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## **Usefulness of Value Added Reporting: A Review and Synthesis of the Literature**

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The role of earnings in external financial reporting is being seriously challenged by the emerging role of value added data. Inclusion of such data in the financial reports of US corporations has been suggested by the American Accounting Association Committee on Accounting and Auditing (1991) and in the international accounting and research literature (e.g. Zubaidur, 1990; Meek and Gray, 1988; Deegan and Hallman, 1991). It is well accepted in UK, Germany and France.

Value added represents the total wealth of the firm that could be distributed to all capital providers, employees and the government. Earnings represents the return to shareholders while other value added components reflect returns to the other stakeholders - i.e. the government, bondholders and employees.

The investigation of value added reporting has been the continuing subject of a descriptive literature which has been complemented by a growing empirical literature. This paper provides an overview of those literatures which have generally focused on the benefits and limitations of value added reporting in the US context.

Section 1 presents the usefulness of value added reporting as viewed in the descriptive and professional literature. Section 2 presents the results from the empirical literature. Section 3 briefly summarizes the paper and presents its conclusions.

### **1. Usefulness of Value Added Reporting: Descriptive Research**

#### *1.1. The Value Added Concept*

The value added reporting issue has been a continuous subject of debate in the international accounting literature (Beattie, 1970; Bentley, 1981; Burchell et al., 1985; Chua, 1977; Pendrill, 1977). Its popularity rose in most European countries starting in the late 1970s. What followed in the United Kingdom was an increased use of value added statements as well as an increased interest by the professional accounting institutes (Gray and Maunders, 1979; Morly, 1978; Renshall et al., 1979; Dewhurst, 1983). In France, extensive use of value added figures has been established for a long time in public company reporting and professional financial analysis, due to its adoption by the "Banque de France" and other large state-owned banks (Force, 1977; Banque de France, 1988; Brodier, 1988; Dormagen, 1994). Officially quoted as a term and an accounting measure in the "developed system" of the Plan Comptable General (1982), it is directly related to the standardized form of the income statement. It is mandatory for individual company accounts and its accounting formula is used for calculating the participation of employees in profit sharing. Growing interest for "Wertschöpfungsrechnung" is also shown by German academics and financial analysts (Haller, 1997). In the US suggestions for its inclusion in companies annual reports have been frequently made (Suojanen,

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1954; Meek and Gray, 1988; AAA, 1991; Cruns, 1982; Riahi-Belkaoui, 1992, 1996). Such suggestions can be traced as far back as the 18th century and from as influential a source as the US Treasury (Cox, 1978). The Accounting Standards Steering Committee (1975) maintained the momentum through its call for a value added statement which identifies how the benefits of an enterprise's efforts are shared among employees, providers of capital, the state and reinvestment.

### *1.2. The Value Added Model*

The value added statement supplements the income statement by reporting the income earned by a large group of "stakeholders" including all capital providers, employees and government (Gray and Maunders, 1980, p.5). Value added can be easily computed by the following rearrangement of the income statement:

$$S-B=W+I+DP+D+T+R \quad (1)$$

or

$$S-B-DP=W+I+D+T+R \quad (2)$$

where:

R = Retained Earnings

S = Sales Revenue

B = Bought-in material and services

DP = Depreciation

W = Wages

I = Interest

D = Dividends, and

T = Taxes.

Equation (1) expresses the **gross value added**, while equation (2) expresses the **net value added**. In both equations, the left side (the "subtractive side") shows the value added (gross or net), and the right side (the "additive side") shows how value added is divided among the stakeholders. Given the lack of mandated uniform guidelines, variations in the treatment of some items do however exist (Morley, 1979; Harris, 1982; McLeay, 1983; Rutherford, 1972, 1980, 1983).

### *1.3. Evaluation of Value Added Reporting*

The descriptive and professional literature has focused on the advantages and disadvantages of reporting a value added statement. These evaluations are based on comparisons to the conventional reporting model which is limited to disclosure of a balance sheet, income statement, and a statement of cash flows.

Some of the most cited advantages include:

1. *Labor Organizing* - Value added reporting produces a good organizational climate for labor by highlighting its contribution to the final results of the firm (Eggington, 1984; McLead, 1984; McLeay, 1983; McSweeney, 1985).
2. *Productivity Bonus Measurement* - Value added reporting provides a more practical way of introducing productivity bonus increases and links rewards to changes in the value added amounts (Morley, 1979a, 1981, 1979).
3. *Explanatory/Predictive Power* - Value added-based ratios can be more useful in explaining and/or predicting economic events of importance to the firm (Morley, 1979; Cox, 1978; Sinha, 1983).
4. *National Income Measurement* - Value added reporting is more congruent with concepts used to measure national income and creates a useful link to the macroeconomic data and techniques used by economists (Maunder, 1985).
5. *Size/Importance Proxy* - Value added reporting acts as a better measure of the size and importance of the firm than sales or capital (Morley, 1981).
6. *Labor Negotiations* - Value added reporting may be more useful than conventional statements to employee groups since it could affect aspirations, particularly those of its negotiating representatives (Maunder, 1985).
7. *Investor's Predictions* - Value added reporting is useful to equity investors as a tool for the prediction of earnings, expected returns and total risks associated with securities (Maunder, 1985).
8. *Economic Development Measurements* - The inclusion of a local value added statement in the host country annual reports of multinationals would provide information to analyze the contributions of these firms to the process of national economic development (Rahman, 1990).
9. *Performance Measurement* - Net value added is a better index of performance than net profit, especially in cases where arbitrary and incorrigible accounting techniques result in recognition of an accounting loss rather than an accounting profit (Sinha, 1983).
10. *Better Proxy* - Value added-based ratio analysis may provide a better index for the measurement of managerial efficiency (Ball, 1968) and vertical integration (Morley, 1978).

Some of the most cited limitations are as follows:

1. *False Assumptions* - Value added relies on false assumptions including: (a) a firm is a team of cooperating groups, (b) the government is a legitimate group, and (c) all legitimate member groups have been included (Morley, 1979).
2. *Possible Confusion* - Value added statement may lead to confusion, especially in cases where wealth (as measured by value added) is increasing while earnings or other value added components are decreasing (Riahi-Belkaoui, 1992).
3. *Possible Management Misdirection* - The inclusion of the value added statement may wrongly lead management to pursue maximization of firm's value added (Gilchrist, 1971).

4. *Fallacies* - The naive approach to the interpretation of a firm's value added statement can create the following five fallacies:

- a. "Increasing value added must increase profit..."
- b. "Increasing value added per unit of labour must benefit shareholders..."
- c. "It is possible to identify in advance an equitable distribution of changes in value added..."
- d. "A relatively high value added per unit of labour represents a superior economic performance..."
- e. "A labour force taking a high proportion of value added does not deserve even high wages." (Rutherford, 1981, pp.31-33).

## **2. Usefulness of Value Added Reporting: Empirical Research**

The empirical research evaluating the usefulness of disclosing value added data - in addition to earning and cash flows data - has been conducted from three perspectives: (1) value added based performance of firms in different contexts, (2) the informational content of value added data in market valuation, and (3) the predictive ability of value added data. A review of each research perspectives follows.

### *2.1. Value Added Performance of Firms*

The value added performance of firms has been examined under different contexts which are summarized in Table 1. The first context concerns the M-Form hypothesis; it stipulates a better performance following the implementation of the multi divisional structure (Hoskinson, 1987). Most studies examining the M-Form hypothesis measured the economic performance of firms before and after implementation of the M-form using either earnings-based or market-based performance indicators (see for example Karpik et al., 1994; Riahi-Belkaoui et al., 1994). The results were mixed. One study by Riahi-Belkaoui (1997a) instead relied on a value added based measure of productivity as a measure of economic performance of the firm before and after the implementation of the M-form. Values for a sample of US firms found that following the implementation, productive efficiency decreased for vertically intergrated firms and increased for related diversified firms. The increase in productivity was not significant for unrelated diversifiers. In sum, the adoption of the M-firm seems to be more beneficial in terms of productivity to those firms adopting a related diversification strategy. The strategy allows the realization of synergistic economies of scope through the joint use of input.

The second context concerns the effect of ownership structure on performance as reflected in the debate regarding the importance of stock ownership on corporate efficiency and strategic development (see for example, Meek et al., 1988, and Riahi-Belkaoui et al., 1994). Empirical examination of the issue led to conflicting results (Cubbin and Leech, 1983) that were attributed to data problems when attempting to construct meaningful measures of performance (Hill and Snell, 1989). The study by Riahi-Belkaoui and Pavlik (1994) argued that the effects of ownership structure and performance are best examined when performance expresses total return rather than being restricted to accounting returns. Using a sample of US firms, they found a significant nonmonotonic relationship between value added-

based performance and ownership structure. Value added-based performance declines up to a turning point before increasing proportionally to the increases in ownership structure measures. The phenomena held regardless of whether ownership structure is measured by management stockholding, stock concentration, or a sum of the two measures. This result is compatible with: (a) a dispersion of ownership and non-value maximizing behavior where holdings are less than 10% ownership, and (b) a convergence of interest for the maximization of value added-based performance between managers and shareholders where there is more than 10% ownership.

The third context concerns the firm performance resulting from the adoption of performance plans. This context follows from theoretical arguments indicating that long term accounting-based performance plans motivate executives to improve firm performance in the long run. Askren et al. (1994) presents results based on a sample of US firms indicating that firms adopting accounting-based performance do not experience any greater gains in accounting return or value-added based productivity measures than do a set of control firms. However, Riahi-Belkaoui (1997a) argued that the nature of the relation varies with the ownership structure of the firm. Using the same sample of firms, his results supported this contention with respect to owner-controlled but not manager-controlled firms.

## *2.2. Market Valuation and Value Added Versus Conventional Data*

The information content of value added data versus conventional earnings and cash flow data has been examined in various studies (Bao and Bao, 1989; Riahi-Belkaoui, 1993; Riahi-Belkaoui and Fekrat, 1994; Riahi-Belkaoui and Picur, 1994; Riahi-Belkaoui, 1997b). Several studies relied on various market valuation models (Litzenberger and Rao, 1971; Easton and Harris, 1991; Barlev and Levy, 1979; Ohlson, 1988, 1995). Table 2 results confirm the thesis; namely, the association between firm value and value added measures of performance is stronger than the association between firm value and either earnings or cash flow measures. The results hold for both linear and nonlinear valuation models. When the research question examined the functional specification relating earnings or net value added to market invested returns, the models relating accounting and market returns have more explanatory power under the following conditions: (a) the accounting returns are expressed by the relative changes in net value added, and (b) the relation is nonlinear, convex-concave function (Riahi-Belkaoui, 1996).

## *2.3. Predictive Ability of Value Added Data*

The predictive ability of value added data has been examined in three studies that differ in terms of the nature of prediction or the economic event predicted (see Table 3).

The first study by Karpik and Belkaoui (1989) follows from earlier works establishing the empirical/theoretical relationship between accounting variables and market risk (Ismael and Kim, 1989). It tested the incremental abilities of value added measures to explain cross-sectional variation in market betas beyond that provided by risk measures which are either earnings or cash flow based. The results based on a sample of US firms point to the superior explanatory power of value added variables in explaining the variability in market betas.

The second study by Bannister and Riahi-Belkaoui (1991) follows from previous empirical endeavours to investigate the characteristics differentiating merger target firms from other firms (Belkaoui, 1976, 1978). The study instead relies on value added to: (a) assess the differences in the characteristics of target firms compared to their industries, and (b) explain target firms abnormal returns during the takeover period. The results indicated that: (a) takeover targets have lower value added ratios than other firms in their industries in the year preceeding the completion of the takeover, and (b) target firm abnormal returns observed during the takeover period are positively related to the difference between target firm and average industry value added to total assets. The results suggest that while acquired firms are on the average under performers, acquiring firms value the access to and possibly the ability to redistribute, the resources of target firms.

The third study by Bao and Bao (1996) is consistent with other studies regarding time series properties of accounting earnings. It examined the time series properties of value added based measures using four well-known time series models; the pure mean reverting model, the mean reverting model with a growth trend, the random walk model, and the random walk with a drift term. Using a sample of US firms, the results showed that the value added based measures can be described as a random-walk process, which has the lowest forecast errors in terms of two error metrics: the autocorrelation coefficient test and a predictability test. The results are consistent with those of annual earnings and stock prices.

### **3. Summary and Conclusions**

This paper reviewed the descriptive and empirical literature in the usefulness of value added data. Coincidentally, the use of value added reporting is on the increase worldwide (Deegan and Hallan, 1991). Calls have been made for its adoption by US corporations.

The current disclosure system does not mandate the disclosure of the information needed to compute the value added metric. The descriptive and empirical results summarized in this paper make a favorable case for the adoption of value added reporting in the United States. The cost of reporting of this data should be relatively immaterial given the availability of all the information comprising value added. Given the low cost relative to the potentially much greater benefits shown in this paper, releasing value added reports, or disclosing the underlying data needed to compute value added, appears to be an improvement over the present US reporting system. In addition, the FASB's Statement of Financial Accounting Concepts No. 5 (1984) notes that supplementary financial statements can be useful for introducing and gaining experience with new kinds of information. The American Accounting Association Committee on Accounting and Auditing Measurement (1991) has also recommended that value added be considered for mandatory disclosure. In sum, a strong case can be made for both mandatory disclosure and increased research on the usefulness of value added reporting in the US context.

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Table 1: Value Added Performance of Firms

Study	Context	Results
1. Riahi-Belkaoui (1997c)	Multidivisional structure and diversification strategy	Following the M-form implementation, productive efficiency decreases for vertically intergrated firms and increases for related diversified firms. The moderate increase in productivity is not significant for unrelated diversifiers.
2. Riahi-Belkaoui and Pavlik (1994)	Effects of ownership structure	There is a significant nonmonotonic relationship between value added performance and ownership structure.
3. Askren et al. (1994)	Performance plan adoption	Firms adopting accounting-based performance plans do not experience any greater gains in accounting return or productivity measure than do a set of control firms.
4. Riahi-Belkaoui (1997a)	Performance plan adoption and ownership structure	Following performance plan adoption, profitability will increase in owner-controlled firms, but not manager-controlled firms.

**Table 2: Market Valuation and Value Added Versus Conventional Data**

Study	Research Question	Model Used	Results
1. Bao and Bao (1989)	Association between productivity and firm value	Litzenberger and Rao (1971) valuation model	The association between firm value and productivity in the oil refining and apparel industries is stronger than between firm value and earnings measures.
2. Riahi-Belkaoui (1993)	Relative and incremental content of value added, earnings and cash flow	Earnings valuation model	Value added information can supply some explanatory power beyond that provided by earnings or cash flow measures.
3. Riahi-Belkaoui and Fekrat (1994)	Merits of derived accounting indicator numbers	Accounting indicator numbers (Barlev and Levy, 1979)	The derived performance indicator numbers based on net value added had lower variability and higher persistency than corresponding numbers based on either earnings or cash flows.
4. Riahi-Belkaoui and Picur (1994)	Relative and incremental information content of value added and earnings	Combined earnings and value added valuation model	The study confirms an association between both relative changes in earnings and net value added and the relative changes in security prices.
5. Riahi-Belkaoui and Picur (1994)	Information content of level versus change in net value added	Book value and wealth models	Both the levels of net value added and the changes in net value added play a role in security valuation.

**Table 2: Market Valuation and Value Added Versus Conventional Data  
(Continued)**

<b>Study</b>	<b>Research Question</b>	<b>Model Used</b>	<b>Results</b>
6. Riahi-Belkaoui (1996)	Functional specification relating unexpected earnings or net value added to market-adjusted returns	Linear and nonlinear valuation models	Models relating accounting and market returns have more explanatory power when: (a) the accounting returns are expressed by the relative changes in net value added, and (b) the relation is a nonlinear convex-concave function.
7. Riahi-Belkaoui (1997b)	Informational content of net value added components disclosed concurrently with earnings	Earnings valuation model	Earnings component of value added is viewed favorably by the market while the nonearnings components (interest, tax and wages) are negatively related to market return.

**Table 3: Predictive Ability of Value Added Data**

Study	Nature of Prediction	Model Used	Results
1. Karpik and Riahi-Belkaoui (1989)	Explaining market risk	Market model	Value added variables process incremental information beyond accrual earnings and cash flows in the context of explaining market risk.
2. Bannister and Riahi-Belkaoui (1991)	Explaining target firm's abnormal returns during the takeover period	Market model	Takeover targets have lower value added to total ratios rather than other firms in their industries in the year preceding the completion of the takeover, and target firm abnormal returns observed during the takeover period are related to the difference between target firm and average industry value added.
3. Bao and Bao (1996)	Examining the structure and the forecasting accuracy of firm value added measure	Four time series models	The four value added measures can be diversified as a random walk model. The process/model has the lowest forecast errors in terms of two error metrics.