THE FUTURE FOR THE REPLACEMENT COST IN THE INTERNATIONAL PUBLIC SECTOR ACCOUNTING STANDARDS

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Abstract

The purpose of this paper is to review academic literature and professional practice guidance in relation to the replacement cost (RC) method of valuation in public sector financial accounting. The replacement cost is regarded as being the most appropriate basis for the determination of fair value when the fair value of the asset could not be reliably determined using market-based evidence (Wyatt, 2009). However, several problems persist in RC definition and application, underlining the lack of a uniform approach in the current valuation standards. The paper explores the current adoption of RC by performing a content analysis of the latest financial statements published by International Public Sector Accounting Standards (IPSAS) adopter jurisdictions across the globe. The analysis highlights interesting patterns in the use of RC and provides an empirical base for further investigations. Additionally, the research offers useful insights to stimulate professional and academic debate on the replacement cost method, particularly in view of amendments proposed by the recently published Exposure Draft.

Keywords: Replacement Cost, Fair Value, Public Sector Accounting Standards, Financial Statement

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1. INTRODUCTION

Fair value measurement is a complex and debated issue in public sector accounting. Often, this value has been determined in practice by the replacement cost (RC) method, which is a measurement method not sufficiently investigated in recent times both in the private and public sectors (Boer, 1966).

Measurement criteria aim to provide stakeholders with useful information. In the specific context of public sector financial reporting, financial data are crucial in order to establish fiscal policies, macroeconomic decisions and strategic operations (Capalbo & Sorrentino, 2013; Rodríguez Bolívar & Navarro Galera, 2016; Tran, Nguyen, & Hoang, 2021).

Public sector entities pursue public interests and contextually should be oriented to optimize the use of available resources to guarantee the groups of interests with regard to the capability of the entity’s administration (Christiaens, Vanhee, Manes-Rossi, Aversano, & Van Cauwenberge, 2015).

This implies that the aforementioned criteria have to be accurately analysed by the accounting standard setters in order to satisfy the stakeholders’ information needs, obviously taking into consideration the entities’ mission and the contextualization of the generally recognized criteria usually applied and consolidated in the private for-profit sector. At the same time, it seems important not only to verify the opportunity
to require a specific criterion but also to examine its effective applicability and that the trade-off between information benefits and administrative burden is adequate (Bastable, 1977).

That said, the International Public Sector Accounting Standards Board (IPSASB), the most authoritative public sector accounting standard setter, has systemised the measurement bases with the publication of the Conceptual Framework (CF) (IPSASB, 2018), and has recently proposed a significant review of the measurement issues in the mentioned Conceptual Framework (IPSASB, 2021b, 2021c).

In this view, the adoption of fair value accounting supports public administrations in illustrating their financial health, producing information on the “real” economic status of properties, intangible assets, financial instruments and other elements.

It is clear that fair value is a specific and conventional example of market values. One of the most significant difficulties of measuring elements by fair value in the public sector context is to achieve a reliable determination.

The proposed revision of IPSASB considers fair value, along with “current operational value” and value in use, as a measurement criterion of the current value model.

The research aims to focus on the current application of fair value and, specifically, on the current adoption of the RC and the chance to find a more uniform technical definition of the RC, in the perspective that the IPSASB approach sometimes appears contradictory in relation to the RC. In this respect, the paper seeks to stimulate debate on the current accounting practices for the use of the replacement cost method of valuation and to provide an empirical basis for monitoring changes in its adoption, especially in view of amendments proposed by the Board.

For this purpose, the paper reviews academic literature and professional practice guidance in relation to the replacement cost and conducts a content analysis on the latest financial reports published by International Public Sector Accounting Standards (IPSAS) adopter jurisdictions. The results of the analysis reveal several unanswered problems in the use of replacement cost valuation technique and they are definitional and methodological. Conclusions will also report some observations about future considerations on the approach and the orientation included in the Exposure Draft recently published.

The remainder of this paper is organized as follows: Section 2 provides the background and key arguments for our research questions, as well as the analytical framework definition; Section 3 explains the research method adopted, we detail our sample selection and building of the data set, as well as the procedures followed in the content analysis; Section 4 discusses the data and provides an interpretation of the results of our analysis; the final Section 5 offers a summary of our findings, considers the potential limitations of the study and outlines opportunities for future research.

2. BACKGROUND AND LITERATURE REVIEW

2.1. The characterization of IPSASB

The Public Sector Committee of the International Federation of Accountants (IFAC), later renamed International Public Sector Accounting Standards Board, was founded in 1986 and is responsible for elaborating IPSAS, accrual-based standards for the preparation of general-purpose financial statements. The main objective of IPSASB is to enhance the quality, consistency and transparency of public sector financial reporting worldwide (IPSASB, 2014a).

IPSAS are based on International Financial Reporting Standards (IFRS) when it comes to covering some specific peculiarities of the public sector. The fact that IFRS may represent a benchmark for addressing IPSAS has been criticised by scholars because they do not take into account public sector dynamics (Grossi & Soverchia, 2011; Biondi, 2012).

The IPSAS framework is structured with a specific goal of maximizing profit and value, but it is meaningless for governments, which attempt to fulfill operational objectives intended to satisfy social needs and achieve collective well-being (Biondi, 2012; Brusca, Gómez-Villegas, & Montesinos, 2016).

The IPSAS standards are intended to promote the successful introduction of new public management (NPM) (Hood, 1995). The concepts of transparency and accountability are among the fundamental notions of NPM, from the standpoint of the citizen as a client (Rodríguez Bolívar & Navarro Galera, 2012). For IFAC (2021), the improvements proposed in IPSAS may enhance the quality of financial reporting and contribute to better government accountability. Therefore, any change of accounting criteria that affects the qualitative characteristics of financial reporting could influence government financial transparency and thus its accountability. As shown by Haque (2006), transparency plays a relevant role in the process of accountability as it represents an important instrument for facilitating citizens’ access to information.

From this critical perspective, IPSASB has enacted a Conceptual Framework for General Purpose Financial Reporting by Public Sector Entities with the aim of taking into account public sector features for the definition and measurement of the elements of the financial statements while focusing on users’ needs for accountability and decision-making purposes (Brusca et al., 2016; IPSASB, 2014c).

2.2. IPSAS and the debate on measurement bases

Measurement in accounting is a difficult issue, which takes a somewhat complicated dimension in the public sector context (Caruana, 2021). The public sector demands accountability and accountability has to ensure transparency (Blann, 2010) through the presentation of reliable financial reports.

The IPSASB has been facing the measurement issue for a decade, by enacting its Conceptual
Framework for General Purpose Financial Reporting by Public Sector Entities, published in October 2014. In December 2010, the IPSASB has launched Phase 3 of its Conceptual Framework project by issuing a consultation paper (CF-CP3) to receive important suggestions and to define the measurement bases (IPSASB, 2010). The consultation paper mainly examined the advantages and disadvantages of historical cost, market values and replacement cost. It also presented the so-called “deprival value model”, which provided a means of selecting a measurement basis that is relevant in specific circumstances (Caruana, 2021).

In November 2012, IPSASB enacted an exposure draft — CF-ED3 — in order to continue the public consultation on the same subject of measurement bases (IPSASB, 2012) with the aim of identifying the relevant elements in selecting a measurement basis for particular assets and liabilities in specific circumstances. It has been underlined that “it will remain a matter of judgment as to which measurement basis most effectively meets the objectives of financial reporting, satisfies users' information needs and secures the best balance between qualitative characteristics” (p. 29).

Historical cost and current value measurement bases were discussed for both assets and liabilities. In the assets perspective, the current value consisted of market value, replacement cost, net selling price, and value in use, while, in the liabilities perspective, the current value consisted of market value, cost of release, assumption price, and cost of fulfilment. The CF-ED3 contained a brief narrative of the deprival value model and of the fair value measurement model. The underlying reasoning of the IPSASB was that these two models may provide guidance in the selection of an appropriate measurement basis when this was not clear (IPSASB, 2012). Furthermore, the CF-ED3 also specified that it should clearly identify a measurement objective “to select those measurement attributes that most fairly reflect the financial capacity, operational capacity and cost of services of the entity in a manner that is useful in holding the entity to account, and for decision-making purposes” (IPSASB, 2012, p. 36). According to the alternative view, the two models, i.e., the deprival value model and the fair value model, would be used specifically to pursue this objective, with the deprival value model best reflecting the operating capacity and cost of services, and the fair value model best reflecting financial capacity (IPSASB, 2012).

The development of financial reporting quality in the public sector shows a continuing tension between relevance and reliability (Bushman & Smith, 2001; Laux & Leuz, 2009; Scott, 2008), specifically with the introduction of fair value as a measurement basis. According to Caruana (2021), some studies debated on the fact that fair value accounting can be misleading (Penman, 2010; Georgiou, 2018) and can reduce the reliability of financial reporting since it is based on future, not verifiable and subjective assumptions (Dechow, Myers, & Shakespeare, 2010). Fair value accounting can also generate higher volatility in reported earnings (Magnan, Menini, & Parbonetti, 2015; Watts, 2003) and this risk can be greater in public sectors since the majority of assets has no readily available market.

### 2.3. The adoption of IPSAS

The adoption of International Public Sector Accounting Standards is useful for modernizing governmental accounting and achieving accounting comparability (Brusca & Martinez, 2016; Schmidthuber, Hilgers, & Hofmann, 2020). To assess the level of adoption of IPSAS, we used data captured by the International Federation of Accountants, the global body representing the accountancy profession, and the Chartered Institute of Public Finance and Accountancy's (CIPFA), a UK-based international accountancy membership and standard-setting body focused on public service issues. A detailed analysis was performed for the country-by-country database to develop an understanding of the bases and frameworks used in public sector financial reporting. As shown in Figure 1, the results outlined a positive overview for future efforts in global IPSAS acceptance.

![Figure 1. IPSAS level of adoption by IFAC member jurisdictions](image)

In the public sector, a consistent number of jurisdictions have already fully (19) or partially adopted (67) some International Public Sector Accounting Standards. Assessing IPSAS adoption, we considered jurisdictions to be partial users when not all IPSAS have been adopted or cash-basis IPSAS have been adopted or if the IPSAS have been adopted for only some public sector entities. After a thorough analysis, the results indicate strong heterogeneity in adoption approaches. According to the Global Status Report 2019 made by IFAC, adoption approaches frequently differ due to national, political and economic realities that influence government decision-making. We noted that a gradual approach to accrual-based IPSAS appeals to many jurisdictions (41).

Accrual reporting is fundamental to good decision-making, transparency and accountability (Laughlin, 2012). The greatest areas of accrual reform were projected to be Africa, Asia and Latin America, and the Caribbean. The data also show that some jurisdictions (34) have adopted modified IPSAS to align with their local contexts. Others have implemented IPSAS only for central government.
entities or are currently using cash-based IPSAS whilst considering how to adopt an accrual base. In the end, although future prospects are considered to be on the rise, the level of adoption of IPSAS is still far from being considered uniform across different jurisdictions, which poses significant challenges to the national and international public sector financial reporting regulation.

2.4. The adoption of fair value and replacement cost

Recently, the IPSASB is exploring the adoption of the replacement cost for valuing assets and the assumption price for valuing liabilities. The CF defines RC as "[t]he most economic cost required for the entity to replace the potential service of an asset (including the amount that the entity will receive from its disposal at the end of its useful life) at the reporting date" (IPSASB, 2012, p. 16). The CF summarises the technical assumptions governing the determination of the RC in the public sector context:

- **RC** is an entry value, taking into examination the necessary costs to replace the service potential of the analysed asset (Lennard, 2010). The service potential refers to the entity's current need. In general terms, this provides the public opinion with useful information as it reveals the current cost of the service.

- **RC** is an entity-specific value, as it relates to the optimized approach applicable by the entity. At the same time, the determination of the RC can reflect in financial statements the paradox that the entity, which is able to replace an asset with lower costs, carries out that asset at a lower carrying amount. Based on the same reason, it decreases the comparability of data.

- **RC** is determined upon observable data. It should guarantee the reliability of the financial values, even if the measurement could be difficult.

RC is a technique already known by private sector valuers (RICS, 2018). The International Valuation Standards Council (IVSC, 2020) considers the RC as a cost approach method (IVS 105, para. 70.2). It is worthwhile to highlight that the identified approaches can produce different bases of value, in relation to the purpose of the valuation. In the specific case of the RC included in IPSAS, it represents a "conventional" basis of value, as the assumptions and the premises are directly provided by the IPSASB requirements. IVSC distinguishes the RC method from the reproduction cost method (IVS 105, para. 70.6).

Moving from these considerations, the IPSASB requires the adoption of the RC in the following cases:

- **Inventories.** IPSAS 12, Inventories: requires measuring inventories at the lower of cost and current RC in the event they are held for distribution or the sum of the production process of goods to be distributed at no charge or a symbolic charge.

- **Property, plant and equipment.** IPSAS 17, Property, plant and equipment: states to use the RC as a surrogate of fair value in the revaluation model for specialized buildings and other man-made structures.

The IPSAS 21, Impairment of non-cash-generating assets, identifies the depreciated RC approach as one of the applicable approaches to measuring the value in use of "non-profitable" assets included in its scope. Among scholars, the pioneer of the replacement cost in accounting valuation studies was Rorem (1929) who provided a definition of replacement cost: "The replacement cost of an asset is the estimated expenditure necessary to secure another similar in nature and equivalent in economic value. It frequently is more or less than the original cost; usually, it varies from sale-price, which is the amount realizable through disposal" (p. 167). After the contribution of Rorem (1929), many other scholars around the globe have discussed the accounting topic of replacement cost, specifically within private companies (Zeif, 1962; Boer, 1966; Falkenstein & Weil, 1977; Ro, 1980, 1981; Samuelson, 1980; Freeman, 1981; Finley Graves, 1992; Gordon, 2001; Johnstone, 2003; French & Gabrielli, 2007; Wyatt, 2009; Copiello, Cosmi, & Stanghellini, 2017).

As mentioned above, this topic has been widely debated during the past decades; however, there is a need to study the replacement cost in accounting valuation for public companies and the potential support this method can provide in the decision process. Specifically, there is a need to investigate the adoption of replacement cost accounting in IPSAS.

Based on the outcome of our technical framework, we identify the following research questions:

- **RQ1:** What is the current level of adoption of RC?
- **RQ2:** How is the RC method currently used?
- **RQ3:** What is the future of RC?

In response to our research questions, the paper will explore empirically the current adoption of RC, examining:

- the level of adoption, considering that IPSASB identifies in each circumstance the RC as an option in the measurement of the involved assets;

- applied specific techniques, considering that RC can be measured implying the use of different operating processes (replacement or reproduction costs, identification of the service potential, information about the replacement);

- potential difficulties or considerations (costs, technical references, rationale at the basis of the adoption of the criterion).

3. RESEARCH METHODOLOGY

On the premise of the technical framework previously developed, the paper aims to explore empirically the current adoption of RC by public entities' accounting practices. For this purpose, we conducted qualitative research performing a content analysis to codify qualitative and quantitative information into pre-defined categories in order to draw patterns in the use and implementation of RC. Content analysis is a research tool for analysing the content of texts and for gathering data. Several studies have underlined its value in revealing useful insights into accounting practice (Guthrie & Parker, 1990). It is a "technique for making inferences by objectively and systematically identifying specified characteristics of messages" (Holsti, 1969, p. 112).

In this research, we performed a "form-oriented" (objective) analysis, which involves the routine counting of words, concepts or themes, but also "meaning oriented" (subjective) analysis, which
focuses on inferring the underlying meanings present in the texts being investigated (Smith & Taffler 2000; Steenkamp & Northcott, 2007).

First, we defined the coding categories based on our technical framework, using a priori coding method (Weber, 1990). Nevertheless, after and during our initial coding, we reviewed the content categories as necessary. The second step involved the selection of data sources for the analysis. We collected information from the 150 jurisdictions examined by the IFAC and CIPFA’s International Public Sector Financial Accountability Index that will apply IPSAS directly, indirectly or will use IPSAS as a reference point by 2023. Afterwards, we analysed financial disclosure of the sampled jurisdictions and standardised collected data into our content categories. Each report was revised to determine whether it contained any qualitative or quantitative reference to RC.

The content analysis method involves choosing certain concepts for examination and analysis and then quantifying their presence in the chosen texts. We used the following concepts to investigate the use of RC: ‘replacement cost’ (costo de reposición, coût de remplacement déprécié). This allowed us to investigate annual reports published in different languages, not only in English. Restricting a study to financial statements may give only an incomplete view of overall accounting practices. For this reason, we also considered the governmental accounting rules handbook, whenever available. The results of our analysis were recorded into an Excel spreadsheet. As Weber (1990) notes, “to make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent: Different people should code the same text in the same way” (p. 12). In order to ensure reliability and validity, one of the authors independently analysed the reports and recorded the results on a separate spreadsheet. The other researchers independently repeated the coding process, while spot-checking some reports randomly to ensure reliability. We compared our results to clarify any uncertainties.

4. RESULTS AND DISCUSSION

In this section, we discuss the results of our analysis and commence to offer insights to stimulate professional and academic debate on the current definition and use of the replacement cost method of valuation. As mentioned before, our sample is composed of over 150 jurisdictions across the globe, considered in the IFAC and CIPFA’s International Public Sector Financial Accountability Index.

In response to the first research question RQ1: What is the current level of adoption of RC? and the second research question RQ2: How is the RC method used?, we focused our analysis only on the jurisdictions that have fully or partially adopted International Public Sector Accounting Standards. The information is taken from the same country-by-country database, accessing the latest financial reports included in the pertaining website page. We excluded some jurisdictions (due to reports not available or written in other languages), defining a final sample of 90 reports analysed. The RC is directly mentioned only in the financial statements of eleven jurisdictions, with a minimum citation of 2 and a maximum of 16. Six of these jurisdictions are IPSAS full adopters and five of them are IPSAS partial adopters.

In the IPSASB Conceptual Framework, RC is defined as “the most economic cost required for the entity to replace the service potential of an asset (including the amount that the entity will receive from its disposal at the end of its useful life at the reporting date)" (IPSASB, 2021c, p. 23). According to this definition, the RC method is currently a form of the cost approach, as it looks at the cost of replacing a damaged or lost asset and uses this cost as a partial proxy or measure of its value. It involves comparing the asset being valued with a hypothetical substitute, also described as the modern equivalent asset. Even if we considered only IPSAS fully or partially adopter jurisdictions, we found different approaches to the RC definition in the sampled reports. Some reports refer to it as “current replacement cost”, “depreciated replacement cost” or “replacement cost with accumulated depreciation”. Specifically, RC has been defined as:

- “the amount a market participant would be prepared to pay to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence”;
- “the lowest performance required to replace the remaining service potential of an asset or the economic benefits embodied in it”;
- “the cost of reconstruction reduced by the cost of rehabilitation”;
- “the basis for an asset valuation. This current replacement cost is depreciated for a period equal to the period that the asset has been in use so that the final depreciated replacement cost is representative of the age of the asset”;
- “the cost the entity would incur to acquire the asset on the reporting date”.

Summarizing all these definitions, RC is considered the cost of replacing an asset’s potential service, but different approaches are used to indicate service capacity and to quantify asset cost consumption. Some definitions refer to it as obsolescence while others call it a depreciation. At the same time, this method is based on the economic theory of substitution, as it relies on the comparison of the valued asset with a hypothetical equivalent asset. We also observed definitional problems related to the need of developing a better clarification of economic concepts of substitution and comparable utility.

In relation to the use of RC, our analysis validates that RC implementation is aligned to the IPSASB recommendations, as it is commonly used for the valuation of specialised assets, such as infrastructure assets (road network, highways, dams) and buildings (e.g., prisons) held by Central Government, heritage and cultural assets, and other specialised assets (e.g., military equipment). IPSASB Conceptual Framework (2018) defined RC as a measurement base “observable in a market”, appropriate for specialized assets. At the same time, we have to remark that in the case of a specialised property (or a specialised plant and equipment asset) its value is intrinsically linked to its use. If the specialised asset is not to be retained for the delivery of a product or service because there is no longer demand for it, it follows that the use of RC.
would be inappropriate (RICS, 2018). In these circumstances, it seems unclear how to use RC, which is regarded as a method of estimating market value because the input variables are required to be derived from the market (Wyatt, 2009). Perhaps the confusion derives from the misuse of RC, that is from the presumption that the RC should be a method of estimating market value.

In order to respond to the final research question RQ3: What is the future of RC?, we examined our findings in relation to what is proposed by the recently published IPSASB Exposure Draft. According to our analysis, several definitional and methodological problems persist in the RC method use. Perhaps it is for this reason that RC has not become a widely used valuation technique in the public sector of financial accounting. The Exposure Draft proposed the deletion of RC as a current value measurement basis, because of its similarities to the fair value cost approach. In addition, the Exposure Draft included the current operational value as a current value measurement basis for operational assets, defining it as “the value of an asset used to achieve the entity’s service delivery objectives at the measurement date” (IPSASB, 2021c, p. 13). Current operational value is considered a more versatile measurement basis than RC, as it can be applied to both specialised and non-specialised assets. In light of this decision, we could imagine an uncertain future for the RC method and may give an explanation to contradictory results of our analysis.

5. CONCLUSION
As stated before, the purpose of this paper is to draw attention to matters relevant to the current use of the replacement cost method of valuation in order to advance research in the public financial sector.

REFERENCES


