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THE CONCEPTUAL FRAMEWORK CONCEPT AND THE ALLOCATION OF INCOMES IN THE CONSOLIDATED ENTITY: ITS IMPACT ON FINANCIAL RATIOS

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ABSTRACT

The majority stockholders are not the same as parent company stockholders in a consolidated entity when one or more subsidiaries own parent company's shares. In this milieu, the allocation of income could be performed: a) among majority and minority stockholders; b) among parent company stockholders and minority stockholders. Considering minority interest as a component of the consolidated equity, this paper demonstrates how the criterion used to allocate income can influence on the consolidated financial statements and, thereby, analysis based these financial statements.

INTRODUCTION

The Conceptual Framework project of the U.S.'s Financial Accounting Standards Board (FASB) and the Conceptual Framework project for the preparation and presentation of financial statements of the International Accounting Standards Board (IASB, 1989) are both clear evidence of authoritative acceptance of the need for an agreed theoretical base for individual and consolidated financial statements. Consequently, they should be the foundation on which consolidated accounting standards should be issued and, in this way, one would expect that the 'logical formulation' should result in internally consistent consolidated financial statements.

Nonetheless, current prevailing GAAP and acceptable consolidation procedures represent a mixture of the entity theory -- also called the economic unit theory -- (Moonitz, 1951) and the parent company theory of consolidated financial statements, leaning more toward the latter than the former (Nurnberg, 2001). Furthermore, from our point of view, none of these theories is coherent with the foundations of the conceptual framework issued by FASB and IASB and, therefore, it makes them conceptually wrong.

The current mixture of accounting standards in consolidated financial statements will undoubtedly lead to confusion and possibly to a situation of misunderstanding of measurements of income and equity's figures. This has a significant impact on the comparability of the consolidated financial statements issued by companies, and this information could not be significant for users to take decisions[1].

Previous commentaries make it necessary to reconsider, under the conceptual frameworks' perspective, these two theories and to pay particular attention to the primary users and information needs of consolidated financial statements. Therefore, this paper focuses on the need to underlie consolidated financial statements on the accounting conceptual frameworks and it demonstrates that existing consolidated accounting standards are based on conflicting theoretical concepts that result in consolidated financial statements with no defined meaning. We are advocates of the need of the presence of the conceptual framework in the issuing of consolidated accounting standards to make useful consolidated financial statements for investors to take decisions. In this way, this paper seeks to contribute to the ongoing understanding of consolidated financial statements and financial ratios based on them.

Therefore, our contribution to the consolidation literature is mainly threefold. First, we analyze if the traditional way of reporting minority interest is coherent from a conceptual view of point. Then, an analysis of the main accounting conceptual pronouncements is made to locate minority interest in the consolidated balance sheet. This way, this paper broadens the scope of judgments studied in the accounting literature about reporting of minority interest[2]. Second, under considering the minority interest as an element of the consolidated equity, this paper analyzes two different allocations of income that can be done when one or more subsidiaries own parent company's shares. The measurement of the minority interest could be done depending on if the income of all entities included in the consolidated entity is allocated among majority and minority stockholders or if the relevance on the allocating is focused on the determination of the allocated income to parent company stockholders. Finally, the differences in the figures between these different ways of allocation can have an impact on the financial ratios that are provided to users to take decisions.

Because the focus of the paper is on analyzing the influence of the criterion used to allocate incomes on financial ratios and not on other aspects that also differ parent company and entity theories[3], such as on the criterion used to eliminate earnings arising on intercompany transactions, there will be no intercompany transactions. As a result, parent company and subsidiaries' income come only from transactions with companies not included in the consolidated entity.

The remainder of this paper is as follows. First, this paper focuses on the primary users and needs of consolidated financial statements in accordance with FASB and IASB's conceptual frameworks. Then, considering minority interest as a component of the consolidated equity, the allocation of consolidated net income is made in accordance with the entity criterion and parent company criterion. In the last section of the paper, the impact of the different ways of allocating

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[1] As Walker (1976: 78) indicates, "if those who prepare consolidated statements are confused about what the statements represent, it seems likely that those who use consolidated statements may misunderstand the significance of consolidated data."

[2] Alternative views describing the nature of minority interest rely upon alternative equity theories of consolidation-parent company theory and entity theory. Clark (1993) did an interesting research about the evolution of concepts of minority interest from the minority interest in perspective vis-a vis the development of relevant corporate theories of equity.

[3] With regard to other different aspects between parent company and entity theories, the reader of this paper can read the following literature: Smolinsky (1963), Crichton (1990), Pacter (1992), Beckman (1995), Scofield (1996) and Nurnberg (2001).

incomes on financial ratios are analyzed. Finally, some conclusions and discussions are highlighted.

CONCEPTUAL FRAMEWORK APPLICATIONS ON THE CONSOLIDATED FINANCIAL STATEMENTS: PRIMARY USERS, INFORMATION NEEDS AND WAY OF REPORTING MINORITY INTERESTS

From the usefulness point of view, the current legislative development of accounting is derived from the origin of a logic-deductive approach called "conceptual framework," which sets forth fundamentals on which financial accounting and reporting standards are based (FASB, 1978). In fact, it establishes a logical process for accounting standard-setting bodies to support the issuance of accounting standards. The scope of these conceptual pronouncements is not only individual financial statements but also consolidated financial statements (IASB, 1989: para. 6).

Consistent with this usefulness perspective, consolidated accounting standards should be issued on the basis of a logical process involving an analysis of the users and their information needs for consolidated financial statements to be relevant for users to make decisions. Indeed, the relevance of accounting information is said to be one of the primary qualitative characteristics of the accounting information (FASB, 1980: para. 33; IASB, 1989: para. 24). Therefore, the analysis of users and information needs appears to be relevant as the preliminary step to establish the purpose of consolidated financial statements and to give an opinion about the criterion used to measure and report minority interest in the consolidated financial statements.

Different conceptual frameworks and academicians point out that investors and creditors are the primary users of accounting information (ICAEW, 1975; FASB, 1978; IASB, 1989; Solomons, 1989; ASB, 1999). These users are directly concerned with the ability of companies to generate favorable cash flow in the form of dividends or interest. Furthermore, they may also be concerned with how the market's perception of that ability affects the relative prices of its securities (FASB, 1978: para. 25). In particular, investors' motivation for investment is focused on the financial return they will receive from their investment and, therefore, they would wish both (a) to evaluate the past financial performance of the entity and (b) to arrive at a view about likely future performance (Rutherford, 2000: 14).

In addition, conceptual frameworks usually indicate that information provided to meet investor's and creditor's needs is likely to be generally useful to members of other groups who are interested in essentially the same financial aspects of business enterprises as investors and creditors (FASB, 1978: para. 30; IASB, 1989: para. 10; ASB, 1999: para. 1.11).

The prevalence of investors and creditors has had an influence on the purpose of consolidated financial statements. In accordance with the FASB (1999: para. 7), the purpose of consolidated financial statements is to report financial position, results of operations, and cash flow of a reporting entity that comprises a parent and its subsidiaries essentially as if all of their assets, liabilities, and activities were held, incurred and conducted by a single entity with one or more branches or divisions.

According to this purpose of consolidated financial statements, the entity theory appears to be more consistent than the parent company theory. Indeed, under the parent company theory, the consolidated balance sheet, consolidated income statement, and consolidated retained earnings statement assume a consolidated entity from the perspective of the parent company stockholders. As a result, whenever there are partially-owned subsidiaries, the consolidated balance sheet, consolidated income statement, and consolidated retained earnings statement incompletely report financial position, net income, and changes in retained earnings of the consolidated entity (Nurnberg, 2001: 144). Nonetheless, under the entity theory, consolidated financial statements will completely report financial position[4], net income, changes in retained earnings and cash flows of the consolidated entity. Because they are more complete, the consolidated financial statements under the entity theory will be more relevant, more reliable, more comparable, and more useful than consolidated financial statements under the parent company theory. In sum, the entity theory provides the greatest representational faithfulness to the underlying economic reality of the consolidated entity (Beckman, 1995: 17).

Likewise, Scofield (1996: 591) indicates that some financial ratios that are produced using the parent company theory to issue consolidated financial statements have inconsistencies because the sales, assets, and liability figures include all of the amounts controlled by the parent company, but income and equity include only the portion directly owned by the parent company stockholders. Nevertheless, when consolidated financial statements are issued under entity theory, numerators and denominators of the ratios have a consistent measurement unit: all of the sales, income, assets, liability, and equity of the entire group controlled by the parent company.

As noted before, primary investors' needs are related to the generation of favorable cash flows in the form of dividends or interests. As the entity theory is more consistent to meet these needs to all stockholders, it seems that the entity theory is more coherent with the philosophy underlying the accounting conceptual frameworks. Besides, from a conceptual point of view, it implies that all stockholders, not only parent company stockholders, must be considered as owners of the consolidated entity because all stockholders are providers of equity figures which have been invested in the parent and subsidiaries' assets and activities, and all of them are concerned with the ability of the consolidated entity to generate future cash flows.

As a consequence, displaying minority interest as a liability, although it is a widespread practice in published consolidated balance sheets (see the survey conducted by AICPA, 1998: 262), is conceptually wrong. SFAC No. 6 (FASB, 1985: para. 35) defines liabilities as "probable[5] future sacrifices of economic benefits arising from present obligations[6] of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events." Three essential characteristics of liabilities are highlighted from the definition of liability: "(a) it embodies a present duty or responsibility to one or more other entities that entails settlement by probable future transfer or use of assets at a specified or determinable date, on occurrence of a specified event, or on demand, (b) the duty or responsibility obligates a particular entity, leaving it little or no discretion to avoid the future sacrifice, and (c) the transaction or other event obligating the entity has already happened" (FASB, 1985: para. 36).

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[4] The American Accounting Association's Financial Accounting Standards Committee expressed a preference for the economic unit concept because this method best presents the entirety of assets under parent company's control and it is consistent with their preference for current value financial statements in general (FASB, 1991).

[5] Probable is used with its usual general meaning, rather than in a specific accountant or technical sense (such as that in Statement No. 5, para. 3), and refers to that which can reasonably be expected or believed on the basis of available evidence or logic but is neither certain nor proven (Webster's New World Dictionary, p. 1132). Its inclusion in the definition is intended to acknowledge that business and other economic activities occur in an environment characterized by uncertainty in which few outcomes are certain (para. 44-48).

[6] Obligations in the definition is broader than legal obligations. It is used with its usual general meaning to refer to duties imposed legally or socially; to that which one is bound to do by contract, promise, moral responsibility and so forth (Webster's New World Dictionary, p. 981). It includes equitable and constructive obligations as well as legal obligations (para. 37-40).

Taking these precedents into account, reporting minority interest as liabilities in the consolidated financial statements conflict with the definition of liabilities according to the FASB's accounting conceptual framework. Minority interest should be reported as stockholders of the consolidated entity and, therefore, in the equity in the consolidated financial statements because:

- There are no duties to transfer assets or whatever financial element from the consolidated entity to minority interest.
- Consequently, maturity of liabilities neither exists nor can be estimated.
- Minority interests are financing investments in assets in the consolidated financial statements with no financial fixed returns on them.
- Minority interests own common outstanding stocks that are not going to be refunded.

In any case, the boundary between equity item and liability item has not always been clear. SFAC No. 6 (FASB, 1985: para. 55) points out that "although the line between equity and liabilities is clear in concept, it may be obscured in practice. Applying the definitions to particular situations may involve practical problems because several kinds of securities issued by business enterprises seem to have characteristics of both liabilities and equity in various degrees or because the names given some securities may not accurately describe their essential characteristics."

This line has become much closer in the last years with the development of the Stock Markets and the creation of new financial instruments. These new financial instruments usually involve characteristics of both liabilities and equity instruments or new characteristics not defined in the definitions of the FASB's accounting conceptual framework. In this way, some characteristics of liabilities, such as entailing settlement of liabilities by probable future transfer or use of assets, are offset. It may be that this concern has made some companies to report the minority interest as an item between liabilities and stockholder's equity in the consolidated financial statements.

In October, 2000, the FASB issued a proposed amendment to FASB Concepts Statement No. 6 to revise the definition of liabilities so that, depending on the nature of the relationship established between the holder and the issuer, it would encompass certain obligations that a reporting entity can or must settle by issuing its own equity shares (FASB, 2003: para. 6). These financial instruments embody akin characteristics of both debtor-creditor and owner-stockholder relationships. As a conclusion of the pronouncement, the FASB (2000: Appendix A para. 11; 2003, Appendix B para. B14) assures that "a fundamental basis for determining whether a financial instrument component should be classified as a liability or as equity is the nature of the relationship that the component establishes between the issuer and the holder."

According to this statement, the FASB (2000: Appendix B para. 13 footnote) indicated that "a financial instrument component establishes an ownership relationship if it (1) is an outstanding equity share that is not subject to mandatory redemption provisions or (2) is an obligation that can or must be settled by issuance of the issuer's equity shares and, to the extent the value that must be conveyed to the holder of the financial instrument upon settlement of the obligation at its maturity changes, the change is attributable to, equal to, and in the same direction as the change in fair value of the issuer's equity shares."

Later, the FASB issued the FAS 150 (2003) that reinforced this idea with mandatorily redeemable financial instruments, obligations to repurchase the issuer's equity shares by transferring assets and financial instruments that embody an unconditional obligation, or a financial instrument other than an outstanding share that embodies a conditional obligation. The differences between equity and liabilities is still under discussion. At its October 6, November 3, November 24, 2004, and March 30, April 6, 2005 meetings, the Board (FASB, 2005) discussed and agreed that an issuer would use the following approach (Ownership/Settlement Approach) for distinguishing whether a single component instrument would be classified as a liability, asset, or equity:

1. A perpetual instrument that does not embody a settlement obligation or right is equity, even if the instrument does not meet the criteria to be a direct ownership instrument.
2. An instrument that establishes a direct ownership relationship between the issuer and the counterparty is equity, even if it embodies a settlement obligation (or possibly, a right).
3. An instrument that embodies a settlement obligation or right and does not establish either a direct or indirect ownership relationship is a liability or an asset.
4. An instrument that establishes an indirect ownership relationship that would be settled or ultimately settled by issuing or receiving an instrument that establishes a direct ownership relationship is equity (such as a physically settled written call or purchased put option). An indirect ownership instrument must be indexed to a direct ownership instrument and settled with that same instrument to be classified as equity. Otherwise, it is classified as a liability or an asset.

Therefore, under the accounting conceptual framework, minority interests should be reporting as an element of the consolidated entity. It is reinforced by FASB's pronouncements because, from the point of view of the consolidated entity, minority interest is a part of the consolidated equity attributable to outstanding shares that are not subject to mandatory redemption provisions and, therefore, there is no mandatory requirement to convey assets to the consolidated entity.

This conclusion is supported by the 1995 Exposure Draft (FASB, 1995: paras. 105-106) which noted explicitly that minority interest was not a liability and suggested that there was no justification for creating a new balance sheet element. Indeed, neither SFAC No. 6 nor IASB's conceptual framework (IASB, 1989) defines separate balance sheet elements between liabilities and stockholder's equity.

In conclusion, we think that from the conceptual point of view, minority interest must be considered as a part of the equity of the consolidated entity because minority stockholders are owners of the consolidated entity. The financial resources they contribute are driven to increase the investments of the consolidated entity to generate future cash flows and there is neither obligation to convey assets to minority stockholders nor a fixed return on the financial resources contributed.

ALLOCATING CONSOLIDATED NET INCOME

As noted previously, investors are one of the primary users of accounting information. Taking into account that minority interest should be an element of the consolidated equity, in the parent company as well as in subsidiaries, two categories of stockholders could be identified in regard to the consolidated entity: internal stockholders and external stockholders.

Internal stockholders of a company "j" are all other companies included in the consolidated entity that own shares of company "j". External stockholders are all stockholders who own shares of company "j" except for companies included in the consolidated entity. Likewise, external stockholders can be distinguished from the parent company's external stockholders (majority stockholders) and subsidiaries' external stockholders (minority stockholders).

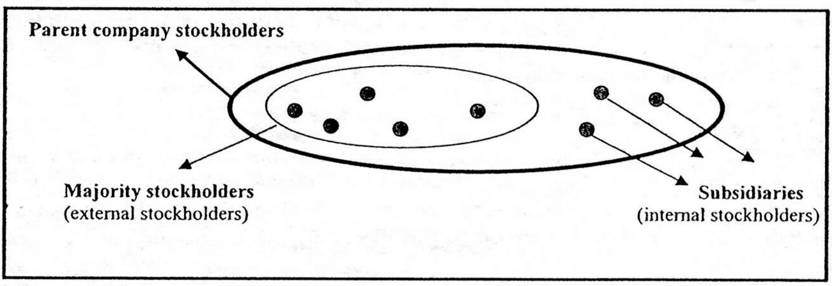
It is also worthy of note that when one or more subsidiaries own parent company's shares, the majority stockholders are not the same as the parent company stockholders (figure 1). Subsidiaries, which are the parent company's external stockholders, are not majority stockholders. This difference makes the possibility of the issuance of the consolidated financial statements of two different consolidated income allocations[7].

An alternative could be the allocation of income of each one of the companies included in the consolidated entity among majority and minority stockholders of each subsidiary company taking into account all intercompany holdings among all firms. The part of parent company and subsidiaries' net income that does not belong, directly or indirectly, to majority stockholders could be allocated to minority stockholders. As the allocation of the consolidated income is made among majority and minority stockholders, who are considered stockholders of the consolidated entity under the entity theory, consequently, this way of allocating consolidated income is called in this paper "entity criterion." This is the Weil's proposal of allocating of earnings (Weil, 1973). Nevertheless, although the allocation is made among external stockholders, Weil (1973) did not differentiate minority from majority interests.

In figure 2, we represent the application of this criterion in a consolidated entity in which there is a parent company (firm 1) and three subsidiaries (firms 2, 3 and 4). In this example, all firms in the group are mutual ownership holdings because each one owns shares of all the others firms in the consolidated entity and, consequently, each company is owned by the rest of firms included in the consolidated entity.

FIGURE 1

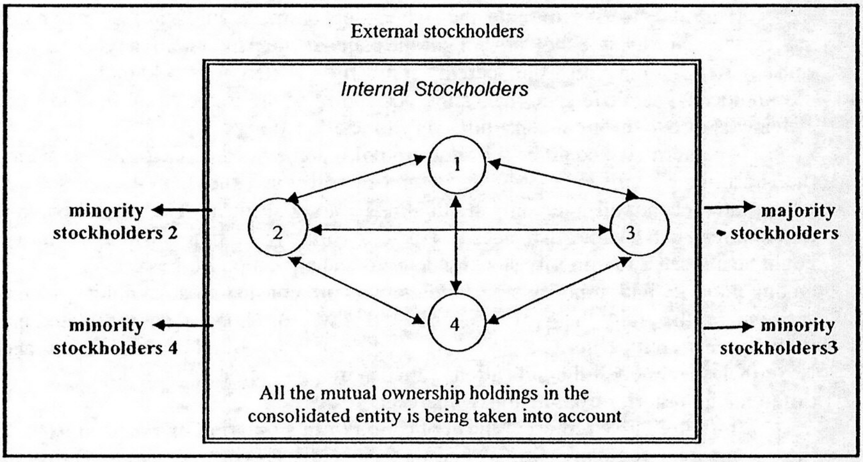
Majority Stockholders versus Parent Company Stockholders



[7] As previously noted, minority interests should be considered an element of the consolidated entity, the consolidated income is the net income of all companies as if they were one economic unit.

FIGURE 2

Allocation of Consolidated Income: Entity Criterion



The second alternative is to allocate income of each one of the companies included in the consolidated entity among parent company stockholders and minority stockholders of each one of subsidiaries. The subsidiaries' incomes that do not belong to minority stockholders will be allocated to the parent company stockholders. In addition, all parent company income will be allocated to parent company stockholders. Accordingly, the income of each subsidiary company must be allocated between the parent company and each group of minority stockholders taking into account the existent mutual ownership holdings among subsidiaries. The subsidiaries' incomes that do not belong, directly or indirectly, to the parent company will be allocated to minority stockholders. This procedure is also applied to determine the consolidated income under parent company theory[8]. Therefore, this way of allocating consolidated income is called in this paper "parent company criterion."[9] (figure 3)

Entity criterion

To allocate the income of each one of the companies included in the consolidated entity among majority stockholders and each group of minority stockholders, their effective interest percentages in each firm included in the consolidated entity must be calculated previously. Applying the methodology proposed by Weil (1973), for a consolidated entity in which "n"

[8] Under parent company theory, the consolidated financial statements are prepared from the perspective of the parent company stockholders who are considered as the only stockholders in the consolidated entity. Therefore, the consolidated net income is the income of the parent company plus the income of the affiliates attributable to parent company stockholders.

[9] The International Financial Reporting Standard No. 27 (IFRS 27) applies the parent company criterion to define minority interest as "that portion of the profit or loss and net assets of a subsidiary attributable to equity interests that are not owned, directly or indirectly through subsidiaries, by the parent" (IASB, 2003: para. 4).

companies are included and being firm 1 the parent company and firms 2,...,n the subsidiaries, the effective interest percentages would be calculated:

$$E = T(I - T')^{-1}, \tag{1}$$

The matrix formulation would be:

$$\begin{bmatrix} e_{11} & e_{12} & \cdots & e_{1n} \\ e_{21} & e_{22} & \cdots & e_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ e_{n1} & e_{n2} & \cdots & e_{nn} \end{bmatrix} = \begin{bmatrix} t_{11} & 0 & \cdots & 0 \\ 0 & t_{22} & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & t_{nn} \end{bmatrix} \begin{bmatrix} 1 & -t'_{12} & \cdots & -t'_{1n} \\ -t'_{21} & 1 & \cdots & -t'_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ -t'_{n1} & -t'_{n2} & \cdots & 1 \end{bmatrix}^{-1} \tag{2}$$

whence:

e_{1j} for j=1,...,n represents the fraction of company j's earnings ultimately accruing to majority stockholders, taking into account all intercompany holdings among all firms included in the consolidated entity. This values is called in this paper "effective interest percentage of majority stockholders in company "j.""

e_{ij} for i=2,...,n y j=1,...,n represents the fraction of company j's income accruing to minority stockholders of company "i", taking into account all intercompany holdings among all firms included in the consolidated entity. This value is called in this paper "effective interest entity[10] percentage of minority stockholders of subsidiary company "i" in company "j.""

$t_{jj} = \dfrac{r_{jj}}{q_j^c}$ for j=1 represents the fraction of company j's outstanding stocks owned by majority stockholders[11]. When j=2,...,n, it represents the fraction of company j's outstanding stocks owned by minority stockholders of company "j".

$t'_{ij} = \dfrac{q_{ij}}{q_j^c}$ $\forall\, i \neq j$ represents the fraction of company "j"'s outstanding stocks owned by company "i."

r_{jj} for j=1 represents the fraction of parent company's stocks owned by majority stockholders and for j=2,...,n represents the fraction of company "j"'s stocks owned by minority stockholders of company "j."

[10] We have written the adjective "entity" to indicate that they are obtained applying the entity criterion and, therefore, with the aim of differentiating them from effective interest percentages need for performing the allocation of income applying the parent company criterion.

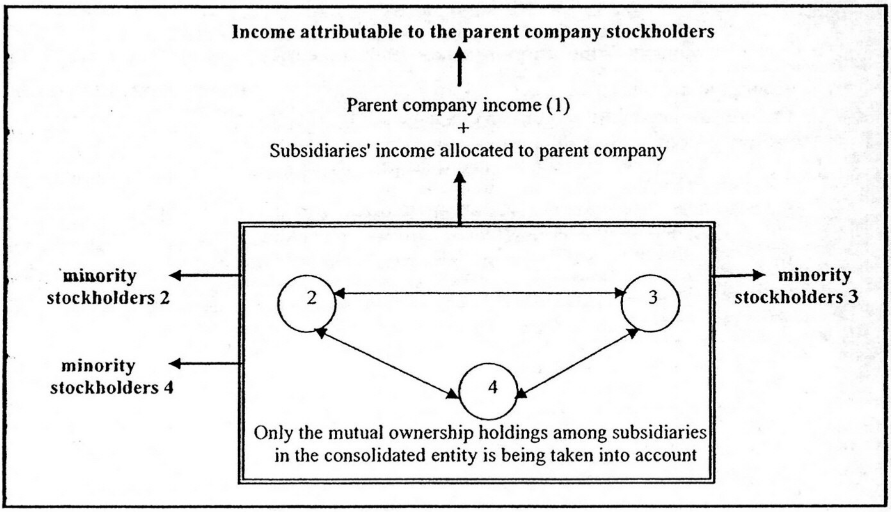
[11] Although Weil (1973) indicates as hypothesis that q_{jj}=0 for i=1,...,n, this is, entities can not own treasury shares, this paper includes that possibility of calculating the effective interest percentages.

q_{ij} $\forall\, i \neq j$ represents the fraction of company "j"'s stocks owned by company "i." When i=j represents the fraction of company "j"'s stocks held in the treasury.

q_j^c represents the fraction of company j's outstanding stocks. Taking into account that the treasury stocks is the only part of common stocks which is not outstanding, $q_j^c = r_{jj} + \sum_{\substack{i=1 \\ i \neq j}}^{n} q_{ij}$.

FIGURE 3

Allocation of Income: Parent Company Criterion



Once the effective dominium coefficients are calculated, the income attributable to each group of stockholders will be calculated by means of the following product of matrices:

$$\begin{bmatrix} I_{cs}^{EC} \\ I_{ms/2}^{EC} \\ \vdots \\ I_{ms/n}^{EC} \end{bmatrix} = \begin{bmatrix} e_{11} & e_{12} & \cdots & e_{1n} \\ e_{22} & e_{22} & \cdots & e_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ e_{n1} & e_{n2} & \cdots & e_{nn} \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ \vdots \\ I_n \end{bmatrix} \tag{3}$$

whence:

I_j for j=1,...,n are the income of the period of the company "j" after eliminating the income arising from intercompany transactions.

$I_M = \sum_{j=1}^{n} e_{1j} I_j$ are the income allocated to majority stockholders.

$I_{ms/i}^{EC} = \sum_{j=1}^{n} e_{ij} I_j$ for i=2,...,n are the income allocated to minority stockholders of subsidiary company "i."

Therefore, in the consolidated equity, it could be possible to separate the following income figures:

- Income attributable to majority stockholders: $I_M = \sum_{j=1}^{n} e_{1j} I_j$.
$$(4)$$
- Income attributable to minority stockholders[12]: $I_{ms}^{EC} = \sum_{i=2}^{n} I_{ms/i}^{EC} = \sum_{i=2}^{n} \sum_{j=1}^{n} e_{ij} I_j$.
$$(5)$$
- Consolidated net income: $CI = I_M + I_{ms}^{EC} = \sum_{j=1}^{n} I_j$.
$$(6)$$

Parent company criterion

As can be seen in figure 3, the allocation of the incomes applying the parent company criterion consist of the allocation of income of each one of the companies included in the consolidated entity among parent company stockholders and minority stockholders of each subsidiary company. Nevertheless, the income of each subsidiary company must be allocated previously among minority stockholders and the parent company. Previous to performing the latter allocation of income, it is necessary to calculate the effective interest percentages of the parent company as well as of the minority stockholders in each one of the subsidiaries.

Firstly, the fraction of affiliate company "j"'s earnings accruing to minority stockholders of subsidiary company "i" will be calculated. It will be represented as (w_{ij}) and they will be called in this paper "effective interest financial percentage of minority stockholders of subsidiary company "i" in company "j."

Earning originating in subsidiary company "j" may go directly or indirectly to minority stockholders of subsidiary company "j." The fraction t_{jj} of subsidiary company "j"'s earning goes directly to minority stockholders of subsidiary company "j." The fraction $w_{jk} t'_{kj} \quad \forall k \neq j$, is the fraction of subsidiary company "j"'s earning that flows to subsidiary company "k," but ultimately accrues to minority stockholders of subsidiary company "j." Therefore,

$$w_{ij} = t_{ii} + \sum_{\substack{k=2 \\ k \neq j}}^{n} w_{ik} t'_{ki} \qquad \text{for } i=2,...,n;\ j=2,...,n. \tag{7}$$

[12] In regard to the income attributable to minority stockholders, the amount can be separated in income attributable to minority stockholders of each affiliate.

We must bear in mind that the coefficient t_{ij} is null for $\forall i \neq j$. Rewriting equation (7) in matrix algorithms:

$$\begin{bmatrix} w_{22} & w_{23} & \cdots & w_{2n} \\ w_{32} & w_{33} & \cdots & w_{3n} \\ \vdots & \vdots & \ddots & \vdots \\ w_{n2} & w_{n3} & \cdots & w_{nn} \end{bmatrix} =$$

$$= \begin{bmatrix} t_{22} & 0 & \cdots & 0 \\ 0 & t_{33} & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & t_{nn} \end{bmatrix} + \begin{bmatrix} w_{22} & w_{23} & \cdots & w_{2n} \\ w_{32} & w_{33} & \cdots & w_{3n} \\ \vdots & \vdots & \ddots & \vdots \\ w_{n2} & w_{n3} & \cdots & w_{nn} \end{bmatrix} \begin{bmatrix} 0 & t'_{23} & \cdots & t'_{2n} \\ t'_{32} & 0 & \cdots & t'_{3n} \\ \vdots & \vdots & \ddots & \vdots \\ t'_{n2} & t'_{n3} & \cdots & 0 \end{bmatrix} \tag{8}$$

or

$$W^S = T^S + W^S T'^S \tag{9}$$

From equation (9), it can be deduced:

$$W^S = T^S \left(I - T'^S\right)^{-1} \tag{10}$$

When $t_{jj} + t'_{1j} > 0$, with $j = 2,...,n$, matrix $\left(I - T'^S\right)$ is strictly diagonal and dominant[13] and, therefore, the inverse of the matrix can be done. It means that each subsidiary company must have minority stockholders or that the parent company directly owns stocks of this subsidiary company.

The effective interest percentage of the parent company over affiliate company "j" [14] (w_{1j}), this is, the fraction of subsidiary company "j"'s income ultimately accruing to parent company, will be the sum of the direct flows and the indirect flows,

$$w_{1j} = t'_{1j} + \sum_{\substack{k=2 \\ k \neq j}}^{n} w_{1k} t'_{kj} \text{ ....for } j=2,...,n. \tag{11}$$

In matrix algorithms (11):

$$\begin{bmatrix} w_{12} & w_{13} & \cdots & w_{1n} \end{bmatrix} =$$

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[13] $t_{j/j} + \sum_{\substack{i=1 \\ i \neq j}}^{n} t_{i/j} = 1 \Rightarrow \sum_{\substack{i=1 \\ i \neq j}}^{n} \left|t_{i/j}\right| = \sum_{\substack{i=1 \\ i \neq j}}^{n} t_{i/j} = 1 - t_{j/j} < 1.$

[14] Weil (1973), considers that these coefficients must be used to determine if, in a consolidated entity with "n" companies where the ownership is multiple, company 1 must consolidate companies 2,...,n and what accounting method must apply to each one of them.

$$= \begin{bmatrix} t'_{12} & t'_{13} & \cdots & t'_{1n} \end{bmatrix} + \begin{bmatrix} w_{12} & w_{13} & \cdots & w_{1n} \end{bmatrix} \begin{bmatrix} 0 & t'_{23} & \cdots & t'_{2n} \\ t'_{32} & 0 & \cdots & t'_{3n} \\ \vdots & \vdots & \ddots & \vdots \\ t'_{n2} & t'_{n3} & \cdots & 0 \end{bmatrix}$$

(12)

or

$$W^P = T^P + W^P T'^S,$$

(13)

whence the result is:

$$W^P = T^P \left(I - T'^S\right)^{-1}$$

(14)

Applying the previous effective interest percentages, the income attributable to parent company stockholders will be calculated:

$$I_{pcs} = I_1 + \sum_{j=2}^{n} w_{1j} I_j$$

(15)

and the amount allocated to minority stockholders of subsidiary company "i" for i=2,...n, this is, $I_{ms/i}^{PCC}$, would be the result of the following matrix product:

$$\begin{bmatrix} I_{ms/2}^{PCC} \\ I_{ms/3}^{PCC} \\ \vdots \\ I_{ms/n}^{PCC} \end{bmatrix} = \begin{bmatrix} w_{22} & w_{23} & \cdots & w_{2n} \\ w_{32} & w_{33} & \cdots & w_{3n} \\ \vdots & \vdots & \ddots & \vdots \\ w_{n2} & w_{n3} & \cdots & w_{nn} \end{bmatrix} \begin{bmatrix} I_2 \\ I_3 \\ \vdots \\ I_n \end{bmatrix}$$

(16)

Therefore, in the consolidated equity, it could be separated into:

- Income attributable to parent company stockholders: $I_{pcs} = I_1 + \sum_{j=2}^{n} w_{1j} I_j$.

(17)

- Income attributable to minority stockholders: $I_{ms}^{PCC} = \sum_{i=2}^{n} I_{ms/i}^{PCC} = \sum_{i=2}^{n} \sum_{j=2}^{n} w_{ij} I_j$.

(18)

- Consolidated net income: $CI = I_{pcs} + I_{ms}^{PCC} = \sum_{j=1}^{n} I_j$.

(19)

When one or more subsidiaries own shares of the parent company, this way of allocating income makes the allocated income of each one of minority stockholders not to be the figure that belongs to them of the consolidated income, because the parent company income which belongs to them is allocated to parent company stockholders. Nonetheless, this way of allocating income allows for the determination of the figure of the consolidated income that belongs to the parent company stockholders. So, when parent company criterion is used to allocate the income, the determination of the income which belongs to parent company stockholders is a priority over the income which belongs to majority and minority stockholders in the consolidated entity as an economic unit.

IFRS 27 has adopted the parent company criterion. This way, minority interests are defined in paragraph 4 as the portion of the profit or loss and net assets of a subsidiary attributable to equity interests that are not owned, directly or indirectly through subsidiaries, by the parent.

SOME FINANCIAL RATIOS OF CONSOLIDATED ENTITY

As it is noted in section two of this paper, one of the primary needs of investors is to generate favorable cash flows in the form of dividends or interest, and they may also be concerned with how the market's perception of that ability affects the relative prices of its securities (FASB, 1978: para. 25). In particular, investors' motivation for investment is focused on the financial return they will receive from their investment (FASB, 1985: para. 51).

Financial ratios are, therefore, relevant to determine the ability of the consolidated entity to satisfy investor's expectations about the return on investment they made. Taking into account that minority stockholders must be included in the consolidated equity and in accordance with the criterion used to allocate income (entity or parent company criterion), different payout ratios should be considered (table 1).

The (1), (2), (3), (5), (6) and (7) ratios reflect the extent to which income attributable to each stockholder group is distributed to them as dividends. The total dividend payout ratio reflects the extent to which consolidated net income is distributed as dividends to majority and minority stockholders (4) or to parent company and minority stockholders (8).

Prior differentiation of dividend payout ratio in the consolidated entity could be analyzed on other ratios such as the dividend coverage ratio or on the earnings retention ratio. In regard to retained earning to total assets ratio, it is necessary to take into account that a cause-effect relationship exists between the numerator and denominator of the ratio for the figure of the ratio to be meaningful. Therefore, if the denominator includes all assets of the consolidated entity, the numerator should consider all retained earnings of the consolidated entity but not only the retained earnings attributable to parent company (parent company criterion), to majority stockholders (entity criterion) or to minority stockholders.

The entity and parent company's effective dominium coefficients of the minority stockholders over each subsidiary company e_{ij} and w_{ij} for i=2,...,n and j=2,...,n will be equal if $t'_{i1} = 0$ for i=2,...,n, this is, when majority stockholders are the same as parent company stockholders since subsidiaries do not have financial investments in the parent company equity. Besides, the coefficients $e_{i1} = 0$ for i=2,...,n.

This way, the figure of the allocated income to each collective of minority stockholders will be the same irrespective of the criterion used to allocate income (entity and parent company criteria). Likewise, all the parent company income plus a part of subsidiaries' income which does not belong, directly or indirectly, to minority stockholders will be allocated to majority stockholders. This amount would be allocated to parent company stockholders applying parent company criterion.

TABLE 1

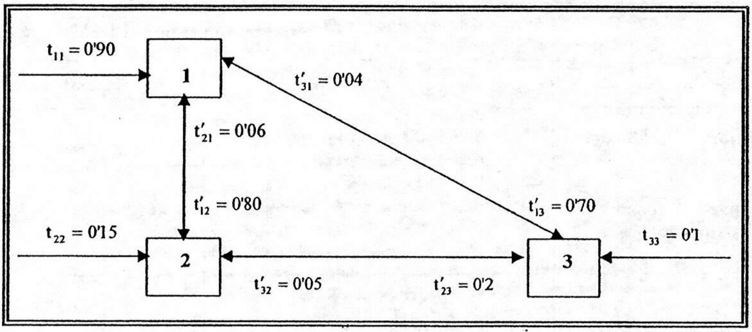
Dividend Payout Ratio: Entity Criterion versus Parent Company Criterion

	Dividend payout ratio = Dividends/Net Income	
	Entity criterion	**Parent company criterion**
Majority stockholders ... **parent company stockholders**	$\frac{D_M}{I_M} = \frac{D_M}{\sum_{j=1}^{n} e_{1j} I_j}$ (1)	$\frac{D_{pcs}}{I_{pcs}} = \frac{D_{pcs}}{I_1 + \sum_{j=2}^{n} w_{1j} I_j}$ (5)
Minority Stockholders/i	$\frac{D_{ms/i}^{EC}}{I_{ms/i}^{EC}} = \frac{D_{ms}^{EC}}{\sum_{j=1}^{n} e_{ij} I_j}$ (2)	$\frac{D_{ms/i}^{PCC}}{I_{ms/i}^{PCC}} = \frac{D_{ms/i}^{PCC}}{\sum_{j=2}^{n} w_{ij} I_j}$ (6)
Minority Stockholders	$\frac{D_{ms}^{EC}}{I_{ms}^{EC}} = \frac{D_{ms}^{EC}}{\sum_{i=2}^{n}\sum_{j=1}^{n} e_{ij} I_j}$ (3)	$\frac{D_{ms}^{PCC}}{I_{ms}^{PCC}} = \frac{D_{ms}^{PCC}}{\sum_{i=2}^{n}\sum_{j=2}^{n} w_{ij} I_j}$ (7)
Total	$\frac{CD}{CI} = \frac{D_M + D_{ms}^{EC}}{I_M + I_{ms}^{EC}}$ (4)	$\frac{CD}{CI} = \frac{D_{pcs} + D_{ms}^{PCC}}{I_{pcs} + I_{ms}^{PCC}}$ (8)

On the other hand, as parent company stockholders and majority stockholders are the same, the amount of allocated dividend to these groups of users is the same, this is, $D_M = D_{pcs}$. Furthermore, the value of the denominator of the ratios (2) and (6), (3) and (7) will be the same and finally (4) and (8). Thereby, the value of the ratios (1), (2), (3) and (4) will be the same respectively with the value of ratios (5), (6), (7) and (8).

FIGURE 4

Consolidated Entity



Nonetheless, coefficients e_{ij} and w_{ij} for i=1,...,n and j=2,...,n will not be the same when one or more subsidiaries own shares of the parent company because: a) majority stockholders will not be the same as parent company stockholders and b) to calculate coefficients w_{ij} for i=1,...,n and j=2,...,n the interrelationship between parent company and subsidiaries is not taken into account, that is, the value of w_{ij} will not be influenced by the value of the nominal dominium coefficients t'_{i1} for i=2,...,n by contrast with coefficients e_{ij}.

As a result, allocated income to majority stockholders will not be the same as allocated income to parent company stockholders. Neither will allocated income to minority stockholders be the same under entity and parent company criteria. Therefore, the value of the financial ratios will depend on the criterion is used to allocate consolidated income.

With the aim of analyzing the differences, the allocation of consolidated income will be done according to the different criteria to the consolidated entity whose parent company (firm 1), subsidiaries (firms 2 and 3) and their nominal dominium coefficients are represented in figure 4.

Taking into account the nominal dominium coefficients (figure 4), the effective dominium coefficients are calculated and are shown in table 2.

TABLE 2

Effective Dominium Coefficients: Entity Criterion versus Parent Company Criterion

	j = 1	j = 2	j = 3
i = 1	$e_{11} = 0'9839867$	$e_{12} = 0'8299282$ $w_{12} = 0'8434343$	$e_{13} = 0'8547764$ $w_{13} = 0'8686868$
i = 2	$e_{21} = 0'0112645$	$e_{22} = 0'1610160$ $w_{22} = 0'1515151$	$e_{23} = 0'0400883$ $w_{23} = 0'0303030$

i = 3	$e_{31} = 0'0047488$	$e_{32} = 0'0090558$	$w_{32} = 0'0050505$	$e_{33} = 0'1051353$	$w_{33} = 0'1010101$
Total	$\sum_{i=1}^{3} e_{i1} = 1$	$\sum_{i=1}^{3} e_{i2} = 1$	$\sum_{i=1}^{3} w_{i2} = 1$	$\sum_{i=1}^{3} e_{i3} = 1$	$\sum_{i=1}^{3} w_{i3} = 1$

If the results on each firm after eliminating the income arising from intercompany transactions had been respectively; $I_1 = 75.000$, $I_2 = 37.500$ y $I_3 = 10.200$, the attributable income to each stockholder group for each criterion would be as shown in table 3.

TABLE 3

Allocation of Consolidated Income: Entity Criterion versus Parent Company Criterion

Stockholders	Entity Criterion	Parent company criterion
Majority / Parent Company	$I_M = 113.640'02$	$I_{pcs} = 115.489'40$
Minority/2	$I^{EC}_{ms/2} = 7.291'85$	$I^{PCC}_{ms/2} = 5.990'91$
Minority/3	$I^{EC}_{ms/3} = 1.768'13$	$I^{PCC}_{ms/3} = 1.219'69$
Minority	$I^{EC}_{ms} = 9.059'98$	$I^{PCC}_{ms} = 7.210'6$
Total	$CI = 122.700$	$CI = 122.700$

The following considerations are derived from the results:

Firstly, the allocated income to parent company stockholders is higher than the allocated income to majority stockholders. This is produced because:

a) The effective dominium coefficients of the parent company over each one of the subsidiaries are higher than those of majority stockholders and, consequently, the allocated incomes to parent company stockholders are higher,

b) Parent company income is allocated fully to parent company stockholders, whereas the allocated income to majority stockholders is smaller because their effective dominium coefficients are smaller than the unit.

Secondly, applying the parent company criterion, the allocated income to minority stockholders of each subsidiary company is smaller. This is produced because:

a) As the interrelationship between parent company and subsidiaries are not taken into account, the financial effective dominium coefficients of minority stockholders on each one of the subsidiaries are smaller than the economic effective dominium coefficients and, consequently, smaller subsidiaries' income figures are allocated to them.

b) Conversely to entity criterion, a part of the parent company's income is not allocated to minority stockholders.

CONCLUSION AND DISCUSSION

In 1976, Walker (1976) indicated that the main burden of his paper had been to point to anomalies and inconsistencies in the theory and practice of preparing consolidated reports. Indeed, he asserted that consolidated statements had become accepted as a means of corporate reporting well before a rationale for their use had been worked out. Nowadays, some topics in consolidation are still unsettled from a conceptual point of view.

So, although the consolidated financial statements can be issued, applying the parent company theory or the entity theory, the accounting pronouncements in consolidation do not advocate one of them, but they represent a mixture of both theories. The lack of a generally accepted consolidation theory has led both to a misunderstanding in the election of options and alternatives and, sometimes, to inconsistent accounting procedures. Indeed, in the absence of a standard of consolidation procedure, the manner in which certain relationships should be reported in the financial statements is not clear (Strawser, 2000). This has important implications because consolidation seems to add an information signal to users and creates non-neutral responses to decisions situations (Singleton, 2000). In other words, consolidated reports do provide additional value relevant information to that provided in parent company accounts (Abad et al., 2000).

An issue of how minority interest should be dealt with in consolidated financial statements has been traditionally unsettled for long time. In fact, neither the Accounting Research Bulletin (ARB) No. 51 (AICPA, 1959) nor FAS No. 94 (FASB, 1987) adopts an official position to locate minority interests in the consolidated balance sheet. Besides, prior academic literature has not been clear in reporting minority interest in the consolidated statements. Some researchers have advocated that minority interest be reported as a liability (Macleod, 1981; Cooper & Ijiri, 1983; Larsen, 1991; Pacter, 1991). Others have advocated their reporting on a separate item between equity and liabilities (Smolinsky, 1963; Pahler & Mori, 1991). And finally, others have advocated the reporting of minority interests on a separate item in consolidated equity (Scott, 1979; Heufner & Largay, 1992). These opposing views have been tackled with contra-solutions camouflaging minority interest in stakeholders' equity of the consolidated entity (Rosenfield & Rubin, 1986). Clark (1993) indicated that concepts of minority interest are tied directly to the evolution of theories of corporate equity. Nonetheless, none of them have supported the way of reporting of minority interest from a conceptual point of view. Therefore, it's time to require a fundamental rethinking from the point of view of the foundations of accounting.

From a conceptual point of view, minority interest should be considered a component of the consolidated equity because minority stockholders are owners of the consolidated entity and the financial resources they contribute to consolidated entity's equity are driven to increase the investments of the consolidated entity to generate future cash flows. Besides, there is neither obligation to convey assets to minority interest nor a fixed return on the financial resources contributed by minority interest because no liabilities exist. Therefore, this is the criterion that should be picked up in the current legislative accounting developments in consolidation such as is included in IFRS 27. This conclusion can have important implications because it can have an impact on the decisions of users of the information when assessing the performance of the consolidated entity with financial ratios such as dividend per ratio.

When one or more subsidiaries own parent company shares, the majority stockholders are not the same as the parent company stockholders. This difference makes the possibility of two alternatives to allocate income –entity criterion and parent company criterion-. These two criteria involve the distinction in the consolidated equity between the income that is attributable to majority stockholders and minority stockholders or else, between the income that is attributable to parent company stockholders and minority stockholders. Therefore, users of consolidated financial statements will have to know the criteria underlying consolidated financial statements as well as the nature and content of the accounts which are particular to consolidation. In this way, they will be able to analyze and to interpret them. Additionally, they should know the advantages and shortcomings that consolidated financial statements present.

Future research would be useful to expand on the findings of this paper. Studies about other topics in consolidation from the conceptual point of view could be useful to provide a wider scope for reference.

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