JOURNAL OF PUBLIC PROCUREMENT, VOLUME 16, ISSUE 4, 419-453 WINTER 2016

ANTIFRAGILIZING PUBLIC PROCUREMENT SYSTEMS: A PARADIGM SHIFT[1]

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ABSTRACT. Taints of corruption in public procurement (PP) exist in both developed and developing countries alike- though in different scales and with different characteristics and impacts. Attempts to achieve a taint-free procurement regulation have failed even in the most robust and mature jurisdictions due to an inherent complexity and difficulty given the paradigms used. PP systems today remain fragile to various shocks[2] coming mainly from markets and corruption. This paper proposes a paradigm shift in the way in which a PP System (PPS) should be designed and practiced rendering it as "antifragile"[3] as possible to benefit from shocks, stresses and disorder. Antifragile PPS design revolutionizes not only the regulations but also the frameworks and institutional setups and the whole practice of the public procurement profession in a manner that permits growth and evolution at times of stress or distress. This paradigm shift is based on a design of the PPS as a complex system.

INTRODUCTION

Public Procurement (PP) is "one of the least understood and most vulnerable areas of public administration…" (Schapper, Malta, & Gilbert, 2006, p. 2). However, McCrudden (2006) sees it as "an extraordinarily adaptable tool." Public Procurement strategy and management research started evolving rapidly in the past decade (Murray, 2009). However, PP today, as well as its reform, still faces lack of consensus about its scope, nature and strategic value (Schapper, Malta, & Gilbert, 2006). Several countries are locked (Knight, Caldwell, Harland, & Telgen, 2003) into savings and value- for-money objectives[4]

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entangling further advancement and reform of their PP regimes. Practicing procurement involves maturing through various stages, models and frameworks (Saad, 2010). As maturity grows, understanding this domain seems more and more challenging and complicated necessitating further research into the origins, experiences, challenges and developments.

Prevalent PP Systems today vary between moderate to strong rigidity; they tend to be skewed towards conformance rather than performance; PP Systems today are prescriptive rather than flexible; they are dogmatic and not pragmatic; they establish their own bureaucracy in addition to mirroring governmental bureaucracies. Practicing PP today is sometimes governed by fear and at other times by greed; many times by stress with very few moments of joy. PP Systems today are passive receptors of stressors and shocks; they react in an attempt to understand and minimize the seemingly inevitable losses. PP Systems today are vulnerable to a multitude of shocks and failures; they are very fragile. Shocks to a PPS come from various sources: information asymmetry, stakeholders, markets, economy, and/or politics. Some examples include the PP regulation, other laws & regulations, weak organizational systems & structures, corruption and fraud, incompetent PP practitioners, opportunistic economic operators, political intervention, market failures, economic deterioration, financial crises, conflict and war, etc. PP Systems have not been designed to withstand any of such shocks. Design mostly considers corruption and market openness only; such design was based on the premise that both are inevitable and evolved accepting such shocks with minimal anticipation or even corrective measures.

The aim of this article is to push PP modernization and reform in a completely different direction with a completely new perspective. The author of this paper proposes novel grounds for designing PP Systems to guide worldwide procurement reform efforts, hopefully escaping bottlenecks and loopholes. This design starts with a basic distinction between PP goals and constraints.

PUBLIC PROCUREMENT GOALS VERSUS CONSTRAINTS

Public Procurement Goals

Several international procurement “instruments” or frameworks are in place today to support the modernization and reform of PP

worldwide; these include the WTO's Government Procurement Agreement, the UNCITRAL model law, the World Bank Guidelines, the EU Directives, and the UN Convention against Corruption (UNCAC). Free-market proponents assert that any government policy-making or reform initiative "should be directed to the achievement of specific, sharply defined objectives [under the emblem of transparency], rather than being justified in terms of a broadly defined notion of the public good" (Quiggin, 1999, p. 11). Unfortunately, these mainstreaming instruments have different objectives (fiduciary objectives, promoting international trade, creating common markets, preventing corruption, or promoting other socio-economic policies) (LEGOP, 2013).

In its background paper presented as a discussion tool in the initiative to modernize the World Bank Guidelines, (LEGOP, 2013) proposes that it is wrong for the public procurement instrument to have a main objective as the promotion of international trade (GPA and UNCITRAL) or the prevention of corruption (UNCAC) or the creation of a common market (EU Directives); instead, the fundamental purpose of public procurement ought to be the fiduciary objectives (The World Bank). The 2014 World Bank's proposed revised procurement policy[5] targets balancing fiduciary objectives with delivering positive development outcomes with the mission of "Procurement in Bank Operations supports clients to achieve value for money with integrity in delivering sustainable development" under the following principles: value for money, economy, efficiency, fit for purpose, integrity, transparency, and fairness (World Bank, 2014, p. 4).

The author of this paper disagrees that the spectrum of objectives of PP should be limited to fiduciary objectives, trade promotion or corruption prevention; and, instead, proposes the following as the ultimate set of goals of public procurement (Table 1).

Some may immediately question the absence of transparency and equal treatment from the above listing. This paper proposes an alternative view where both as well as a multitude of others are regarded as constraints. Regulators must set their procurement policy goals based on an accurate account of their particular situation. One-size does not fit all! The World Bank has finally acknowledged this matter: "Our one-size-fits-all approach does not leave sufficient room for innovative procurement methods" (World Bank, 2014, p. 1).

TABLE 1
Ultimate Set of Goals of Public Procurement

Policy Level Goals	Framework Level Goals
- Enhancing economy and development; - Maintaining and enhancing public service delivery; - Maximizing welfare; - Promoting sustainability, human rights, social justice, environmental protection, etc.; and/or - Promoting other policy objectives (coherence and integrity of the public service).	- Practicing procurement strategically; - Ensuring efficiency and effectiveness; - Attracting innovations; - Maximizing value-for-money; - Capitalizing on supply side value; and/or - Developing markets.

Public Procurement Constraints

"A moral ought ('moral responsibility') always implies a practical can ('competence')" (Wagner-Tsukamoto, 2005). Spending public monies requires compliance with a wide spectrum of rules, procedures and regulations topped with best practices and enveloped with multiple layers of constraints established in laws, codes or professional and ethical standards. A public procurer targets, ideally, to maximize "net social benefits" wearing the shoes of a "benevolent social planner" (Anthon, Bogetoft, & Thorsen, 2007, p. 1626). Unfortunately, this has rarely been the case. In New York City for example, public procurement continuous reform initiatives targeted immunizing the process from the "taint of corruption" thereby impacting the whole system with the key "goal" of preventing not only actual corruption but also the appearance of corruption (Anechiarico & Jacobs, 1995). This is one striking example of a constraint mistaken for a goal. "It seems that the means to an end (transparency) has become an end in itself" (Lennerfors, 2007, p. 388). And it is normally caused by the assumption that the regulator is setting the rules and procedures that will probably be applied by likely fraud-prone civil servants. In the old continent, combating corruption through implementing the European Act on Public Procurement "jeopardizes efficiency and might devaluate competence… wins legitimacy for its fight for transparency and leaves efficiency in the background…" (Lennerfors, 2007, p. 389). However, "[c]orruption control ought not to be the tail that wags the public

administration dog" (Anechiarico & Jacobs, 1995, p. 144). Assuming the risk of being accused of blasphemy, I innocently cite that, after all, it may be true that the optimal level of corruption may not be zero![6]

Public procurement constraints are classified basically into three tiers each incorporating the following sample constraints (Table 2). Specific constraints cannot be generic and need to be custom-made for each goal and then reconciled for the collection of goals adopted in a procurement regime.

TABLE 2
Three Tiers of Public Procurement Constraints

General	Procurement Policy-Driven	Framework-Driven
- General legal texts, requirements and limitations; - Environmental, social, etc. policies, regulations, standards, etc.; - Sector-specific constraints; and - Market constraints.	- Transparency; - Integrity; - Confidentiality; - Competition; - Fairness, equal treatment and non-discrimination; - Accountability; - Curbing corruption; and - Others.	- Procurement law constraints; - Procedural constraints; and - Others.

The Goal-Constraint Interplay

Transparency is a key constraint- widely mistaken for an objective- in public procurement. But that is not all. The UNCITRAL Model Law on Public Procurement in its preamble (of both the 1994 version and the current version) mixes up constraints and goals; it identifies the objectives of PP regulation as follows:

a. Maximizing economy and efficiency;
b. Promoting international trade;
c. Promoting competition;
d. Providing fair, equal and equitable treatment;
e. Promoting integrity of and fairness and public confidence; and
f. Achieving transparency.

Points (a) and (b) are goals, yet the remaining points are constraints.

Reading the preamble to the 2011 version of the GPA, we can infer the following as objectives of PP regulation:

a. Achieving greater liberalization;
b. Expanding and improving the framework for international trade;
c. Avoidance of protectionism or discrimination;
d. Integrity and predictability;
e. Flexibility to meet various countries' needs;
f. Transparency, impartiality and prevention of conflict of interest and corrupt practices;

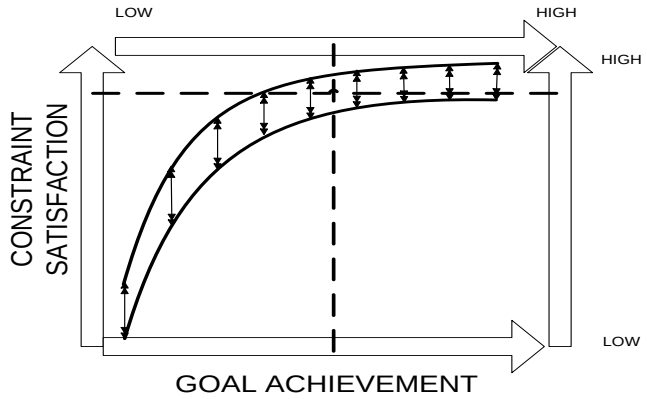
Points (d) and (f) are clear constraints as it is unclear where do points (b), (c), and (e) better fit (the former closer to a goal while the other two closer to constraints). Table 3 below provides a clear distinction between goals and constraints in both models.

TABLE 3
Goal-Constraint Distinction (UNCITRAL and GPA)

UNCITRAL Model		GPA Model	
Goals	Constraints	Goals	Constraints
Maximizing economy & efficiency	Promoting competition	Achieving greater liberalization	Avoidance of protectionism or discrimination
Promoting international trade	Providing fair, equal & equitable treatment	Expanding & improving the framework for international trade	Integrity & predictability
	Promoting integrity of & fairness & public confidence		Flexibility to meet various countries' needs
	Achieving transparency		Transparency, impartiality & prevention of conflict of interest & corrupt practices

Goals and constraints interact in a dualistic bi-directional manner where goals dictate some constraints and constraints impact goal achievement (up to a certain point). Distinguishing constraints from objectives is paramount in understanding, modernizing and practicing public procurement. An attempt (Saad, 2010) to differentiate can be seen in Figure 1.

FIGURE 1
Constraints versus Goals



In a schematic manner, the above shows that goal achievement is highly dependent on constraint satisfaction- with room for tolerance- up to a certain limit beyond which sensitivity declines. The above uni-dimensional plot could apply to a single coupling ($goal_a$, $constraints_a$); developing a relationship plot for the various couplings of goals and their respective constraints could prove extremely complex rendering a mathematical equilibrium rather difficult necessitating a possibly different type of equilibrium (if at all attainable) not dependent on explicit straightforward costs and benefits and relying heavily on complexity theory, heuristics and trial and error.

When setting policies, namely those with a social, environmental, developmental and economic impact, policy makers need to recall the basics and speculate into the origins of their responsibilities and objectives- their ancestral core values. Is it Aquinas who is still their guiding godfather or is it Friedman: is it realism or idea-ism that constitutes their philosophical paradigm? (Wishloff, 2009). As Maxwell

puts it, regulators need to "focus on the essentials" in designing policies and standards- such basic essentials as form of economy, degree of openness, etc. (Maxwell, 2003). Simultaneously, essentials, ultimate criteria, moral goals, and philosophical paradigms cannot substantively support legal reform unless they can be grounded to real-time practical implementation mechanisms (Hoffman & O'Shea, 2002). On the other side, a complete analysis of the above philosophical paradigms should ideally end in a final set of preferences that would, in the eyes of the analysts, maximize the welfare of the country and should guide all aspects of public ordering, policy making, legislation, execution and governance. However, policy making in general has the characteristics of complex systems preventing both completeness of analysis and predictability of outcomes. In spite of the value of such rooting of legal reform into both essential principles and practices, such a task may be pursued through modeling with proxies and assumptions that often require policy makers to adopt norms that differ from the desired philosophical theory and to target sub-goals due to possible hardship in quantifying or modeling the desired ultimate goals, due to absence of political consensus on the same, or indeterminism of the methods and tools (Hoffman & O'Shea, 2002).

Philosophical essentials translate into public values manifested in policies and regulations. However, public values -- non-universal and non-static -- compete together necessitating a "multi-value approach" adopting non-generic management strategies and safeguarding mechanisms that level "soft" and "hard" public values and realize balanced trade-offs wherever possible (Koppenjan, Charles, & Ryan, 2008). The problem is with trade-offs themselves that may well sacrifice softer and abstract values for the sake of harder and concrete ones. Where public values' analysis may be approached in three different ways (universal, stakeholder and institutional approaches) (Furneaux, Brown, & Allan, 2008), the traditionally soft values of sustainability, human rights and environment protection should be reconciled with other procurement values, integrated within the system, safeguarded at every phase rather than traded-off (Charles et al., 2008). Classifying values as material (tangible substance) or procedural (traditional government values including equality, transparency, governance, etc.), a research on Public-Private Partnerships concluded that "[n]either an exclusive focus on material values, nor a sole focus on procedural values appears to be beneficial in the long run" (Weihe, 2008, p. 158).

To translate those values to practice, the policy maker needs to identify the required goals. Research finds that "there is a need to re-conceptualize the goal for public managers and institutions aiming to produce public value as one that seeks to improve 'institutional responsiveness to the refined preferences of the public'. This is about the capacity of a public body to listen to and engage with the public and shape and inform the public's preferences, rather than just give the public what it wants at a particular point in time" (Blaug, et al., 2006, p. 9). Attached to every goal ought to be constraints, working procedures, standards, best practices, etc. With every additional goal that a policy/regulation tries to achieve, the tensions within this system aggravate and its complexity multiplies. There is an intriguing gap between public values in the abstract and public values in practice (Charles et al., 2008). The gap can be narrowed through the careful association between values and goals on one side and between goals and constraints on the other leaving ample room for policy makers to tighten or relax this interplay. The elaboration of tighter or softer constraints is effective only as a by-product of the articulation of the quested goals in more detail. Without this coupling, a PPS will remain misguided and directionless.

ANTIFRAGILITY

Nassim Nicholas Taleb (2012, p. 20) categorized systems as "fragile", "robust", or "antifragile." As per Taleb (2012, p. 22), fragile systems are those that disintegrate or deteriorate under stress or shocks; robust systems are those that are not affected by any; on the opposite side, Taleb coined the term "antifragile" to categorize those systems that neither break under shocks, nor remain intact but, instead, grow and become better! Taleb (2012) describes "antifragility" as a characteristic that helps systems (up to a certain limit)

- Benefit from and become better under shocks;
- Grow and thrive when exposed to volatility and randomness;
- Love risk and uncertainty;
- Love a certain class of errors;
- Deal with unknowns and perform well without understanding sometimes; and
- Lose fragility.

Taleb's seminal work on unpredictability in complex systems and the paradigmatic shift in the design of those systems from a fragile

mentality into an antifragile mentality has inspired economists, researchers, policy makers, engineers as well as many others. This article aims at transposing antifragility into PP Systems in order to change the way such systems are being designed and the way such systems operate.

ANTIFRAGILIZING PUBLIC PROCUREMENT

All PP Systems today are fragile (robust at best, and very rarely). An act of corruption drives system reputation down. Rigid rules hide away benefits that could be achieved otherwise. Unseen benefits wash away easily. Monopolies and oligopolies dictate the paths a procurement process takes. Incompetent procurement professionals do mistakes (mostly unnoticed) that deteriorate results and associated benefits. In short, the system is breaking with every tick of a clock. Governments can modernize, automate, recruit, train, expand, reorganize, restructure, etc. but the end result remains the same: marginal enhancements in the face of round-the-clock breaks and deteriorations. Performance reports will inevitably look shiny and bright because they fail to capture unrealized benefits and unachieved successes. What if a PPS system can be designed as less and less fragile to become more and more antifragile?

Antifragility is a new paradigm in view, design and practice. Some systems are bounded by historic layers of risks, stresses and constraints that make their revolution towards antifragility harder than others. PP is one such system. Below is an attempt to characterize an antifragile PPS decomposed into system design, regulation and practice. In some instances, comparison is made with respect to the most recent mainstream PP modernization initiatives (The World Bank and the European Union).

Policy making in general has that characteristic of complex systems which prevents both completeness of analysis and predictability of outcomes. Designing a PPS is a very complicated process- till now- based on inaccurate premises, misunderstanding and a lot of misconceptions. Some of those misconceptions include the following:

- Mistaking goals for constraints;
- Lacking identification of goals and the setting of the appropriate constraints;

- Lock-in onto some constraints (and/or goals);
- Assuming predictability of Market behaviors;
- Considering PPS a non-complex system (i.e. predictable, understandable, non-chaotic, and dualistic);
- Considering PP Systems as absolute dogmas;
- Reducing a wide array of biases to "conflict of interest";
- Assumption of "Corrupt unless proven innocent" (the default situation is that of corruption);
- Optimal level of corruption is zero;
- There is an optimal PPS;
- Accountability systems work;
- PP Systems are not culture-sensitive… one-size fits all; and
- Ignorance is visible and finite.

Projected onto PP by deduction from (Taleb, 2012), an antifragile PPS would have the following characteristics.

Antifragile PP System Design

The owners of this system should have the upper hand in manipulating exposure to risks.

Governments (central or local) should have the power to expose the system to certain advantageous risks and protect it from others. Such a sensitive process of managing risk exposure is impossible if the PPS does not account for it. EU Directives for example recently allowed contracting authorities to buy on direct contracting basis (negotiated procedure) with suppliers on advantageous terms (e.g. those being wound-up or facing bankruptcy). Previously, working with economic operators facing bankruptcy or being wound-up was prohibited.

The 2013/2014 Review of the World Bank Procurement Policies and Procedures proposes a new set of Directives and Procedures mandatory for World Bank Borrowers to apply as well as non-mandatory Guidance Notes (World Bank, 2014) that offer flexibility to Borrowers. This newly-introduced flexibility may provide opportunity for Borrowers to manipulate themselves risk exposure. The European Union's 2014 procurement modernization process introduced simplification and flexibility of procedures (European Commission, 2014) that may as well provide for more opportunities to Contracting Authorities to better manage risks.

Randomness should come from a wider set of sources rather than be concentrated.

Today PP Systems are designed so as to be receptive to concentrated sources of randomness namely markets and economic operators. Whether markets respond positively to a bid or not is tainted with a huge amount of randomness; similarly, behaviors of bidders and contractors: how ethical, responsive, cooperative, competent, etc. Although market and economic operators' randomness do yield positively in some instances, the fact remains that such randomness is negatively skewed most of the time. Some systems have captured this risk and have accounted for it by mandating expanding markets and opening borders to reduce the impact of randomness coming from local markets. Though this step has increased the sources of randomness (more markets, more economic operators), the concave exposure (see Taleb [2012, pp. 267-289]) for an analysis of concave/convex exposures) remains the same.

Increasing the sources of randomness in a PPS yielding positive outcomes and reducing the negative consequences of concentrated sources of randomness would be the target. One form of such increase in sources of randomness is the lesser reliance on a few economic operators. The 2014 EU procurement Directives aim at encouraging public purchasers "to award several contracts to various small businesses, rather than a single contract to a large company" (EU, 2014a, p. 2).

The theory of imperfect or monopolistic competition was recognized by economists more than 80 years ago after observing the impact of capital-intensive investment on the concentration of industries in the hands of a few economic operators controlling the market (Amini, 2004). It was supported that a local economy centered on one or more large corporations has worse outcomes compared to one revolving around several smaller scale diversified firms (LYSON, 2006). A wealth of research and literature promotes the role of small and medium enterprises in economic development and prosperity; as far as public procurement is concerned, it has been shown that the increased reliance on small businesses and "social enterprises"- in addition to its social and economic impact- helps achieve procurement efficiency goals (SBS, 2005). Between the two extremes of perfect competition and natural monopoly market structures, there exists a

wide range of intermediate economies (Baumol et al., 1982).[7] After all, "[s]mall may be ugly, it is certainly less fragile" (Taleb, 2012, p. 278).

Antifragility is characterized by a "convexity effect" in which a system would benefit more than it loses from randomness and fluctuations (volatility) as opposed to "concavity effect" in which systems lose more than they gain from the same randomness and fluctuations (Taleb, 2012, pp. 270-273). Major challenges facing a principal (from an agency-theory perspective) are information asymmetry and the tendency of the agent to be opportunistic (Höner & Mohe, 2009). This is because the system is fragile and is hurt by this (unfavorable) asymmetry (Taleb, 2012, p. 158). Further research could try to demonstrate other examples of how this effect can apply to a PPS.

Decision Making should rely on heuristics.

Decision making models and decision aiding tools attempt to deny heuristics their originality and authenticity. Evaluating bids or assessing liquidated damages or settling a claim are all examples of decisions that are far from mathematics and science. They involve a great deal of subjectivity because of the complex nature of the environment in which they exist. Heuristics cannot be generalized into rules and cannot be described in mathematical, statistical models, algorithms or logical rules.

Decision making in any one of the following PP tasks, for example, cannot be shrunk to a mathematical formula or a software application or even a set of rules:

- Deciding on prioritizing closely important projects;
- Designing project packaging or delivery method;
- Scoring the technical merits of a bid;
- Interviewing key experts while evaluating service/consultancy proposals;
- Managing contractual relationships and disputes; or
- Assessing the authenticity of a contractor's claims.

Mathematical models, formulae or software systems do not factor in trust, good faith, reliability, as well as other human, psychological and sociological traits inherent in any social practice. In spite of rigorous attempts to de-bias and de-personalize decisions within PP processes, these still involve a great deal of subjectivity because of the

complex nature of the environment in which they exist. Such a characteristic necessitates the recourse to heuristics. Heuristic decision making is a case-sensitive matter that can only be appreciated by those managing the process. Systems should empower those managers to make those decisions while training their heuristic decision making capacities to identify and escape inherent cognitive biases. All at the same time, practitioners should understand that relying on heuristics becomes dangerous if we forget that "[h]euristics are simplified rules of thumb that make things simple and easy to implement. But their main advantage is that the user knows that they are not perfect, just expedient, and is therefore less fooled by their powers" (Taleb, 2012, p. 11).

There should be widest possible decentralization and de-concentration.

The model of flexible specialization proves that "the progressive decrease in economic and social performance of economies of scale has created a growth opportunity for small businesses… The decentralization of production, people and power is the essential element in the process of social and economic development" (Amini, 2004, p. 379). Centralized procurement systems are promoted for the economies of scale they can achieve and the limited incidence of corruption. Let us analyze both starting with the latter. One incident of corruption in a multi-million dollar contract has a much graver impact than tens of such incidents in smaller sized contracts amounting to the same value. The probability of the first is much higher than the probability of the second. Probability of one person being corrupt is much less than the probability of 10 being corrupt at the same time ($P(a) <<< P(a)*P(b)*P(c)…$). Second, If a larger contract is awarded based on a mistake (or where no actual economy of scale exists), correction is impossible; however, if a mistake occurs in a smaller contract, correction may be more feasible in another occurring later in time. Antifragility here requires decentralization and de-concentration where the risks are also de-concentrated and the opportunities for benefits are expanded.

As per the UN 1993 UNDP Human Development Report, decentralized investment strategies aiming to promote small-scale industries and to benefit from local resources "increase local cooperation, and generate public expenditure by creating jobs, higher quality service, and higher government support for local

entrepreneurs." Decentralization is of paramount importance to achieve sustainable development (Amini, 2004).

The system should undergo continuous evolution and change.

Evolution should come as a result of experiencing with an existing system and as a consequence of its interaction with other external systems surrounding it. Such experiencing and interaction mandate changes to the goals/constraints necessitating amending the system. All goals cannot be achieved simultaneously; today's PP goals differ from tomorrow's -- similarly for the respective constraints.

From an economic perspective seeking equilibria and minimizing transaction costs, policy makers may be induced to minimize this recurrent evolutionary urge so that the market and operators therein as well as the operators of the PPS do not suffer excessive costs associated with adapting to system changes. Indeed, continuously changing the rules and regulations of PP may hinder smooth implementation and may undermine the value of previous experiences and of learning on both sides of the transaction let alone the regulatory, political, judiciary, control, etc. stakeholders. Traditional economic science when forced to apply such changes would try to minimize the "losses" by, for example, shifting the concentration of change to areas where the impact is least or by "calculating" the consequences of various options and opting for the one that has the highest "returns"; in either case, the purpose of evolution is lost- or at best, undermined- in quest of economic sense. Alternatively, and from an antifragile perspective, it is wiser to embrace such changes as sources of opportunities and yet-unseen gains as well as a medium for trial and error! Whereas actors in a PPS may benefit from system stability at some perceived equilibrium, they themselves may be able to benefit much farther in areas traditionally obscure or invisible.

The system should be designed as to be subjected only to small reversible mistakes.

Mistakes (inevitable) by practitioners should be not only small in size but also of a reversible nature. Consider, for example, investment strategies by the state. Compare centralized investment strategies implemented by packaging programmes and projects into larger and larger contracts with decentralized investment strategies where programmes and projects are dissected into smaller contracts;

mistakes in the former are large scale while in the latter they are small scale. Small scale mistakes allow you to learn in the next small scale transaction. Large scale mistakes have a much wider coverage preventing immediate learning and correction.

Let us consider another example of a mistake in bid evaluation. If an award decision has been taken based on mistaken assessments that are not discovered by appeal mechanisms, the mistake would be large in size and the impact irreversible. The system could be designed in such a manner as to reduce the size of mistakes and preferably render them reversible. In this example, the system could allow for internal revocation of award decisions, cancellation of contracts based on mistaken assessments, correction of the mistake and restarting the award process. Accordingly, award decisions will remain under scrutiny for longer periods of time during which bids will also remain valid. No contractor would benefit from mistaken evaluation.

Antifragile PP Regulation

PP regulation should be based on virtues.

From an economic perspective, legal reform should attend to two separable yet connected questions: a moral question ("what substantive ethical or moral criteria should ultimately be used to evaluate the success or failure of the legal system") and a practical question ("what type of economic decision procedure should be used in practice to identify legal rules that satisfy the relevant moral criteria") (Hoffman & O'Shea, 2002, p. 339).

Virtue-based ethics of Aristotle is built on the grounds of "moral excellence" (arête), "practical wisdom" (phronesis) and "eudaimonia." Policy making and legislation have had numerous grounds on deontologist and utilitarian moral philosophies and have rarely been based on virtue ethics (Farrelley & Solum, 2008). Very few regulations seem to uphold justice, honesty, integrity and honor as paramount guiding principles for arête and criteria to be upheld and served. No practice, procedure, method, application, etc. can the reformer or policy maker arrive at without understanding the "ultimate criteria the chosen procedure ought to serve" (Hoffman & O'Shea, 2002, p. 339).

Procurement regulation today is mostly based on consequentialism (calculating consequences of actions) and sometimes on moral absolutes (deontological). In the midst of such regulations, virtues

themselves may be lost for the sake of results or in the dilemma of establishing universality. Virtue-based regulation anticipates that actors within the system behave virtuously at all times; virtuousness is a whole-hearted non-stop endeavor for excellence mixed with the growing body of experiences in quest of achieving eudaimonia. As per Taleb (2012, p. 405), "[o]nly a sense of honor can lead to commerce. Any commerce."

Contract law today (Cimino, 2009) based on law and economic consequentialist and deontological theories is haunted not only by conflicts but also by blind spots. Today's contract law issues such as efficient breach, damages and penalties, good will or intent, etc. all occur in the blind spots of the law, and settling them results in a "theoretical logjam" where resolution of conflicts is based on an apparent impossibility of a dual-focused analysis (economic and social) (Cimino, 2009). Virtue-based contract regulation "reasons about means and ends in a fully symbiotic way" (Cimino, 2009, p. 712).

Regulation should be based on evidence rather than pure theories.

Trying to dress successful practices (say in trade) with economic academic theories and formulas that are worn by new practitioners cause those to fail (Taleb, 2012, p. 220). Taleb (2010, p. 65) explains the "theorizing disease" as an anatomical characteristic forcing humans unconsciously to extract judgments and explanations from raw facts: "It is impossible for our brain to see anything in raw form without some interpretation. We may not even always be conscious of it." Ill-theories produced form either wrong or unconscious interpretation or non-evidenced experimentation will never render targeted outcomes.

There are several theories that govern PP regulation today; these include theories of "ultimate transparency"; the "compulsory competitive tendering"; the "free market economy"; "contract law"; etc. Popper believes that theories are hypotheses that must be subjected to critical testing through continuous cycles that can either further support those hypotheses or not: "The falsification or refutation of theories through the falsification or refutation of their deductive consequences was, clearly, a deductive inference (modus tollens). This view implied that scientific theories, if they are not falsified forever remain hypotheses or conjectures" (Popper, 2002, p. 88).

Today, there are doubts as to how successful market mechanisms are and how efficient competition is. The limitations of ultimate transparency are starting to become clearer and neo-classical contract theories are being challenged by relational contracting theories. "[G]iven the centrality and socially constructed nature of trust, relational contracting may be shown to be superior to conventional law-and-economics analysis on efficiency grounds alone" (Seal, 2004, p. 335). Relational contracting is an emerging contracting theory that challenges- with varying degrees- mainstream theories of transparency, competition and open markets. To render PP regulation less susceptible to the threats of those theories, it is imperative that the guiding theories in this regulation be real-life tested; they ought to be strong hypotheses subjected to rounds of critical appraisal instead of confirmatory appraisal.

Public as well as donor-funded procurement has not yet engaged in relational contracting in any recognizable manner. However, a change in this trend is being witnessed in the 2014 version of the reviewed procurement procedures of the World Bank through two changes: (i) the adoption of new procurement methods such as competitive dialogue, negotiation, best and final offer, strategic supplier engagement; and (ii) the increased ability to recognize previous performance of suppliers in the procurement process (World Bank, 8 July 2014). The EU has similarly engaged in a reform initiative that permits Contracting Authorities greater discretion in using procedures relying more on negotiations and other simplified procedures such as the new competitive procedure with negotiation, a simpler and more practical competitive dialogue, and the new innovative partnership approach (EU, 2014a, Factsheet No. 3) in addition to a lighter, more flexible and simple service award procedure (EU, 2014a, Factsheet No. 8).

Take for example the award based on the "most economically advantageous tender" in service/consultancy type of bids. Some regulations mandate an 80/20 proportion of technical/financial weights; some others allow for a range of 50-80/50-20 proportion. The majority of such weighting options has rendered consultant selection dominated by price where consultants submitting lower fees-lower technical scores have higher chances to win (Drew , et al., 2004). Additionally, such prescriptions tie (the former much more than the latter) the hands of practitioners and prevent them from adapting

weights to better suit the type of project and circumstances surrounding its implementation. Actual situations mandate sometimes that the technical weight be reduced to less than 80% in the former regulation or less than 50% in the latter. Examples are abundant such as the procurement of audit services, surveying services, topographic studies, routine administrative training, etc. Other situations where quality is paramount, the technical score may need to be assigned a weight in excess of 80% to reach sometimes 100%. PP regulation should permit the practitioner to test the qualitative weighting theories and adapt them based on learning to be able to achieve particular PP goals. Rigid theoretical systems prevent such adaptation and therefore undermine goal achievement.

Knowledge should come from real life.

Similarly to the theories behind PP regulation, knowledge in PP should be mainly derived from lessons learned rather than from pure theories and untested hypotheses. PP practice should feed into PP regulation in a continuous manner. The PP body of knowledge should remain an unclosed book gaining regularly from the experiences of practitioners. Today, the PP body of knowledge is primarily derived from theories such as those listed above or from the experiences of a very limited number of practitioners in an even fewer number of countries. There are of course universal lessons learnt that may apply most of the time in most of the countries; however, the more reliable, extensive, and relevant lessons are those local lessons that practitioners in a certain country accumulate. Procurement policies in developing countries should not directly imitate those of developed nations due to major structural, economic and capacity divides (Kattel & Lember, 2010); otherwise, PP Systems will remain subjected to the Bed of Procrustes! "Prescriptive regulation, particularly of fast-changing industries, risks becoming procrustean" (Ohlhausen, 2014, p. 1).

This feature of antifragile PP regulation stands up against mainstreaming initiatives that target wide harmonization of procurement regulations across countries. Such harmonization and internationalization have been a prominent impact of globalization and market economies and constitute a sizeable segment of "global governance" that, still, is characterized by conceptual ambiguities and hindered emergence.[8] "Conflict or incongruity between international procurement rules is caused by an absence of mechanisms for adapting or reconciling the specific methods used by different

supranational bodies' to protect their interests… [E]ven when such interests coincide, they can nevertheless be accorded varying weight during a careful consideration of the other interests of importance for each body" (Casavola, 2006, p. 26). On the other hand, "real-life"-based learning and regulation mandate reliance on empirical data and information collected through practice. "Cherry-picking" from a wide spectrum of collected data is extremely harmful to knowledge (Taleb, 2012, p. 416); experiments ought not to be marred with bias and experimenters must not be fooled by data.

The 2013/2014 Review of the World Bank's Procurement Procedures acknowledged this matter: "The system does provide a tailored approach to supporting procurement in each specific country context. The procurement reform aims to make policy and procedures more responsive to client needs and provide support where it is really needed" (World Bank, 2014, p. 3).

The mindset should be entrepreneurial without any bureaucracy.

PP systems today are governed by structural and procedural bureaucracy; layers of functions and disciplines overlap and collide with loads of procedural constraints. Several of the procurement processes fail due to bureaucracy, red tape and fear. Examples are numerous of bids that have failed to reach conclusion and the products of those bids arrive later (much later) than when needed. An entrepreneurial and sincere mindset will not be afraid of taking risks and assuming responsibility because the outcome is worth it. Unfortunately, today's PP Systems systematically deprive practitioners from courage, initiative, motivation and sincerity… the very virtues based on which the PPS should be initially designed.

PP is encouraged to learn from private sector successes and practices (Hulme, 1994). Some countries were not only urged but sometimes required to reform their procurement frameworks in line with private sector procurement values, practices and ethos (McCrudden, 2006). The entrepreneurial aspect of private sector procurement may be the cause of its successes. However, research and efforts to align PP with private sector procurement as is have, on the other side, been characterized as myopic and biased failing to capture the true essence of public ordering and operation notably in the political dimension distinguishing it fundamentally from that in the

private sector (Murray, 2009). The quest, then, would be to capture the true entrepreneurial mindset in a public ordering perspective.

PP should never be treated as an island… holistic view to governance.

PP governance without governance in the rest of the functions of government is a lost cause. PP is a complex system that is part of a yet more complex system of government operations. Reforming a part will not shield that part from shocks coming from other systems. "[I]f public procurement is to make a strategic contribution, it should have strategic 'fit' and be consistent with the issues important to the rest of the organization. A strategy pursued that is not aligned with the core objectives is said to be dysfunctional" (Murray, 2009, p. 94).

"By its very magnitude, public procurement … demands coherence with other public policy environments, especially business policy because of its significance in the economy (Harland et al., 2000)[9] … even though these various operational elements often fail to come together into a coherent policy or politically sensitive management framework." (Schapper, Malta, & Gilbert, 2006, p. 4). Both the World Bank's and EU's 2014 reform initiatives have addressed the integration of other policy objectives into procurement in a clearer manner.

PP regulation should be in the simplest form possible.

Simpler theories possess a greater power of excluding possible states or situations and are much better tested (Popper, 2002, p. 151). "A complex system, contrary to what people believe, does not require complicated systems and regulations and intricate policies…Complications lead to multiplicative chains of unanticipated effects" (Taleb, 2012, p. 11). A valid question arises from the complexity of reformed procurement systems: wouldn't such a complexity diminish the chances of implementing those reforms and attaining long-term objectives (LIPFORD, 2000) as well as testing their validity. Recent PP modernization initiatives in the EU (2014a) have been targeting simplification of the procedures to make it easier for practitioners and economic operators (namely SME's) to use the system. Complex PP Systems cannot be regulated in a complex manner because no matter how sophisticated such a regulation is, it cannot capture any closely the complexity of the PP System. Additionally, "[t]he difference between the letter and the spirit of

regulation is harder to detect in a complex system" (Taleb, 2012, p. 414).

Simple regulations are characterized by simplicity of application: procedures, frameworks and institutional setups. It also includes simplicity of the standard documents prescribed in the regulation. Standard bidding documents will accordingly become more simple and straight forward- standard forms of contract as well. Participation by economic operators will be rendered easier and less expensive. Application of simpler regulations ought to be faster, more effective and efficient. Simple regulations are naturally more flexible than complicated ones; regulating lesser aspects of the procurement cycle allows practitioners and decision makers enough room to use their discretion within the boundaries of the law.

Both the 2014 WB procurement review initiative and the 2014 EU procurement Directives target simplification of procedures, processes and associated documentation. Although such simplification is not up to the targeted level to enhance management of complexity in procurement, it is surely a marginal step in the right direction. The simplicity Taleb lobbies for is not so simple to attain (Taleb, 2012, p. 11).

Contracts should be in the smallest feasible size.

In the context of complex systems, it is recommended that achievements be attempted on smaller scales to minimize the impact of shocks, externalities and mistakes and reduce the incidence of catastrophic failures. Increasing the number of contracts means that there are more and more economic operators participating in the PP system. It also signals a laissez passer for SME's to join and be active players in this system. Researchers believe that "widespread, numerous and prosperous small business sector is more likely to be associated with relatively equitable income distribution than a smaller number of large enterprises" (Amini, 2004, p. 372).

The 2014 EU (2014c) procurement directives require that contracts be subdivided into lots whenever possible to facilitate the participation of SMEs and enhance competition (EU, 2014a). Recital No. 78 of the EU's "Public Procurement Reform" states the following:

> To that end [facilitating participation of SMEs] and to enhance competition, contracting authorities should in particular be

> encouraged to divide large contracts into lots. Such division could be done on a quantitative basis, making the size of the individual contracts better correspond to the capacity of SMEs, or on a qualitative basis, in accordance with the different trades and specializations involved, to adapt the content of the individual contracts more closely to the specialized sectors of SMEs or in accordance with different subsequent project phases (EU, 2014a).

Previously (and still, in many mainstream models), this was considered an unacceptable action that hinders competition. Smaller procurements yielding smaller contracts would help minimize the impact of shocks, externalities and mistakes in two folds:

(i) Increase the number of economic operators qualified for the procurement in question and surely increase the number of SME's among them; and
(ii) Reduce the impact of transaction mistakes on the operation of the PP system in general; by reducing contract size and (thereby) increasing the number of transactions being processed within the PPS, randomness and shocks will eventually be spread over a wider spectrum rather than be concentrated in a few transactions.

Antifragile PP Practice

PP should be practiced with joy with enough time to contemplate and exercise sufficient mental effort.

PP practitioners today are mostly stressed due to overload, tightened schedules, opportunistic contractors, unrealistic plans, organizational conflicts, etc. Whereas it is characterized nowadays by tension, fear, anger, competition and disputes, PP should be practiced with joy and contemplation. Stressors preventing joy and contemplation should be eliminated to facilitate the practitioner's way through PP to render goals and achievements. Psychological and organizational scholars have valued the impact of happiness and contemplation on the achievement of results. It is not questionable that tension, fear, anger and disputes are counterproductive and are the causes of many mistakes.

The third recommendation under this point is the exercise of mental effort as opposed to robotic and routine exercise of functions without critical thinking. A tenet of the management of complex

systems is the unending pursuit of new knowledge and the continuous reproduction of hypotheses subjected to continuous testing. This is only feasible through the exercise of mental effort even in areas that traditionally seem requiring none.

An ultimate ethical rule is sincerity.

Literature as well as prevalent PP regulations highlights the following ethical principles required while operating on a PP system: transparency, fairness, equal opportunity, freedom from conflict of interest, equal treatment/non-discrimination, and integrity. All except integrity can be observed and measured. Integrity remains to be the least verifiable of all. It is noteworthy that no PP regulation has mentioned "sincerity" as an ethical rule. "Good faith" was introduced to contract law in a limited perspective slightly approaching the relational rather than normative public contracts. Relational contracts are characterized by role integrity (fit within wider social role), preservation of the relationship between the parties (raised to the level of a norm), harmonization of relational conflict (through trust, good faith and the streamlining of relational and social norms) and Supra-contractual norms (distributive justice, liberty, human dignity, social equality and inequality, and procedural justice) (Seal, 2004).

The link between sincerity and trust is key. Sincerity (based on good faith and leading to trust) in planning, conducting and managing PP tenders and contracts creates a healthy environment free from opportunism, rent seeking, fraud and inefficiency and conducive of trust building. Simultaneously, sincerity and integrity cannot be regulated. They are inherent characteristics of people be they procurement practitioners or private sector operators. However, the PP system including associated procedures and standard contracts does play a role in fostering, sincerity, good will and trust. A comparison between the World Bank and Europe-aid conditions of contract for consultancy services found that the WB GCC offers more flexibility and discretion to both parties and includes a "good faith" provision, yet it paves the way for both opportunism and trust building. Opportunism is more feasible where the terms are more relaxed; and the less usage of "sticks" is more conducive of trust building (Saad, 2016). Accordingly, sincerity ought to be ingrained in every phase of the procurement cycle and must be integrated in the conditions of contract governing the relation between both parties in an attempt to transform a classical and normative contract into a relational contract.

Should mistakes happen, should they lead to highest forms of accountability.

Obstacles accompanying the modernization and reform of PP are in no way limited only to developing or transition countries: "Even in those jurisdictions with stronger administrations the issues are poorly appreciated and susceptible to systemic failure of accountability - often because the agents of accountability themselves have at best a weak appreciation of the issues" (Schapper, Malta, & Gilbert, 2006, p. 3).

"Accountability refers to the obligation on the part of public officials to report on the usage of public resources and answerability for failing to meet stated performance objectives" (Armstrong, 2005, p. 4). Observers witness a tiny set of instances where accountability is working but do not appreciate the much larger set of instances where it is not. Failure of accountability systems is partly caused by the failure of agents of accountability to appreciate the gravity of mistakes and partly because of failure to capture the mistakes in the first place let alone political intervention to conceal mistakes. Agents of accountability in antifragile PP Systems should be perfectly equipped to evaluate mistakes and impose corrective and disciplinary actions; the system should be capable of identifying any mistake that trespasses the narrow field of simple regulations; and the system should be protected from political intervention. No one should abuse the system for a free ride!

PP should be run by the principal and not by an agent.

The resort to private sector Procuring Agents in developing and some developed countries raises the question of how much does that agent possess "soul in the game"?[10] Procuring agents representing the state in conducting PP on its behalf are governed by business professionalism models that inevitably include profit making as one of its most important pillars. Another pillar of such models is the pursuit of continued business with the state. Both pillars mandate dilution of their ability to assume a public value maximization goal. Simultaneously, they are likely not deeply engaged in the achievement of state public values and would hence conduct procurement from a different perspective: transactions that must be executed for the earning of financial returns.

An antifragile PPS must be operated by the owners of the funds themselves or their elected representatives: Governments, local

governments, public institutions, etc. Those should possess "soul in the game"![11] Yet, if they do not, the problem is wider and cannot still be resolved by agents.

Practitioners should remain skeptic at all times.

"A thousand days cannot prove you right, but one day can prove you to be wrong… you know what is wrong with a lot more confidence than you know what is right… All pieces of information are not of equal importance" (Taleb, 2010, p. 57). PP practitioners should not trust a rule or an observation blindly. Asymmetry makes pieces of information of un-equal importance. A complex system- such as that of PP- requires practitioners to remain constantly skeptic about rules, processes, procedures and occurrences they come across. Many a time will a practitioner abide perfectly with regulations and rules yet find that something is wrong. Instead of pursuing a misleading process in this case, the practitioner should pause and question seeking a corrective measure before it is too late.

All at the same time, policy makers as well as practitioners must work admitting the presence of ignorance at all times (what is termed as the Dunning-Kruger effect or ignorance of ignorance) (Dunning, 2011). Ignorance, asymmetry, statistical errors, statistical cherry-picking, bias, complexity, etc. mandate a skeptic attitude. "[U]nderstanding how to act under conditions of incomplete information is the highest and most urgent human pursuit" (Taleb, 2010, p. 57).

Functions and not only data must be redundant.

How often does a procurement process drag or fail due to functional failures (competency, overload, absence, enthusiasm, motivation, capacity, etc.)? Today, if you lose a file, you can retrieve it in a matter of seconds, but if one of your staff resigns, you would need at least six months to regain the position you were in when he/she resigned. Functional redundancy is key to making the system antifragile to functional shocks. This can be achieved for example by widening the circle of procurement professionals in your organization; widening the knowledge base and reducing dependency on a few. It can be achieved also by dissecting current functions into smaller and smaller pieces managed by more and more staff.

PP education should therefore encompass almost all members of the operating organization aiming at building their relevant competencies and equipping them to assume PP practitioner functions at times of heightened demand. Job rotation has been proposed by some as a technique to facilitate intra-organizational learning and minimize the impacts of turnover shocks.

An ultimate practitioner's selection criterion is strong ethics.

Although modern employment techniques involve a component of ethical evaluation, but the same are not free from defects including but not limited to

- Candidate preparedness to such evaluation questions;
- Failure of interview or written exam questions to replicate real life situations;
- Inability of replicating the tensions that are normally present in ethical decision making; and
- Limitation of ethical evaluation to a limited subset of morality (namely, bribery, conflict of interest, confidentiality, and the like).

Ethical evaluation of to-be PP practitioners ought to be a primary evaluation component based on an assessment framework as distant as possible from the above defects. The aim of this assessment is to evaluate the virtues the candidate possesses. There exists a wealth of research on honesty and integrity testing (e.g. Personnel Selection Inventory, Applicant Potential Inventory). Various scholars have analyzed the impact of the same on employee performance. Although there is almost no correlation between an integrity score and cognitive ability, relying on the former to choose between otherwise equal candidates will help create a workforce that is more likely to engage in productive work activities (Wanek, 1999). Another research found correlations between employee integrity test scores and the performance assessment of career potential, leadership and work performance as reported by the employee managers (Becker, 2005).

DISCUSSION: SYNTHESIS OF ANTIFRAGILE PPS CHARACTERISTICS

Achieving the goals of PP and equipping this system not only to withstand shocks but also to benefit from them necessitate a paradigm shift in the conception, design, regulation and practice of such a complex system. This paradigm shift is based on a clear distinction

between the goals the system is to achieve and the respective constraints associated with these goals. Based on such a clear comprehension of a PPS can attempts to transform and- hopefully- antifragilize succeed.

This paper argues that the above-discussed features and characteristics can help extract fragility from and inject antifragile properties into a PPS. Accordingly and in brief, an antifragile PPS relies neither on unproven theories nor on prescribed models; instead, it builds and grows from practical experiences; such a growth is neither in size or in complexity; instead, regulation should remain in the simplest form possible and should grow in maturity. Such a simple regulation must undergo, then, continuous evolution, adaptation, and enhancement. A PPS should allow its users to use their discretion as an adaptation tool to cross complexity shock episodes. Such discretion is accompanied with uncompromising accountability. Bans on the discretion of users are relaxed while concentrating on sincerity as an ultimate human trait in a system built on virtue ethics grounds.

Research on a PPS should be more action research rather than a purely theoretical one. Practical experiences feed back into system design and nourishes the learning process and knowledge development and sharing. Knowledge within a PPS is not limited to particulars of that system but, instead, expands to all other arts and sciences to grant researchers, regulators and practitioners a deeper understanding and an inspiring insight into other forms of complex systems. The lesser reliance on theories while depending on real-life experiences mandates continuous mental efforts and a skeptic approach to knowledge gaining and decision making; skepticism in its turn requires trusting no theories or pre-packaged models and solutions. It fortifies knowledge and protects the system from the failure of theories. Practitioner's decisions- while subjected to the highest forms of accountability- must be allowed to rely on heuristics especially when science furnishes no definitive answers.

A virtue based system built on sincerity to achieve set goals in a highly uncertain environment should be practiced with joy while possessing soul in the game; practitioners are the principals; they co-own the system and are not mere paid employees. Owners should have the ultimate say in manipulating system exposure to risks to support their goal achievement. The lesser the sources of such risks, the higher the system fragility in return; hence, such a system should widen the

sources of randomness at two levels: (a) practitioners' risks, by- for example- extensive decentralization and functional redundancy within such decentralized structures; and (b) market risks, by- for example- reducing the size of transactions (contracts).

Implanting antifragile properties in a contemporary PP market is a huge challenge facing several obstacles, namely:

- Proving that PPS antifragility is attainable and feasible;
- Designing the policy, legislative and practical mechanisms for the same;
- Overcoming decades of fragile PP regulation and practice;
- Coordinating such a policy with other public policies; and
- Overcoming political and mainstreaming barriers.

The above challenges also open the door for further research on the topic paving the way for putting forward antifragile PP policies, systems, models, and frameworks that may be subjected to cycles of testing and reformulation.

CONCLUSION

As Aristotle says "The least initial deviation from the truth is multiplied later a thousand fold." "We must consent to advance cautiously, step by step, feeling our way, adopting no foregone conclusions, trusting no single science, expecting no infallible guide.... We must learn to judge each case upon its merits, interpreting with painful care all experience which can be brought to bear upon the matter"[12] (Hosseini, 1999, p. 19). The above is the essence of antifragility.

Finally, it is imperative to note that as per (Taleb, 2012, p. 6), one should not gain antifragility at the expense of the fragility of others. PP regulation mainly moderates a bilateral transaction where either party ought not to take advantage of the fragility of the other, for this -- in the eyes of Taleb -- is a breach of the chief ethical rule: "Thou shalt not have antifragility at the expense of the fragility of others" (Taleb, 2012, p. 19)

Based on the above ethical rule, Public Purchasers must not gain at the expense of their consultants, contractors or suppliers who, ideally speaking should target antifragility as well. For antifragility to work best in PP, it is required that the other side of the transaction behaves congruently. Today, private sector entities engaged in PP are

accused of providing the "cheapest-to-deliver-for-a-given-specification"[13] partially lured into this by the lowest-bid award mechanism in PP but also by the "balance sheet" prerogative, among others.

PP is an arena where the majority of commerce and trade worldwide occur. Taleb looks back at ancestral commerce and trade practices and derives that "Commerce, business, Levantine souks… are activities and places that bring out the best in people, making most of them forgiving, honest, loving, trusting, and open-minded… I can vouch that commerce, particularly small commerce, is the door to tolerance- the only door, in my opinion, to any form of tolerance. It beats rationalizations and lectures. Like antifragile tinkering, mistakes are small and rapidly forgotten" Taleb (2012, p. 17).

It is timely now to redirect PP research, regulation and practice into a new path. This article is a first attempt to this redirection that should hopefully attract the interest of scholars, researchers, policy makers and practitioners. This path is still at infancy. Deliberation and huge mental effort is needed to demonstrate its viability- that it will lead to much more than what we can expect!

ACKNOWLEDGEMENTS

This research was self-financed. The author wishes to sincerely thank those who inspired this work directly or indirectly.

NOTES

1. A summarized version of this paper was presented in the Public Procurement Global Revolution VII Conference in Nottingham on 15 and 16 June 2015.
2. The author is in the final stages of drafting a paper analyzing those shocks and their impacts on traditional PP Systems.
3. "Antifragile" is a term introduced by (Taleb, 2012).
4. IRSPP1: covering 13 countries including (Australia, Belgium, Singapore, Finland, US, UK, Australia, Canada, Germany, Netherlands, South Africa as well as a case from the UN) (Knight, et al., 2003).
5. This proposal has been endorsed in June 2015 (after the date of completion of this paper) to become effective in 2016.
6. See (Klitgaard, 1991/1987) cited in (Lennerfors, 2007).

7. Cited in (Quiggin, 1999).
8. For a thorough review of the concept, see: (Dingwerth & Pattberg, 2006).
9. Cited in Schapper, Malta, and Gilbert (2006).
10. Phrase adopted from (Taleb, 2012).
11. A key ethical premise of (Taleb, 2012).
12. Quoted from William Stanley Jevons (Jevons, 1882).
13. Term used by (Taleb, 2012, p. 402).

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