regulations as cited in the table.

The fragmented laws and rules were consolidated in 2003 through RA 9184 or the GPRA. In the history of public procurement reforms, the 2003 GPRA is the first major reform because it updated the old rules and codified aspects of various executive issuances that needed to be institutionalized. The next major reform to date is the substantial revision of the GPRA implementing rules and regulations in 2016. The 2016 IRR introduced the following reforms, among others:

- clarified procurement planning and required government entities to use the annual procurement plan (APP) as input to the proposed agency budget early on rather than preparing the APP after the General Appropriations Act (GAA) has been approved;
- required that early procurement planning define the specifications early and not after the GAA has been enacted;
- streamlined the requirements and procedures and informed procuring entities that PhilGEPS Certificate of Registration should suffice, in lieu of other documents previously required from bidders;
- reduced the number of eligibility documents to lessen the likelihood of disqualification of bidders during the eligibility stage;
- reduced the overall cost of advertising procurement notices by setting higher thresholds for project amounts that require advertisement; and
- harmonized previous GPPB issuances on alternative modes of procurement and consolidated these as one set of guidelines.

After two decades of implementing the GPRA and seven years of using the 2016 IRR, procurement issues continue to be prominent in budget execution and project implementation. Controversies related to procurement arose during the height of the COVID-19 pandemic, especially when health supplies procurement under the Bayanihan laws (RA 11469 and RA 11494) were questioned by the Senate. Procurement issues also surfaced as the delivery of education services amidst the pandemic through equipment support suffered corruption allegations. The controversies even led to calls for abolition of the Procurement Service unit of the Department of Budget and Management (DBM-PS).

The DBM-PS, which was created in 1978 (then named the Procurement Council) to improve the efficiency in the procurement of common-use supplies, figured in the Senate's investigation during the 18th Congress of alleged anomalies related to the DBM-PS' procurement of medical supplies, on behalf of the Department of Health (DOH), from Pharmally Pharmaceutical. The Senate during the 19th Congress also investigated the DBM-PS' procurement of laptops, on behalf of the Department of Education (DepEd), from various suppliers. The Senate's investigation of the Pharmally scandal did not produce a definitive finding because the required 11 signatures for the Senate Blue Ribbon Committee Report to become official was not secured before the 18th Congress closed.² However, the Senate in the 19th Congress was harsher in its investigation of the DepEd laptop procurement as there are now calls in the Senate to terminate the DBM-PS' operations (Senate Committee on Accountability of Public Officers and Investigations 2023). Clearly, despite the reforms, issues and challenges remain.

² See opinion in Lagman, O. 2022. Pharmally case closed? BusinessWorld June 6, 2022. <https://www.bworldonline.com/opinion/2022/06/06/453069/pharmally-case-closed/>.

2.2 Persistent issues and new challenges

Persistent issues in public procurement abound and the enumeration of these in this study is at best broad descriptions and not an exhaustive listing. The more nuanced descriptions of issues can be achieved when case studies for specific projects are explored. Among the persistent issues are as follows:

- In civil works projects, many projects get delayed due to right-of-way procurement problems. Navarro and Latigar (2022) examined project monitoring and evaluation reports of Regional Project Monitoring Committees³ and found that acquisition of right-of-way is one of the common causes of project delays in road and rail transport projects.
- In consulting services projects, procuring entities sometimes do not conform with procedures. For instance, the Commission on Audit (COA) flagged the Commission of Human Rights' hiring of 130 consultants in 2021 without conducting market research first, as required by the GPRA and its IRR (COA 2022). Despite the greater flexibility provided by alternative modes of procurement, the turnaround in hiring consultants is still slow. Moreover, the quality of hired consultants is sometimes the problem, suggesting poor design of the terms of reference or poor evaluation during the hiring. This happened in the Department of Transportation (DOTr)'s procurement of three-year maintenance services of the Busan Universal Rail Inc. (BURI) for the MRT-3 urban rail system. The DOTr withheld some of its payments and eventually terminated the contract because BURI failed to overhaul some light rail vehicles (see the antecedents in Supreme Court (2020)).
- In goods procurement, non-conformance with procedures also happen, especially in big projects such as the Pharmally medical supplies case and DepEd laptop case. The non-conformance actually refers to the misuse or abuse of procurement rules and signal red flags of corruption, which prompted the Senate to investigate. The issues on conformance with the GPRA procedures in the Pharmally and DepEd cases eventually evolved into issues related to the enforcement of criminal and civil laws and administration of justice (see Box 1).
- Weak capacity of government entities to implement procurement procedures remains a problem. One source of weakness is the fact that performing the functions of the Bids and Awards Committee (BAC) is an ad hoc exercise by the BAC members, who are from various units of a government procuring entity, because they have primary responsibilities related to their key posts in the organization.⁴ It is only the secretariat of the Bids and Awards Committee (BAC) that is permanent and has a mandate to dedicate its whole time for procurement activities.

³ Regional counterparts of the inter-agency National Project Monitoring Committee chaired by the National Economic and Development Authority.

⁴ As attested to by the trainor from the GPPB-Technical Support Office during the Government Procurement 101 training for the members of the PIDS BAC on February 7, 2023.

Box 1. The controversies surrounding the procurement of Pharmally medical supplies and DepEd laptops

The implementors of the procurement of medical supplies for the fight against COVID-19 pandemic and laptops for the continued delivery of education services during the pandemic justified the non-conformance with regular procedures by invoking the time-limited Bayanihan laws--RA 11469 or the Bayanihan to Heal as One Act and RA 11494 or the Bayanihan to Recover as One Act. But the investigating senators during the Senate Blue Ribbon Committee hearings contended that despite the relaxed procedures provided by these laws, the DOH, DepEd, and DBM-PS are still required to follow the basic requirements of the GPRA, such as conducting due diligence in financial capacity evaluation and ensuring that there is no overpricing or market manipulation. In the case of the medical supplies, the DBM-PS awarded contracts in 2020 to 2021 with a total worth of PHP11 billion to Pharmally Pharmaceutical despite the latter's lack of financial capacity, as evidenced by its low capitalization of only PHP625,000. The Senate investigation also showed overpricing and corruption issues. The Ombudsman recommended in August 2023 the filing of graft charges against specific government officials and private individuals tagged in the Pharmally scandal.⁵ The COA in its Special Audit in November 2023 confirmed the lapses committed by the DOH and the DBM-PS.⁶

In the laptop deals, the specific issues that surfaced during the Senate investigation were: the repeated changes by the DepEd in the use and allocation of the PHP 2.4 billion budget, first from tablets for students, then to mobile connectivity loads for students, then finally to laptops for teachers; the non-conformance by the DBM-PS and the DepEd with procedures (e.g., absence of legal basis for outsourcing the procurement to the DBM-PS because the DepEd possesses proficiency in undertaking procurement, absence of a Memorandum of Agreement between them); market survey manipulation resulting in high agency budget for the procurement; and overpricing and corruption. When the Senate Blue Ribbon committee wrapped up its investigation in January 2023, it recommended the filing of administrative and criminal charges against former DBM-PS and DepEd officials and called for the abolition of DBM-PS (Senate Committee on Accountability of Public Officers and Investigations 2023). In August 2023, the Ombudsman recommended a six-month suspension of certain DepEd and DBM-PS officials pending the investigation on the laptop deals.⁷

In addition to the persistent issues, new challenges have emerged. Digital payment options continue to grow and digital payment platforms continue to innovate, and yet the GPRA is not clear on the use of digital payment modes. The promotion of innovations is also not optimized in the restrictive lowest calculated and responsive bid given that the procuring entities may not have sufficient knowledge to anticipate and accurately estimate the cost of innovative designs and technologies. There is thus a need to incorporate the concepts "best value" procurement and "most

⁵ See Rappler's August 4, 2023 report "Ombudsman recommends filing of graft charges vs officials tagged in Pharmally scandal" in <https://www.rappler.com/nation/ombudsman-resolution-recommends-graft-charges-officials-pharmally-scandal/>.

⁶ See "Special Audit Findings in 9-Volume Report: COA confirms DOH, PS-DBM 'lapses' in Pharmally deals" in the *Inquirer*, November 21, 2023 edition in <https://newsinfo.inquirer.net/1862967/coa-confirms-doh-ps-dbm-lapses-in-pharmally-deals>.

⁷ See "Ombudsman suspends DepEd, PS-DBM execs over alleged overpriced laptops" in the *Inquirer*, August 25, 2023 edition in <https://newsinfo.inquirer.net/1821877/ombudsman-suspends-deped-ps-dbm-execs-over-alleged-overpriced-laptops>.

advantageous and responsive bid" in the GPRA and clarify that the bid being sought is the one that offers the best public value (and not necessarily the one with contract cost below the ABC) over the life cycle of the good, infrastructure, or consulting services technology.

3. Modeling the state of competition in Philippine public procurement

In examining the state of competition in Philippine public procurement, this study used an econometric model and tested it in pre-reform and post-reform periods. This study defines pre-reform period as the time period with PhilGEPS data on January 9, 2017 and earlier and post-reform period as the time period with PhilGEPS data from January 10, 2017 up to June 2023 (i.e., given that the April-June 2023 dataset of PhilGEPS was the most recent available in the database at the time of econometric modeling). The January 10, 2017 is reckoned as the latest award date or the latest deadline possible for the strict application of the 2016 IRR given the October 28, 2016 effectivity of the IRR.

The cutoff was calculated as October 28, 2016 plus 74 days, where the 74 days total considers posting and advertisement of the invitation to bid for 7 calendar days, receipt and opening of bids within a maximum of 45 days from the last day of posting or advertisement, completion of bid evaluation within 7 days from receipt of proposals, issuance of the notice of award within 15 days from the declaration by the BAC of the lowest calculated and responsive bid (LCRB) or single calculated and responsive bid (SCRB).

3.1 A logit model of Philippine public procurement

The model describes competition outcomes "competitive", denoted as 1, and "weakly competitive", denoted as 0, where the competitive outcome is assigned to LCRB cases and the weakly competitive outcome is assigned to SCRБ cases. Note that LCRB is the result of competition with many bidders participating, whereas SCRБ is the result of competitive bidding with only one participant. Thus, the independent variable is:

$$\text{outcome of competition, } y_i = \begin{cases} 1 & \text{if competitive,} \\ 0 & \text{if weakly competitive} \end{cases}$$

where $i = i^{\text{th}}$ contract for $i = 1$ to n observations.

The model also uses the agency's budget for the contract (ABC) and the contract duration as specific determinants of competition. The untidiness of the PhilGEPS database dictated the choice of these two explanatory variables. Among the database fields examined, the records on these two variables have the least number of errors or omissions. Thus, the predictors are:

$$\text{budget, } x_{1i} = \{\text{continuous variable}\}$$

which is in Philippine pesos and based on the ABC

contract duration, $x_{2i} = \{\text{discrete variable}\}$

which is in days and generated as “contract_start_date” minus “contract_end_date” from the PhilGEPS records.

By definition, the odds ratio or the probability of success, P , over the probability of failure, $1-P$, is

$$\frac{P}{1-P} = e^{\beta_0 + \beta_k x_k + \varepsilon}$$

Equation 1

for predictors 1 to k .

Given the predictors budget, x_1 , and contract duration, x_2 , the odds ratio is:

$$\frac{P}{1-P} = e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon}$$

Equation 2

The logarithmic transformation of this is

$$\ln \left[\frac{P}{1-P} \right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

Equation 3

which is linear in the parameters. This study proposes this as a basic model of competition in Philippine public procurement, which can be solved using a logistic regression or logit model.

The performance of this model in pre- and post-reform periods can then be tested using piecewise regression, or by fitting the model into the pre-reform and post-reform groupings of data. The regression in this study used Stata version 18 and directly employed the logit command for the consulting services and goods data and the `firthlogit`⁸ command for the civil works data. The resulting coefficients of the estimated model of the logarithm of the odds ratio can then be mathematically transformed to check the contribution of the predictors in increasing or decreasing the odds, which mathematical transformation is produced automatically by Stata logit regression commands. A value greater than 1 means that the predictor increases the odds of success and a value less than 1 means that the predictor decreases the odds of success.

In piecewise regressions, we need to test whether the coefficients in pre- and post-reform scenarios are statistically different from each other, that is, whether the results on improvement or deterioration in competition are statistically significant. To do this, we need to include interaction terms by using a dummy variable g for grouping that takes a value of 0 if the observation is in the

⁸ When using Stata, one needs to search “firthlogit” first to check if it has not yet been installed (because it is not pre-installed in Stata), then follow the instructions on installation (see <http://fmwww.bc.edu/RePEc/bocode/f/firthlogit.html>). Firthlogit had to be used for the civil works data because the standard logistic regression resulted in non-convergence. In logistic regression, non-convergence is a warning and not necessarily an error. Non-convergence can be due to data separation, or a predictor is strongly associated with one of the possible outcomes (say, 0 or 1). Firth logistic regression was developed to address this.

pre-reform group and 1 if the observation is in the post-reform group. We then run this model that combines the pre-reform and post-reform groups in a single equation:

$$\ln \left[\frac{P}{1-P} \right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \gamma g + \delta_1 x_1 g + \delta_2 x_2 g + \varepsilon$$

Equation 4

In this model, we want to test the null hypotheses $H_0 : \delta_1 = 0$ and $H_0 : \delta_2 = 0$. This is actually a test that the coefficients of the predictors in the pre-reform group and post-reform group are the same. To see this, consider first that when $g = 0$, the result for the pre-reform group is the same as Equation 3, our basic model of competition in Philippine public procurement. Then consider the case when $g = 1$ and we get the following result for the post-reform group:

$$\ln \left[\frac{P}{1-P} \right] = (\beta_0 + \gamma) + \beta_1 x_1 + \beta_2 x_2 + \delta_1 x_1 + \delta_2 x_2 + \varepsilon$$

Equation 5

which when re-grouped actually results in a form similar to our basic model of competition:

$$\ln \left[\frac{P}{1-P} \right] = (\beta_0 + \gamma) + (\beta_1 + \delta_1) x_1 + (\beta_2 + \delta_2) x_2 + \varepsilon$$

Equation 6

When δ is 0, Equation 6 becomes:

$$\ln \left[\frac{P}{1-P} \right] = (\beta_0 + \gamma) + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

Equation 7

which essentially says that there is no difference between the coefficients of the predictors x_1 and x_2 in the two groups.

After the regression, if the estimate of δ is not significant, then we cannot reject the null hypothesis that δ is 0 and the pre-reform and post-reform groups likely have the same coefficient. We would want to see the null hypothesis being rejected, or we are interested in the result where the estimate of δ is significant, to be able to say that there had been a change in competition post reform.

3.2 Data used

Table 1 below describes the data from the starting point, the data cleaning efforts involved, and the final count of the observations which may be considered "clean" data. This study assumes that the erroneous entries are random, that is, the government procuring entities did not systematically enter erroneous data in PhilGEPS (or to put it simply, the mistakes are "honest mistakes" of the encoders who are likely members of the BAC secretariat).

Table 2. Number of observations, bid notices and award notices data from the PhilGEPS, 2006 to June 2023

Classification	Bid notices	Award notices ^a		Award notices done through public bidding ^b					
				Before cleaning		After cleaning (first stage) ^c		After cleaning (second stage) ^d	
				In number	% of bid notices	In number	% of bid notices	In number	% of data before cleaning
Civil Works								394,646	
Consulting Services								6,753	
Goods								330,255	
Total	13,276,236	3,519,531	26.51%	1,551,645	11.69%	1,091,103	70.32%	731,654	47.15%

Notes:

^a Observations that have “Awarded” in its “Notice Status” category and have “Posted” or “Updated” in its “Award Status” category.

^b Observations from award notices that have “International Competitive Bidding”, “National Competitive Bidding”, or “Public Bidding” in its “Procurement Mode” category.

^c Observations from award notices done through public bidding that have an identifiable reason for award (Lowest Calculated Responsive Bid, Single Calculated Responsive Bid, Highest Rated Responsive Bid, or Single Rated Responsive Bid), have no equivalent award number with another observation, and have a Contract Amount between 45% and 100% of the Approved Budget for Contract (ABC).

^d Observations from the first stage that have at least PHP50,000 ABC (given that only contracts with ABC of PHP50,000 and above are required to be posted), have zero length of contract duration for civil works, have at most 40 days between the award date and contract start date (given the maximum reasonable period per the IRR). Concatenated observations were only meaningfully disaggregated by classification into civil works, consulting services, and goods after the second stage of cleaning.

Source: PhilGEPS (2021); DBM-PS as PhilGEPS administrator, by email, October 31, 2023.

The award notices in the PhilGEPS database are 26.51 percent of bid notices. The study considered only the award notices done through public bidding (i.e., excluded the awards in alternative modes of procurement) and public bidding awards are 11.69 percent of the total award notices. The dataset from the first stage of cleaning constitute 70.32 percent of the award notices done through public bidding. The dataset from the second stage of cleaning constitute 47.15 percent of the award notices done through public bidding, meaning, the observations with erroneous entries in the datasets for awards by public bidding are 52.85 percent. This is a huge number and suggests that improvements in the PhilGEPS design must be made to minimize data encoding entries (e.g., by including logical checks that automatically prompts the user that a mistake has been made and by limiting the choices of the user to logical categories only through dropdown menus).

In the first runs of the regression, there were absurdly large standard deviations in the budget variable, in turn because of too many small values in the budget. The solution used is to test the model in relatively large contracts only and scale the amounts in millions of pesos. The cutoff rule applied is to use the mean of the budget in the three procurement classifications and define the observations to the right of the mean as relatively large contracts. One definition of large contracts in public sector projects is according to the cost threshold being used by the Investment Coordination Committee (ICC) of the National Economic and Development Authority Board. But it is impractical to use the ICC cutoff rule because the threshold is large (PHP 1 billion in the years before 2017 and PHP2.5 billion by 2017) and this rule will miss out many contracts implemented by local government units. Addressing the standard deviation issue resulted in the final count in Table 3.

Table 3. Number of observations in the final dataset used in the regression

	Observations
<u>Pre-reform</u>	
Civil works	21,570
Consulting	287
Goods	10,248
<u>Post-reform</u>	
Civil works	67,337
Consulting	923
Goods	36,458

Source: Author's calculations.

3.2 Results of regression

Recall that the odds ratio in statistics is the ratio of the probability of success over the probability of failure. In our model, "success" corresponds to a competitive outcome or award via LCRB and "failure" corresponds to a weakly competitive outcome or award via SCRB. Thus, the odds ratio is the probability of competitive outcome (the award being due to the lowest calculated and responsive bid among many bid participants) over the probability of weakly competitive outcome (the award being due to only one bidder participating and that bidder being evaluated as single calculated and responsive bid). Note that when the odds ratio of a predictor variable is greater than

1, that odds ratio increases the overall odds of success, that is, it corresponds to "positive effect" because it increases the overall odds of the procurement event having a competitive outcome. An odds ratio less than 1 (the denominator, the probability of having a weakly competitive outcome, is greater than the numerator, the probability of competitive outcome) corresponds to "negative effect" because it decreases the overall odds of success. Table 4 summarizes the resulting odds ratios and statistical significance tests after running the logit model in Stata.

Table 4. Results of the logistic regression

	Pre-reform		Post-reform	
	Odds ratio	P> z	Odds ratio	P> z
<u>Civil works</u>				
constant	13.38354*	0	9.253466*	0
budget	1.003858*	0	1.000858*	0
contract duration	0.9974766*	0	0.9985142*	0
<u>Consulting</u>				
constant	4.213588*	0	1.61596*	0
budget	0.9994924	0.813	0.9991046	0.31
contract duration	0.9984993*	0.008	1.000201	0.489
<u>Goods</u>				
constant	1.336752*	0	1.067836*	0
budget	1.000079	0.604	0.999697*	0.039
contract duration	1.000282*	0.008	0.9998392*	0.009

Note: * The coefficients are significant.

Source: Author's calculations.

Let us consider first the constant, which is significant in all three categories. The odds of competitive outcome deteriorated post reform at the base or reference case (when the predictors "budget" and "contract duration" are zero) in all three categories. For the odds ratios of the predictors, or the contribution of each to the overall odds ratio while holding the other predictor constant, our desired results for pre- and post-reform scenarios are ratios greater than 1. An additional desired result is for the ratios to increase in the post-reform scenario, that is, the reforms likely increased the level of competition. If the coefficients are significant, we can have confidence in the results per equation (with the significance of the statistical difference between the two equations to be tested later). Table 5 summarizes the interpretation of the transformed coefficients or odds ratios of the predictors.

Table 5. Interpretation of the contribution to the odds ratio of budget and contract duration

	Pre-reform	Post-reform
<u>Civil works</u>		
budget	odds ratio greater than 1; budget increases the overall odds of competitive outcome	odds ratio still greater than 1 but declined; although budget or contract size still has a positive effect on the likelihood of competition happening, this positive effect post-reform slightly weakened
contract duration	odds ratio less than 1; contract duration has a negative effect on the overall odds of competitive outcome	improvement in the odds post-reform; odds ratio still less than 1 or contract duration still has a negative effect on the odds of competitive outcome, but at least the negative effect is weakened (or there is improvement in competition) as shown by the increase in the magnitude of the odds ratio
<u>Consulting</u>		
budget	budget pre-reform as a predictor is not significant	budget post-reform is not significant; no conclusion on improvement in competition post-reform
contract duration	odds ratio less than 1; contract duration has a negative effect on the overall odds of competitive outcome	contract duration as a predictor is not significant; no conclusion on improvement in competition post-reform
<u>Goods</u>		
budget	budget pre-reform as a predictor is not significant	odds ratio is less than 1; contract duration has a negative effect on the overall odds of competitive outcome; but no conclusion because there is nothing to compare with given that pre-reform result is not significant
contract duration	odds ratio is greater than 1; contract duration increases the overall odds of competitive outcome happening	odds ratio became less than 1; odds of post-reform procurement being competitive weakened, and competition became less likely to occur as contract duration gets longer; a deterioration relative to the pre-reform state

Source: Author's interpretation.

We can exclude the results which are not statistically significant because no conclusion can be made based on these. For the results that are statistically significant, the results are mixed but leaning more on weakened competition post reform. In civil works procurement, competition weakened post reform when budget is considered while holding the other predictor constant. There is improvement in the effect of contract duration post reform, but the contribution to the overall odds of competitive outcome is still negative. In goods procurement, only contract duration is significant and the result shows an unambiguous deterioration in competition—the odds ratio flipped from being greater than 1 to becoming less than 1 post reform.

We still need to check if there is statistical difference between the coefficients in the pre-reform regression and the post-reform regression to see if the conclusions are reliable. Table 6 summarizes the results of this test.

Table 6. Results of testing the statistical difference between the pre- and post-reform coefficients

	Coefficient of the interaction term	P> z
<u>Civil works</u>		
x_1g	-0.0030061*	0
x_2g	0.0010415*	0.001
<u>Consulting</u>		
x_1g	0.999612	0.867
x_2g	1.001704*	0.007
<u>Goods</u>		
x_1g	0.9996181	0.071
x_2g	0.9995571*	0

Note: *The coefficients are significant.

Source: Author's calculations.

Note from above that in the case of civil works, δ_1 and δ_2 are significantly different from zero. There is indeed a change in the coefficients of budget and contract duration from the pre-reform period to the post-reform period for civil works procurement. In the case of consulting services, δ_1 is not significant and δ_2 is significant, but these results do not matter because there are no conclusions being checked in this category. (Note that the odds ratios for budget and contract duration in the earlier regression are insignificant.) In the case of goods, δ_1 is not significant and δ_2 is significant. The result for δ_1 is irrelevant because there is no conclusion on the post-reform effect of budget that is being checked. The result for δ_2 means that we can be statistically confident in accepting the conclusion that post-reform competition effect of contract duration weakened.

4. Conclusions and recommendations

The enactment of the GPRA in 2003 is the major reform in the history of public procurement in the Philippines and the next major reform after that is the overhaul of the IRR of the GPRA in 2016. After seven years of applying the 2016 IRR, issues persist such as delays in procurement, non-conformance with procedures, poor bid design and evaluation, weak capacity to implement procurement procedures, and corruption. The persistent issue on corruption is also related to the slow administration of justice. New challenges have also emerged, such as the use of digital payments and the promotion of innovations, which can be addressed by revising the GPRA to clearly authorize the acceptance of digital payments and allow the use of best value procurement based on multi-criteria assessment and life cycle net benefit analysis.

To analyze the state of competition after the reforms, this study formulated a logit model of Philippine public procurement. Running the regressions using PhilGEPS award data yielded results that suggest a general tendency toward weaker competition despite reforms. In the base case or reference case (i.e., considering only the intercepts in the regression), competition weakened in the three procurement categories, namely, civil works, consulting services, and goods. Considering the results for the predictors budget and contract duration, the results for consulting services are inconclusive because the regression coefficients are not significant. The results for civil works show slightly improved contribution to competition of contract duration but weakened contribution to competition of budget. The results for goods show inconclusive result on the effect of budget and unambiguous deterioration in the contribution of contract duration to competition.

The empirical testing should be interpreted with caution because there were numerous errors in the PhilGEPS database. In the awards data for public bidding, 52.58 percent of the total observations have erroneous entries and needed to be excluded from the calculations. Nevertheless, the modeling and empirical testing serve as useful demonstration to future researchers of how the PhilGEPS system, once improved, can be used in econometric regressions to derive evidence-based analysis.

This study offers the following recommendations:

- To improve the evidence-based analysis, fix the PhilGEPS system design such that it minimizes the tendency of encoders to input erroneous entries and revisit the analysis of the state of competition after some years and using longer PhilGEPS data.
- To minimize the room for corruption in goods procurement, decentralize procurement if: (a) the agency is handling a big procurement program that involves nationwide supply of goods to various subnational units; (b) logistics and storage costs will be more problematic if done at the national level; and (c) there are subnational markets for the goods (e.g., vehicles, laptops, and other mobile gadgets). If there are no subnational markets for the goods and logistics and storage can be better handled by the national government entities, it makes sense to centralize the procurement.

- To help minimize corruption in all types of procurement, strengthen the reforms on areas outside the GPRA, such as governance, transparency, accountability, and administration of justice. Investigate allegations of corruption thoroughly and prosecute the cases swiftly and judiciously.
- To improve the capacity of procuring entities, continuously retrain BAC members and secretariat and design opportunities for inter-agency sharing of lessons learned. Incentivize also the reduction of errors in posting bid notices and awards to PhilGEPS.
- To address the emerging challenges, revisit the GPRA and identify stipulations that need to be amended or removed and formulate provisions that need to be added.

Moreover, the study recommends the following future research areas: issues in policies that evolved outside the GPRA, such as RA 10752 guiding the right-of-way acquisition and RA 7898 guiding procurement in the military sector; bid rigging among players, where the governing law for enforcement of anti-bid rigging is RA 10667 or the Philippine Competition Act; red flags of corruption in public procurement; and procurement issues related to scientific, scholarly or artistic work.

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