

## THE (UN?) FAIRNESS OF FAIR VALUE: SFAS 157, IRVING FISHER AND GECON<sup>1</sup>

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### ABSTRACT

**Objective:** The objective of this study is to assess the level of adherence of explicit and implicit measurement concepts present in SFAS 157 – Fair Value Measurements to traditional economic-accounting concepts.

**Background:** The expansion of situations in which fair value measurement is required makes more difficult to ensure that the computed measure of value is actually fair. Out of the objectivity of current sales prices in an active market, all other measures of value are expectations about the future, inherently uncertain and inaccurate. Thus, the desired justice of the computed figures lies not in its accuracy, but in the using of the correct concepts for measuring accounting transactions and events.

**Method:** To reach the objective, the characteristics of this standard are confronted with the secular concept of capital and income set by the laureate American neoclassical economist Irving Fisher, which were incorporated into Information System for Economic Management (Gecon).

**Results:** The results indicate that SFAS 157 fair value concept and measurement structure are incorrect or incomplete, suggesting that the maintenance of the fair value expression in accounting seems inadequate.

**Contributions:** This paper contributes to the literature on accounting measurement showing that as a measurement concept in accounting fair value seems inadequate. In abnormal situations or absence of a market, the measure found is always inexact and subjective, and therefore is not correct to call fair the quantity resulting from this arbitrary calculation.

**Keywords:** Fair Value; Irving Fisher; Gecon; Economic-accounting.

### 1. INTRODUCTION

The extensive discussion of fair value accounting has intensified with the outbreak of the financial crisis that shook the world in the last quarter of 2008. In face of the billionaires accounting losses recognized by banks and other institutions in marking to market their subprime-backed trading securities<sup>1</sup>, whose prices fell to levels approaching zero, many questioned whether it was correct that undervalued held for trading securities, due to a temporarily tense and irregular market, should

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<sup>1</sup> Received: 12/20/2016. Revised: 12/22/2016. Accepted: 12/23/2016 by Luiz Felipe de Araújo Pontes Girão (Adjunct Editor). Published: 01/01/2017. University: UFPB.

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DOI: <http://dx.doi.org/10.18405/recfin20170101>

be reported at such depreciated values in the balance sheet. Others argued that the requirement to value such securities at market prices could lead to excessive sale movements when prices are falling<sup>ii</sup>.

The emergency rescue package from the U.S. government to that country's economy, approved by Congress in early October 2008, demanded the SEC -Securities and Exchange Commission to conduct a study to assess the fair value accounting required by SFAS 157 - Fair Value Measurements, including giving it (the SEC) authority to suspend this standard or even review the process used by FASB - Financial Accounting Standards Board to develop accounting standards.

Six months later, on 11/09/2009, shortly after the G-20 London meeting to discuss the global financial crisis, FASB issued Staff Position (FSP) number 157-4, which reaffirmed the basic guidance of SFAS 157, but added a new section describing what is considered to be an abnormal and irregular market, and allowed, in these cases, that fair value could be ascertained through valuation techniques as if the market does not exist. This flexibility has allowed the institutions affected by the standard, mainly banks, to report their depreciated securities with figures similar to the period prior to the explosion of the crisis, reversing losses formerly recognized and restoring its share price in the stock market.

This brief description outlines the motivation for this study. It will be argued that the use by accountants of the adjective "fair" aggregated to the noun "value" seems inappropriate to refer to the value of certain assets, because the concept of value in economic terms will always be directed to the uncertain future. Thus, the vagueness, not the accuracy or validity of the calculated number, is predominant when future expectations are measured in monetary terms. For this reason, the fairness of a value measure resides more in its ability to express the correct concepts of measurement than in measurement accuracy.

Thus, the objective of this study is to assess the level of adherence of explicit and implicit measurement concepts present in the main global accounting standard on fair value, SFAS 157 - Fair Value Measurements, amended by FSP 157-4 but with preservation of its essence, to traditional economic-accounting concepts documented in the literature and organized in the conceptual foundations of GECON - Information System for Economic Management. The measurement of any object depends on the instrument used as a basis for comparison. The GECON model for measuring transactions and equity aims to operationalize in accounting practice the fundamental concepts of capital and income set forth by Fisher (1906) almost 100 years ago. For Canning (1929, p. 145), the American economist Irving Fisher was the one who more clearly and convincingly showed the meaning of the concept of income. Taking GECON as a reference, and therefore the classical concepts of economic value, I hope it will be possible to assess, with some objectivity, the level of fairness of the fair value concept as it is currently used by accounting.

This approach adds a new focus to the vast literature on fair value, which for almost 10 years in a non-exhaustive review done by Barth, Beaver and Landsman (2001), already had dozens of titles. Empirical studies tend to show evidence that information on value is more relevant, from the perspective of users, than cost, and perhaps this explains why fair value concept and measurement has been increasingly pervasive in accounting pronouncements in worldwide level. For Whittington (2008, p. 155), which criticizes the deliberate choice of the IASB - International Accounting Standards Board by the fair value, the debate in accounting now is no longer the old dichotomy cost or value, but if the representation of the latter is at entry or exit prices.

The remaining sections of this paper are organized as follow. Section 2 presents an evolution of the accounting cost-value controversy that has been nourishing the academic debate for almost 100 years. Section 3 describes and discusses the SFAS 157 fair value definition and measurement structure, which are confronted, in section 4, with Fisher's ideas on this subject and with GECON

model, for purposes of evaluating the level of fairness of the accounting concept of fair value. Finally, section 5 presents the conclusions.

## 2. VALUE X HISTORICAL COST CONTROVERSY

For Canning (1929, p. 6-8), accounting, unlike economics, was not born of a deductive formulation where, from some self-evident propositions, a whole system of thought is formulated. Thus, the first accounting texts were mere descriptions of an art, of bookkeeping practices that came to the attention of the authors or that they themselves had developed for specific companies.

Thus, in response to the 1929 crash of the NYSE - New York Stock Exchange and the economic depression that followed, the stock market was structured in the 1930s in the United States, with the approval of relevant legislation and the creation of SEC. The financial reporting regulation began with SEC delegating to the profession the power to issue accounting standards for compulsory use by public listed companies. Initially, the standards legitimized the current accounting practice, so the AICPA - American Institute of Certified Public Accountant, together with the NYSE, first introduced the term Generally Accepted Accounting Principles (GAAP), to designate statements that had substantive authoritative support, without clearly defining what that meant (Schroeder, Clark; Cathey, 2005).

The desire to give more scientific basis for accounting standards led, from the start of the financial reporting regulation, the quest for a conceptual framework for accounting. It was then created specific committees for this purpose, composed of renowned American scholars, and in the mid-1970s, almost 40 years later and after the production of various non-consensual proposals, the FASB, taking advantage of what already had occurred, issued the theoretical framework that would henceforth guide the production of accounting standards.

One pillar of the current practice that was incorporated as a GAAP was the principle of recording transactions by its original cost, also known as original historical cost (Iudicibus, 1997). Ijiri (1989, p. 92) came in defense of this principle with the argument that "it relieve us from the need to look into the future to the following extent. Assets are stated at their historical cost as long as their future benefits are estimated to be not less than the cost." In a prior article, Ijiri (1975) had defended, using arguments derived from the Euclidean geometry, the fundamentals of GAAP accounting system, in particular the historical cost principle.

But the principle of original cost, since it was formally incorporated into accounting, was subject of much criticism from scholars, who considered historical cost as irrelevant for supporting the economic decisions of users of accounting information. For example, MacNeall (1939), one year after the creation of the CAP - Committee on Accounting Procedures, first agency linked to AICPA to issue accounting pronouncements, published a book condemning the principle of cost and proposed an accounting system totally oriented to economic value, based on market prices. He proposes (MacNeall, 1939, p. vii) aligning the entire accounting system with the already established principles of economics and logic.

In the 1960s, during the term of APB - Accounting Principles Board, which succeeded the CAP in 1959, were published many papers highlighting concepts of profit closer to economic reality. In this sense, Solomon (1961), like Canning (1929), establishes clear distinctions between accounting earnings, calculated by matching revenues earned with expired costs, and economic income, and expresses his preference for the latter. That same year, Edwards and Bell (1961) released their classic work showing the nature and measurement of business income, with emphasis on current replacing cost earnings, a concept closer to assets economic value.

Chambers (1966) focused the dynamic adaptation of companies into the market to defend a balance sheet-centered economic system of measurement in accounting. The need for continued adaptation imposes the asset exchange decisions the company makes with the market. For this reason,

the company needs to know how much it would receive by selling their assets, so as to evaluate their limits of performance in the market. For Chambers (1966, p. 91), "in the present moment, all past prices are simply a matter of history, only the current prices care in choosing an action."

With the advent of the positive paradigm in accounting at the end of the 1960s, there was a decrease in the production of papers advocating economic concepts to accounting measurement. After all, the research of Ball and Brown (1968) and Beaver (1968) brought empirical evidence that the market reacts to the accounting earnings that major theorists assumed to have little or no relevance. But it seems that the criticism prior to the accounting system were not in vain, since the FASB, in the U.S. and the IASB, in international level, began a gradual movement requiring fair value measurement after the initial transaction for certain accounting elements, with implications for early recognition of unrealized gains and losses through profit or loss, or directly in equity.

### 3. SFAS 157 – FAIR VALUE MEASUREMENTS

Issued in September 2006 to be applied in all financial statements covering fiscal years beginning after 11/15/2007, SFAS 157 has unified the conceptual foundations on Fair Value hitherto non uniform and scattered in 61 of FASB pronouncements (37 standards, 4 interpretations, 4 technical bulletins and 16 staff position). The standard defines what is fair value, establishes a framework for measuring this concept when it is required in any statement and expands the requirements for its disclosure. Following, will be presented and discussed, according to the argumentation presented in the standard itself, the concept and framework for fair value measuring. Subsequently, in section 5, these issues will be confronted with the concepts of economic accounting measurement, according to the precepts of GECON. Aspects related to the fair value disclosure will not be presented.

#### 3.1 Fair Value Definition

SFAS 157 defines fair value (par. 5, p. 6) as *the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date*.

Noteworthy are the following elements in the definition above:

- Explicit and exclusive option for an exit price idea of the entity's equity elements, of both assets (the price that would be received in the sale) and liabilities (price that would be paid on this transfer to a third party);
- The exit price of the asset or liability will be discharged at the measurement date of the equity element. This means that there may be situations where the cost (entry price) may not be at the transaction date, the best representation of fair value;
- Orderly transaction between market participants - this feature means that the company should imagine how much a market participant, who owns the same asset or liability, would receive or pay in a hypothetical transaction, for the asset sale or the liability transfer, on the best opportunity of the market (principal or the most advantageous market, according to the standard) in normal conditions, i.e. without any coercion or encouragement at the time of completion of the transaction.

#### 3.2 Measuring framework

The framework, according to the standard, are clarifications and details directly or indirectly present in the definition of fair value. They are:

- The *asset or liability* - the measurement should consider attributes specific to the asset or liability, examples being its condition, location, possible restrictions on use or sale of assets at the measurement date etc. The asset or liability can be considered alone or belonging to a

group (a business, a segment, a group of assets). The standard states that the entity's chart of accounts should be considered in setting the level of aggregation (or disaggregation) of assets or liabilities to be measured at fair value.

- *Exit price* - for transactions take place in an atmosphere of normality of price between market participants, it is necessary that the asset being sold or the liabilities being transferred have been exposed to market activities prior to the measurement date.
- *The principal market (or more advantageous)* - the fair value measurement assumes that the asset sale transaction or the liability transfer occurs in the principal market for these elements or, in the absence of the principal market, the ones which is more advantageous. Always taking the perspective of the entity in account, the main market is the one with most activity, measured by volume and number of transactions to the respective asset or liability, and the more advantageous market is the one in which the entity would obtain a higher price to sell the asset or to pay the lowest price to transfer the liability. Thus, if there is a principal market for the asset or liability, the measurement at fair value should consider prices in that market, whether it is directly observable or determined by an evaluation technique, even though the price in a different market is more beneficial to entity.
- *Market participants* – buyers and sellers on the principal market (or most advantageous) for assets and liabilities, which are:
  - Independent from entity that report, being not related parts to it;
  - Business experts, with a reasonable understanding of assets, liabilities and related transactions, based on all available information, including those that could be obtained by usual and customary means.
  - Able to transact with the assets or liabilities.
  - Spontaneously willing to transact with the assets or liabilities.
- *Assets application* - considers the option of using of the asset by market participants that would maximize its value, even if the intended use of the asset by the company that owns it is different. The best use should be evaluated under two possibilities:
  - *In-use* - the best use of assets would occur when it was combined with other assets to operate as an asset group, the most common situation for nonfinancial assets. In this case, the fair value of individual asset must consider the best price that market participants would get when it was used in conjunction with other assets.
  - *In-exchange* - the best use occurs under individual use of the asset, the most common situation for financial assets, and the fair value would be that obtained in a current transaction for the sale of individual assets.
- *Liabilities application* - measurement assumes that the obligation is transferred to a third party and that the risk of non-payment of this liability, which affects the price to be paid to the third, is the same before and after the transfer. The risk of non payment includes the credit risk of the entity that reports, which must be considered in all periods in which the liability is measured at fair value.
- *Valuation techniques* - Used when one could not identify the fair value directly through a transaction in the active market. It can be consistently used in measuring fair value the approaches of *market*, *income* or *cost*, as summarized below:
  - *Market approach* - uses prices and other information generated by market involving identical, or comparable, assets or liabilities.
  - *Income approach* – uses valuation techniques (present value, pricing models like Black-Scholes and others) that takes into consideration the amount of current expectations on some measure of future income (e.g. cash flows or net income). The standard encourages the use of multiple valuation techniques in some situations (e.g. assess the value of a business unit) with consideration of the values found in each one to set the final fair value.

- *Cost approach* – which considers the replacement cost of the asset from the viewpoint of a market participant who had to buy or produce a replacement good of similar utility to the good that would be reset. To preserve the idea of exit price contained in the fair value definition, the market participant asset seller would receive what the buyer would pay to replace the good.
- *Inputs hierarchy* – the standard has defined three priority levels for measuring fair value, established according to the inputs availability for feeding techniques. When the inputs cover different categories, the lower level category should be chosen in the measurement.
  - *Level 1 Inputs* – when there is availability of quoted prices in active markets for identical assets and liabilities and the entity that reports have conditions to access them at the measurement date.
  - *Level 2 Inputs* – when other inputs, except quoted prices, are available for the asset or liability either directly or indirectly. Examples of such inputs: prices of similar assets or liabilities in active markets, prices of the same (or similar) assets or liabilities in non active markets, where there are few transactions, or prices vary greatly over time or among market participants; interest and exchange rates, etc.
  - *Level 3 Inputs* – when there is no observable inputs for fair value measurements, which should be calculated in such cases by using valuation techniques. Occurs in situations of active market absence for the asset or liability. The logic of exit price definition, even in such cases, should prevail, and the company will have to establish their own assumptions of how market participants would value the asset or liability being able, to do so, to use their inside information and adjust them to the knowledge level that market participants would have of them.

### 3.3 SFAS 157 SUMMARY

Exhibit 1 below summarizes, with brief comments, the prescriptions and guidelines of SFAS 157 displayed before.

**Exhibit 1 – Commented summary of the prescriptions of SFAS 157 - Fair Value Measurement**

<b>Element</b>	<b>Prescription</b>	<b>Comment</b>
Fair value definition	Price that would be received to sell an asset or paid to transfer a liability, in the measurement date, in an orderly transaction among market participants.	<ul style="list-style-type: none"> <li>Valuation based entirely on exit price and a view of the resource exchange itself (asset or liability) in the market;</li> <li>Exchange without favoring any party;</li> <li>Market's viewpoint and not of the specific entity;</li> </ul>
Principal market and most advantageous market	Principal market → greater amount and volume of transactions for assets and liabilities; Most advantageous market → best opportunity: higher price for the assets and liabilities for the lowest price; Prevalence rule: principal market prevails over the most advantageous market.	Fair value is determined by the principal market. If there is simultaneously a principal and a most advantageous market, the better opportunity than the principal market will be recognized as a gain at the time of occurrence of the transaction.
Resources for use and resources for exchange	In-use → the exit price of the individual asset must be considered in the context of a group of assets (the asset-specific synergy with other assets) → prevails for nonfinancial assets; In-exchange → the asset is used only to exchange for other assets: there is no synergy of the asset with other assets → prevails for financial assets.	Even for in-use assets, the focus for fair value valuation is always the price of the asset as a whole in a sale transaction in the market, whether the entity has or not the intention of selling it. It is implied that the benefit of use, which could eventually increase the asset sale price, comes from its synergy with other assets.
Valuation techniques	Three approaches: market, income and cost; Market → prices available in an active market; Income → present value of current expectation of future flows, from the perspective of market participants. Encourages the use of different techniques, with fair value resulting from a weighting of such techniques; Cost → exit price is the cost that the market participant buyer would pay the seller to replace the same utility of the original asset.	Approaches focus on the asset sale by market participants: Market: direct sales, by the price in the principal market, or in its absence, in the most advantageous market; Income: sale at the price the market would estimate the present value of asset future results. Standard does not detail how the inputs for future flows of individual assets would be obtained; Cost: selling price is what the buyer would pay for similar assets in the market.
Fair value measurements hierarchy	Based on the availability of inputs for the valuation approaches: Level 1 - there is an active market, in which prices can be directly accessed by the entity; Level 2 - active market does not exist, but there is availability of substitute information for estimating the fair value of the asset; Level 3 – there is not an active market and there is poor or nonexistent substitute information for estimating the fair value of the asset.	Estimates of fair value made using inputs in levels 2 and 3 contexts are very subjective and uncertain, casting doubts on the value "fairness" that results from its calculations.

## 4. SFAS 157 X ECONOMIC CONCEPTS

This section is divided into three subsections. The first presents the fundamental concepts of capital, income and economic profit in the view of Fisher (1906), an early American economist of the neoclassical school. In the second, the GECON basic concepts of economic accounting measurement are established, which relies almost entirely on Fisherian vision. Finally, in the third subsection, the concepts of GECON are confronted with the fundamentals of SFAS 157, seen in section 3 of this paper, so it is possible to gauge the extent to which FASB fair value definition and statement measuring framework are really fair.

### 4.1 Summary of Fisherian Vision on Capital, Income and Economic Profit

The ideas on capital, income and economic profit of Fisher (1906) were incorporated operationally into the conceptual framework of GECON – Information System for Economic Management. Fisher (1906) considers income as a result of capital, which is the wealth or the potential of services present in natural or man-made resources. When resources are scarce, they are suitable by people, and proprietorship gives them the right to enjoy the benefits of their services. People look for resources because some occurrence arouses in them the need of the services they contain. Canning (1929), in this sense, viewed income as "a desirable event", referring to the element that takes the services from its source and directs it to the satisfaction of human needs, and defined asset as "any future service, in cash or convertible into cash, the benefits of which are legally secured to some person or set of persons to whom it runs."

Economic profit, in Fisherian view, is the amount of income (or services) earned in any time period. Since income determines the amount of capital (or wealth), the economic outcome of the period represents the increase or decrease in the potential services, that could also be determined by the difference between the levels of economic wealth at the beginning and at the end of the period. Canning (1929), relied heavily on the teachings of Fisher, of whom he was a student, presents an image to differentiate the economic from the accounting profit. He says the accounting profit is like income (services) collected in a container at a time, so it is made objectively, while economic profit is the difference between earnings that are subjectively expected to flow in the continuous future in the beginning and at end of that period. Therefore, accounting profit is contained, is a subset of economic profit, and would be equal to it when considering the whole business life.

But to extract income from assets, other assets performing work on the events are necessary. So, in any instance where an effort (work) is needed, so called by him of economic event, an assets interactions happens and potential new services are generated at the expense of services of other assets. He named disservices the services that are sacrificed to generate other services. The earned economic profit for a period may then be monetarily quantified as the present value of the difference between the value of all new services generated, which increase the wealth, and former services consumed (disservice) diminishing wealth.

This process of transformation of services into new services is continuous and is interrupted only when the benefits incorporated into products by the end user are consumed. Then, by paying for it, he allows the resumption of the cycle. Thus, in any business enterprise the process of generating wealth occurs continuously through thousands of interactions in which, in each one of them, new wealth (service) is created at the expense of the existing wealth (disservice).

### 4.2 GECON Measurement Model

GECON was wisely conceived by the now retired professor Armando Catelli, who served at the Department of Accounting and Actuarial Science of the Universidade de Sao Paulo. Prof. Catelli's ideas were first organized in Guerreiro (1989) doctorate thesis, and since then some few

other students who took classes with him have written on this subject. GECON operates in a practical manner the ideas of Fisher (1906). To do so, develops a set of concepts, supported by economic literature and the perception of physical reality, to measure the occurrences where wealth is generated. Professor Catelli noted that thousands of events that change ones entity state of wealth were similar and could be grouped into four categories: buying, selling, processing and timing-conjectural, the latter representing both the passage of time and wealth-modifying occurrences that comes from the environment, say, inflation, interest rate, natural disasters, etc, over which manager has only indirect control. Each individual exchange of an asset (disservice) for another (service) is called transaction and the set of transactions of the same nature is called event. For example, the event buy represents all purchase transactions; conversion, all transactions that converts assets (e.g. raw materials) in other assets, etc.

The transaction is, for GECON, the central element of manager decision, similar to the Canning (1929) "desirable event", for it is what produces the changes of the entity state of wealth. But as wealth, in economic terms, is an expectation of future flows of net incomes that emerge from elements that are under direct or indirect control of the manager, it will always be subjective and inaccurate, so inherently unfair in that respect. The only way to conceive justice to wealth, in terms of its measurement, is respecting the philosophical basis of their concepts. GECON then defined, based on what has been stated above, a set of measurement concepts to reflect properly (not exactly, because it is impossible) the value of wealth, so that at any moment in time, the balance sheet of a company measured according to the concepts of GECON would show how much is worth each individual asset and liability and, by extension, the whole company. These concepts, basis for comparison with the fundamentals of SFAS 157 exposed in the previous section will now be presented and discussed.

#### 4.2.1 Oportunity Cost

This is the most fundamental of all concepts used in the measurement model of economic events by GECON. Opportunity cost is the value of a resource in its best alternative use (Coase, 1937). This means that the valuation of a resource (asset or liability) depends on the intended use by whoever controls it. If the intention is to use the asset productively, say, a machine, it would be worth the present value of the lowest price the manager would pay for the equivalent services (an expected volume of machine-hours) into the market as this is the best rejected opportunity to have the asset and, as can be concluded by the arguments presented in the previous subsection, the asset is worth the expected income of its services, which can not be divorced from the intended use. If, on the other hand, the manager intention is to sell the machine, it would be worth the higher price that the market would be willing to pay for a machine with the same characteristics and properties. As seen, the same good may be valued either at an entry price, when in-use (implicit purchase of services), or an exit price, in-exchange, when it comes to disposal (sale of services). Regarding the market representation, GECON calls for the need of each firm to maintain an updated data file with market price bids from reputable suppliers and buyers for the concerning good, in order to permit the daily identification of a better opportunity to buy (lowest price) and sell (higher price).

#### 4.2.2 Replacement Cost

When the services of an asset are in use for the production of other assets, the best opportunity disregarded by the manager would be to acquire in the market the same services of the asset that is already under his control. The opportunity cost in this situation is the replacement cost of the asset services, i.e. the lowest price that would be paid in the market for those services. This reasoning applies both to a fixed asset for use and a raw material that is incorporated in other products. Both, when consumed, are disservices used in producing other assets (services).

#### 4.2.3 Capital Equivalence

This concept derives from the time-value of money, usually because countries governments pay a minimum return for raising the funds held by the public. \$ 1.00 today is worth more than \$ 1.00 tomorrow, so the future flows of services and disservices must be computed in the same reference date for its equivalent values.

#### 4.2.4 Inflation

Prices of goods and services in the economy, including money, are nominal because embed an expected inflation. Thus, to correctly represent the value (or opportunity cost) of assets and liabilities it is necessary that these are expressed in non-devaluated currency. Inflation to be considered is the company's own internal, because the general price indices of the entire economy may not represent the changing prices of the resources used by the company.

#### 4.2.5 Discount Rates

The future flow of services and disservices expected, basis for estimating the opportunity cost of certain assets and liabilities, should be discounted to present value. It should not be used the same discount rate for both elements, because the opportunity for a recognized liability is to invest the prior borrowed resource (which generated the liability) for the best rate that the company would obtain in the market, and the opportunity for the recognized asset is the lowest rate that the company would pay in the market to collect the resources it has already incorporated in assets. In summary, the liabilities should be discounted by the lending rate and assets by the borrowing rate, and both rates, because they are nominal, should be adjusted for inflation .

There are other important concepts in the measurement model of GECON which are also in line with the fundamentals of capital (equity), income and economic profit, established by Fisher (1906), but for the purposes of this study the concepts seen up to here suffices.

### 4.3 SFAS 157 x GECON

Based on the information shown in the previous two subsections and in section 3 of this paper, now I present a clash between SFAS 157 concepts and requirements, and GECON economic accounting concepts. Exhibit 2 below summarizes the analysis that is done in sequence.

**Exhibit 2 – SFAS 157 versus Fisher’s (1906) concepts incorporated in GECON**

Element	SFAS 157	Fisher’s Fundamentals and GECON
Fair value definition	<ul style="list-style-type: none"> <li>Market validated prices;</li> <li>Exclusively based on exit price;</li> <li>Management’s intention – Hypothetical transaction of asset sale or liability transfer occurs between market participants.</li> </ul>	<ul style="list-style-type: none"> <li>Market validated prices;</li> <li>Value is the opportunity cost. Depending on the manager’s intent regarding the asset, may be an exit price (sale) or entry price (replacement cost).</li> </ul>
Principal market and most advantageous market	<ul style="list-style-type: none"> <li>Principal market → greater volume and quantity of transactions;</li> <li>Most advantageous → best opportunity;</li> <li>If there is simultaneously both a principal and a most advantageous market, the principal market prevails.</li> </ul>	<ul style="list-style-type: none"> <li>Market price, including price of money, determines the opportunity cost (value) of assets or liabilities;</li> <li>If the transaction occurs on more favorable term than the opportunity cost, this indicates management efficiency, and increased wealth (services stock) is recognized.</li> </ul>
Resources for use and for exchange	<ul style="list-style-type: none"> <li>In-use: prevails for nonfinancial assets used in combination with other assets → to infer individual price of the specific asset by market participants, consider its interaction with other assets;</li> <li>In-exchange: prevails for financial assets → fair value is the individual asset exchange price in the market.</li> </ul>	Asset for use or for exchange is always a potential of service. If synergy increases market demand for ending products of the company, this will raise the service volume of usage assets, which when multiplied by the unitary opportunity cost of service on the market will also increase the values of the assets involved.
Valuation techniques	<ul style="list-style-type: none"> <li>Three approaches:                             <ul style="list-style-type: none"> <li>Market → direct selling price in the market</li> <li>Income → evaluation techniques; encouraging the use of multiple techniques with final fair value being a weighted average among individual values of each technique;</li> <li>Cost → replacement cost taken in the perspective of how much a hypothetical buyer in the market would pay for acquiring an asset with similar conditions.</li> </ul> </li> </ul>	Assets worth the opportunity cost of their services. Money has time value, so the present value of expected future net economic incomes. In line with Fisher, the future net economic incomes are the asset services less the disservices consumed to extract its services. In mathematical terms: $Va_t = \sum_{r=1}^T R^{-r} E_t(\tilde{x}_{t+r})$ where: $Va_t$ = value (opportunity cost) of the asset at current time $t$ ; $R = (1 + \text{discount rate})$ ; $E_t(\tilde{x}_{t+r})$ is the expectation at the current time $t$ of future net economic incomes (or residual earnings). The same reasoning applies to liability valuation.
Fair value measurement hierarchy	<ul style="list-style-type: none"> <li>Set on three levels. Difficulty in obtaining inputs for the assessment determines hierarchy. Level 1, there is an active market and the selling prices are accessed on the market. Level 2, there is no market and prices for the same asset, but it may exist for a similar asset, and there is availability of other variables (interest rate, exchange rate, etc.) to facilitate the assessment of fair value. Level 3, there is neither active market nor information about similar assets.</li> </ul>	Objectivity is only possible in determining the opportunity cost of an asset if it comes to be sold in an active market. When the asset is for use, the opportunity cost should be based on opportunities available in the market to generate the same service that is already in use in the entity.
Inflation	<ul style="list-style-type: none"> <li>Does not consider.</li> </ul>	Should be considered, as it affects the opportunity cost of assets, liabilities, and consequently net equity. The correct index to be considered is an internal index based in the assets consumed by the company.
Discount rate	<ul style="list-style-type: none"> <li>Standard does not address this element.</li> </ul>	Assets and liabilities in the company have different opportunities when one considers the financial resources that generate them. Liabilities should be discounted by the lending rate, and assets by the borrowing rate.

Analysis:

**Fair Value Definition:** by opting exclusively for exit prices in the fair value definition, the standard contradicts the understanding already incorporated into the economic theory of accounting, as in Hendriksen and Van Breda (1999, p. 283), that assets are probable future economic benefits, controlled by a given entity. Exit price does not reflect the reality for in-use assets, since in such situations value is the replacement cost of asset services, an entry price.

**Principal market and most advantageous market:** value or the opportunity cost of an asset for sale is the highest price obtainable in the principal market for the same asset. If the asset could be sold at a price higher than its best market benchmark, it is the merit of those who sell and a gain would be recognized. The concepts of SFAS 157 in that aspect align with economic fundamentals presented above, but it should be highlighted that the standard restricts the concept to recognize it only in assets for sale. In case of assets for use, fair value would be the replacement cost, i.e. the

lowest price of the asset (or, more generally, of its services) in its principal market. If it could be bought for a price even lower than this reference, it is credited to the purchaser, and a gain should be recognized.

**Resources for use and resources for change:** SFAS 157 does not seem to recognize that an asset for use is worth the expected physical volume of its services time the per unit service price in the market. Valuing assets for use by this way, besides preserving the conceptual fundamentals of asset, is much less subjective than to imagine how the market would consider the price of the individual asset when it was in interaction (synergy) with other assets.

**Assessment techniques:** the formula  $V_{at} = \sum_{\tau=1}^T R^{-\tau} E_t(\tilde{x}_{t+\tau})$ , whose variables are defined in

Exhibit 2, accurately reflects the concept of asset. The asset for use net future economic income is the expectation of its volume of services multiplied by the correspondingly service unit price in the market. If the intention is to sell the asset, the sum expectation operator and time counter vanish and the formula results in the actual market price. When management intention is to use the asset, it is not be the use of multiple formulas that generate more truth (fair) value, but the correct application of concepts, for the inputs to the expectation about future flows of services will always be subjective.

**Fair value measurement hierarchy:** as a consequence of prescribing the fair value definition only at exit price, SFAS 157 stresses alternative ways to find the sale price when it is not available. This applies to inputs situations of level 2 and 3. But the Fisherian teaching, incorporated in GECON, that the value of an asset refers to the service or utility embedded in it, and not to the asset itself, might deconstruct the SFAS 157 reasoning.

For example, assuming there was only one pipeline, owned by Brazilian Petrobras state owned company, to transport gas from the Santos Basin to the northeast of Brazil, how one could compute the fair value of this pipeline?

It does not fit in level 1, because there is no market price available for the pipeline, and does not fit in level 2 because there are no similar assets. The solution, according to SFAS 157, would be to use one or more valuation techniques to project future income of the pipeline and bring them to present value. That would be the sale price and therefore the fair value of the asset. But what would be these future flows?

It is not correct to consider the projected amount of gas transported because other assets contribute for this activity (people, machines, etc.) and not only the pipeline. For the Geconian theory, the value of the pipeline would be its opportunity cost. Since what matters are the services provided by pipeline to transport gas from the Santos Basin to the northeast, not the pipeline itself, and Petrobras, in this hypothetical example, does really need these services, then the opportunity cost of such services, having no another similar pipeline in the market, would be the best forgone alternative in the market to do the same service that is already being done by the pipeline.

If this alternative is to transport the gas by train, then the cost Petrobras should have to incur with such transportation would be the value of the pipeline. Also if there were no train, and the needed gas had to be transported by road, in trucks, the correspondingly cost to do this would be the opportunity cost, or the value of the pipeline. In summary, it is not the use of multiple techniques that will make the computed amount to be fair, but the correct use of concepts and, in this respect, the requirements of SFAS 157 seem inadequate.

**Inflation and discount rates of expected future flows of services:** to calculate fair value, SFAS 157 makes neither reference to inflation nor the distinction of discount rates of assets and liabilities. This omission can lead to major distortions in the values found, as inflation expectation is embedded both in goods market prices when purchased on term and in the rates used to discount future flows to present value. These errors can be quite relevant when the projections in the future are more elongated.

It can be concluded, by the elements exposed, that the fair value definition and framework for its measurement, as prescribed in SFAS 157, seems unfair. The most suitable terminology to refer to this form of evaluation would be simply the noun value, without the adjective fair. The alleged fairness would be impossible to be reached on an assessment of assets for use where there is no intention of selling them, due to high subjectivity inherent in the projection of future expectations, and is still more aggravated because of the distance of the standard, in its definition and framework for measuring fair value, from the foundations of economic accounting that GECON incorporated from the understanding of the concepts of capital, income and economic profit left by Fisher (1906).

## 5. CONCLUDING REMARKS

It is reasonable to think that the first decision, 40 years ago, by American regulators, to incorporate the adjective fair in accounting measurement to determine the value of a given element, asset or liability, originally had a concern that the measure obtained was just in a philosophical sense. The justice of the value would be assured if the asset object of measurement could be sold in normal market conditions, among parties freely interested in transacting. The price in a normal market, with many sellers and buyers, is the best representation for measuring the value, a fair balance of the parties involved in the transaction, without excesses to one or to the other side.

But the measurement at fair value, initially restricted to financial assets traded in a nearly perfect competition in secondary markets, became to be progressively applied to other accounting elements, including reducing the fixed assets and acquired goodwill costs to their recoverable amount, and even for certain very complex for measuring liabilities, as is the case of the obligation of the sponsor to the defined benefit plan of its employees. Thus, while preserving the original notion that the value must always be endorsed by a market transaction, such transaction became an exercise of imagination of financial statements preparers that, in the absence of an active market for pricing a certain asset or liability, should establish very subjective parameters for their expectations of future interest rates, exchange rates, production volumes, inflation, market prices, risks, etc. or imagine by how much market participants would sell the same asset or were willing to pay for transfer the liability, even if it was not the company's intention.

When measuring of fair value is no longer guided by accessible prices in the asset market that the company intends to sell, but by internal and highly subjective assessment criteria, we can no longer ensure that the value so obtained may be called fair. The desired fairness shall be questioned. As was also questioned, in the 2008 global financial crisis, the asymmetry introduced by FSP 157-4 in response to banks pressure, illustrated by Stocker and Craig (2009): "The financial sector has a long love and hatred relationship with the fair value accounting (...). When markets are fine, as in the boom of the last 10 years, banks applaud the rule, but when prices fall, they see the same rules as a problem. "

In this article, it was shown that the fair value term, used as a measurement concept in accounting, seems inadequate. It might even be acceptable if it was restricted only to the representation of what would be received in a sale current transaction in a normal market. But in abnormal situations or absence of a market, when the company should make use of internal models, projecting the future, to find the supposed asset value, the measure found is always inexact and subjective, and therefore is not correct to call fair the quantity resulting from this arbitrary calculation. If the inaccuracy is inherently unfair, it remains to seek fairness in the measurement definition and concepts that the standard uses to calculate fair value.

But also under this standpoint the leading global standard on measuring fair value, SFAS 157, fails to incorporate all the concepts that would ensure the rightness of the calculations (not accuracy, since this is impossible) so that it could be accepted the figures obtained as fair values. Sup-

ported on the concepts of capital and income of Irving Fisher, renowned neoclassical American economist, which are incorporated into the measurement model of GECON - Information System for Economic Management, developed at the University of São Paulo by prof. Armando Catelli, it was found that:

- The standard definition of fair value is based entirely on exit prices, but the correct value for assets for use (raw material for production use, fixed assets, etc.) is the cash replacement cost of their services in market, an entry price;
- The standard disregards the intended use of the asset by the person who controls it, and states that he imagine what market participants would get by selling this asset or pay to transfer the liability to a third party. But the market sale price of the physical asset is below its in-use value for those wanting to keep it;
- The standard ignores the effect of inflation in calculating the value, but this is embedded in the nominal interest rate and in sales and purchases prices on credit;
- The standard does not distinguish between rates for discounting the expected future cash flows of assets and liabilities. But these rates reflect, among other things, the cost of money, which is different, from the perspective of the finance area of the company (which acts as an internal bank), to buy money (recognized liabilities → lending rate) or sell money (recognized assets → borrowing rate);
- The standard makes no mention of the opportunity cost concept, but this is the true value of an asset or liability, as it represents the value of the resource, backed by the market, in its best alternative use, closely linked to the intended use of the resource by who controls it;
- The standard does not focus on the services, but on the physical asset itself, to establish the definition and concepts of fair value measurements. But the reality of an asset as a utility potential implies that their correct valuation is, for those willing to use it, the lowest price that would be paid in the market to have the same services under the same conditions, an entry price, not considered in the standard.

For all those reasons, we conclude that the fair value measurement concepts as it is set out in SFAS 157, are incomplete or incorrect, and therefore are not fair. Therefore, it is also unfair the value calculated based on these same concepts. It is noteworthy that the production of accounting standards is subject to political forces in the market that involve multiple interests. Thus, not always the standard adopted is the one conceptually more correct, but that which represents the possible balancing of interests. But why go on calling this measurement form of fair value instead of adopting a less controversial terminology, such as subjective value or, simply, value?

The answer to this question along with the historical reasons for the introduction and continued use of the term fair value in accounting stay as suggestions for future research.

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<sup>i</sup> There are many academic papers about the subprime financial crisis nature. The interested reader can consult, for example, the excellent work of Ryan (2008), which also evaluates to be improper the FAS 157 application in tense market situations, when transactions do not occur in normality (orderly transactions), as sets the standard.

<sup>ii</sup> There are various works discussing the fair value accounting advantages and disadvantages. For instance, Laux and Leuz (2009).