

## **The Dividend Irrelevance of Miller and Modigliani (1961), The Sarbanes-Oxley Act of 2002, and Rule 702 of the Federal Rules of Evidence of 2000**

### **1. Introduction**

According to the theory of financial management, shareholder wealth can be created in terms of three main decisions, the investment decision, the financing decision, and the dividend or distribution decision. In 1961 Miller and Modigliani (henceforth MiMo 1961) concluded that dividend policy was irrelevant. De Angelo and De Angelo (2006, p. 294) state that MiMo's 1961 dividend irrelevance theorem forms the foundational bedrock of modern corporate finance theory. Since MiMo 1961 published their article, dividend irrelevance has occupied a prominent position in the literature of financial and corporate management, and has been reported in a manner that could be interpreted as endorsing the validity of this finding.

The Sarbanes-Oxley Act of 2002 (henceforth SOX), in particular Section 807 §1348 concerning criminal penalties for defrauding shareholders of publicly listed companies, in conjunction with Rule 702 of the Federal Rules of Evidence of 2000 (henceforth Rule 702), places considerable emphasis on the importance of sound research methodology and rigorous epistemology. In short, the compliance requirements of the financial management of listed companies have been substantially extended, especially in comparison with legislation of the early 1930s, such as the Securities Act of 1933 and the Securities and Exchange Act of 1934. Yet, little discussion of these changes and the implications for financial management have so far appeared in print. Since MiMo 1961 has been around for 50 years, and forms an integral part of the core of financial management, it is worth examining their dividend irrelevance analysis from the perspective of sound research methodology and rigorous epistemology in order to establish the extent, if any, to which it satisfies the requirements of SOX and Rule 702. From these considerations the title of this article is drawn.

## 2. The research methodology of MiMo 1961

This section reports the research methodology of MiMo 1961. It evaluates the extent to which they have been able to attain the primary purpose as stipulated in their article, notes their confusion of the value of the firm with the value of the firm's shares, examines their reliance on unstated assumptions, and disregard for important differences between the concepts of income and capital, and shows that using their interpretive logic, their model reveals the irrelevance of dividend, financing, and investment decisions.

### 2.1 Purpose of the research of MiMo 1961

MiMo 1961 state on the first page of their article that the primary purpose of their research is to investigate the role of dividends as a determinant of market value, with statements such as:

“... this paper will attempt to fill the existing gap in the theoretical literature on valuation [of the effect of a firm's dividend policy on the current price of its shares]” (1961: 411),

and,

“... this paper which is concerned primarily with the effects of dividend policy on market valuation” (1961, p. 427).

The reaffirmation of the primary purpose in Section IV “The Effects of Dividend Policy Under Uncertainty” is important for it occurs towards the end of the article after these authors have performed a number of manipulations to the 30 primary equations that comprise their model of dividend irrelevance. They follow this statement on page 427 with another statement (also on page 427) that:

“For even without a fully-fledged theory of what *does* determine market value under uncertainty we can show that dividend policy at least is *not* one of the determinants” (1961, p. 427).

Bear in mind that MiMo 1961 attribute the problem surrounding the impact of the payout ratio on share price to the:

“... absence in the literature of a complete and reasonably rigorous statement of those parts of the economic theory of valuation bearing directly on the matter of dividend policy” (1961, p. 411).

MiMo 1961 construct a model under the assumptions of perfect competition (1961, pp. 412 – 426) to investigate the core problem they have identified. The model extends to 30 primary equations, of which 25 feature the cost of capital denoted as  $\rho$ , and four of these equations feature both  $\rho$  and the internal rate of return denoted as  $\rho^*$ .

If an adequate and substantial theory of what determines market value does not exist, how can anyone know *a priori* whether dividends are, or are not, a determinant of market value? Is it legitimate and reasonably defensible from the perspective of sound research methodology to exclude dividends as a determinant of market value from the model merely because arithmetically they can be shown, under restrictive non-operational conditions as well as non-disclosed conditions (that will be discussed later), to be a non-determining variable in market value? How scientific is this and how does this enable them to “... fill the existing gap in the theoretical literature on valuation [of the effect of a firm’s dividend policy on the current price of its shares]” (1961, p. 411), which they state is the purpose of their research? Since the primary purpose of the article is to investigate the role of dividends as a determinant of market value, to exclude them, especially at such a late stage of the article, namely on page 427 of an article that covers 22 pages, from page 411 to page 433 (i.e. after some 70% of the material has been presented), could be interpreted as side-stepping the primary purpose of their article which they state was motivated by the opening statement of their article:

“The effect of a firm’s dividend policy on the current price of its shares is a matter of considerable importance ...” (1961, p. 411).

This opening statement is presented as a matter of fact, and is followed in the same paragraph with the following four research questions, which their model and research methodology do not enable them to answer.

- (i) *“Do companies with generous distribution policies consistently sell at a premium over those with niggardly payment?”*;
- (ii) *“Is the reverse ever true?”*;
- (iii) *“If so, under what conditions?”*; and,
- (iv) *“Is there an optimum payout ratio or range of ratios that maximizes the current worth of the shares?”*

MiMo 1961 do not and cannot answer these questions which flow from the primary purpose of their article because the model they use is construct deficient and excludes the variable they seek to investigate.

## 2.2 Value of the firm confused with value of the firm's shares

MiMo 1961 rewrite their equation [2] (1961, p. 413) as:

$$V_t = \frac{1}{1+\rho^{(t)}} [D(t) + n(t)p(t+1)] \quad (1)$$

Using the notation:

$V_t$  = current market value of the firm, or equivalently the price of its individual shares,  $p(t)$ ;

$\rho$  = is the cost of capital, the discount rate;

$D(t) = n(t)d(t)$  = the total dividends paid during  $t$  to holders of record at the start of  $t$ ;

$n(t)$  = the number of shares of record at the start of  $t$ ; and,

$p(t)$  = the price of the individual shares.

The above equation says that the value of the firm at time  $t$ , is determined by its dividend in time  $t$  plus its share price in time  $(t+1)$ , with both the dividend and share price components discounted at the same cost of capital,  $\rho$ . In other words, total shareholder return is a function of income in the form of dividends and capital gains or losses that derive from changes in share price. They rewrite their equation [2] as equation [3] (1961, p. 413):

$$V_t = \frac{1}{1+\rho^{(t)}} [D(t) + V(t+1) - m(t+1)p(t+1)] \quad (2)$$

where:

$m(t+1)$  = the number of new shares (if any) sold during  $t$  at the ex-dividend closing price  $p(t+1)$  so that,

$n(t+1) = n(t) + m(t+1)$  = total number of shares on issues as at  $(t+1)$ .

Equation (2) (MiMo 1961 equation [3]) says that the value of the firm is determined by three factors, dividends in period  $t$ , plus market value or price in time  $(t+1)$ , minus the market value or price of new shares issued by the firm, with all three factors being discounted at the same cost of capital  $\rho$ . This is not quite correct. New issues of shares will dilute the value of existing ordinary shares as the “cake” is divided into smaller slices, but this does not necessarily mean that the cake has changed size, thus apart from liquidity issues under certain circumstances, the value of the firm is not affect by the number of shares on issue. Increases (share splits) or decreases (share consolidations) in the number of shares should not affect the value of the firm, but will affect the value of the shares. In this regard it is useful to recall

that throughout their modelling, MiMo 1961 assert that  $D(t) = I(t) = m(t+1)p(t+1)$ , and further assert that any change in any one of these variables is offset by an equal but opposite change in one of the other variables.

### 2.3 Unstated assumptions: legislation irrelevant, and, no conceptual differences between income and capital

Apart from the intellectual misconception regard the difference between the value of the firm and the value of the firm's shares, the interpretation MiMo 1961 attribute to the third term of equation (2) (MiMo 1961 equation [3]) cannot pass without comment. Consider their statement that, "... For the higher the dividend payout in any period the more the new capital that must be raised from external sources to maintain any desired level of investment" (1961, p. 413). None of the MiMo 1961 equations thus far in their article, [1], [2], or [3] enable this interpretation, nor have they provided an assumption anywhere in their article that justifies this interpretative finding. This interpretation effectively says that the payment of a dividend not only includes distributable profits but also accumulated reserves that form part of the firm's capital, and having stripped equity capital the firm is obliged to raise replacement capital by way of an issue of new shares in order to ensure that the desired level of investment is maintained for the continued liquidity and solvency of the firm in its normal course of business as a going concern. For them, new capital does not include debt, only new issues of shares. Since they make no mention of the possibility of raising debt as an alternative to new issues of shares, can this be interpreted to mean that the firm has hit its maximum debt capacity ?

It is untenable to contemplate that *bona fide* corporate executives would intentionally endanger the liquidity, solvency and viability of the company by distributing capital through the front door with the intention of raising new equity capital or debt through the back door, with the waxing and waning of capital markets since time immemorial. From time to time companies return surplus or excess capital to shareholders, and state so clearly and unambiguously so as to distinguish them from returns in the form of dividends.

MiMo 1961 continue in similar vein in their subsequent paragraph when they state: "The fact that the dividend decision affects price ... in two conflicting ways – directly via  $D(t)$  and inversely via  $-m(t)p(t+1)$  – is, of course, precisely why one speaks of there being a dividend

policy problem.” (1961, p. 413). In so doing, MiMo 1961 demonstrate a disregard for the difference between the concepts income and capital, as well as a disregard of company law concerning the nature, definition and purpose of dividends. These intellectual misconceptions render their model unsatisfactory from the perspectives not only of financial management and financial valuation, but also from the perspective of corporate and securities law, economics, and accounting principles that are prescribed by the SEC, FASB, and GAAP. Their assertion that  $D(t) = I(t) = m(t+1)p(t+1)$  is far fetched.

This interpretation is reliant on two implicit assumptions that have not been disclosed, *firstly*, that there are no accounting, economic and legal differences between income and capital items, and *secondly* that company law with regard to dividends and capital is irrelevant, as is legislation such as the Securities Act of 1933, the Securities and Exchange Act of 1934. Since they have not stated these assumptions as being necessary for their model, from the perspective of sound research methodology these interpretations and conclusions are unjustified. Sound research methodology requires the conclusions reached be confined to those justified by the model and supporting data. Dividends, properly constituted in terms of corporate law, affirm the profitability and ability of a company to pay dividends without endangering its ability to survive and succeed, and should never be paid if the consequence is capital depletion, or restrictive and standard loan covenant infringement.

#### 2.4 Unstated assumption: non-zero growth rates and capacity utilization

##### *Non-zero growth rates*

In the same paragraph that has already received attention in the above sub-section, namely paragraph two on page 413, another issue arises. MiMo 1961 state: “... will the increase in the cash payments to the current holders be more or less than enough to offset their lower share of terminal value?” (1961, p. 413) which raises questions about the growth rate of the company. Even in a zero growth situation a company would maintain reserves and sufficient levels of equity as part of a prudent strategy to be able to exploit new opportunities and changes in the business cycle that periodically occur; with the possibility of negative growth always present, it would be reckless to denude a company of its capital. Yet again, MiMo 1961 have not stated by way of assumption or in any other way that their analysis is confined to a zero growth company and economy. Even with positive growth, that is often associated with a requirement for an increase in fixed and current assets, there may be no need for

additional capital if productivity can be raised, waste (defined as anything that does not add value) is reduced, the company is not operating at full capacity, and the possibility of sub-contracting exists.

If negative growth, defined as situations where  $\rho > \rho^*$  (MiMo 1961, p. 417), is the result of a decline in sales and production, then it would be reasonable to expect an excess of capacity of fixed assets and current assets. The surplus of working capital could generate substantial proceeds when sold, and the excess productive capacity of the firm's fixed assets no longer requires an increase in investment to match the size of the dividend. What this effectively means is that MiMo 1961 equation [4]:

$$m(t+1)p(t+1) = I(t) - [X(t) - D(t)] \quad (3)$$

where:

$I(t)$  = the given level of the firm's investment or increase in its holdings of physical assets in time period  $t$ ;

$X(t)$  = the firm's total net profit for the period  $t$ ; and,

$D(t)$  = the total dividends paid during  $t$  to holders of record at the start of  $t$ ,

is incorrect, and should be:

$$m(t+1)p(t+1) \neq I(t) - [X(t) - D(t)] \quad (4)$$

and this would also apply to situations where growth is positive because of the enhanced productivity of capital investment.

Thus, where growth is non-zero equation (3) (MiMo 1961 equation [4]) is wrong, and this further dislocates an already weak model. None of the 30 primary equations used by MiMo 1961 enable such interpretation, findings or conclusions and this yet again constitutes *prima facie* evidence that their model is not only flawed and construct deficient, but substantially remote from the primary purpose of their research.

### *Capacity utilization*

Nowhere in their article do MiMo 1961 state that their model requires strict adherence to the assumption of complete capacity utilization in the firm or across the industry and economy. If spare capacity existed in the firm, industry or economy, the dividend paid  $D(t)$  would not require investment replenishment  $D(t) = I(t)$ , in which case  $D(t)$  could exceed  $I(t)$  until a capacity constraint becomes effective. Even if all the firms in the industry were operating at full capacity and even if there was no spare capacity in the industry, it is not always the case that the only way to increase output is to raise fresh capital from new issues of ordinary

shares to finance additional investment. Imports, sub-contracting, over-time and double shifts and technical progress are all possibilities and can result in an increase in output without the need for additional capital investment. Moreover, in the case of profitable firms additional investment in working capital can be spontaneously financed in which case the firm does not need to commit additional funds. Since the function of current assets is to ensure the effective utilization of the investment in long-term assets, an improvement in the cash conversion cycle can reduce the amount of capital required as well as the associated financing costs by stretching accounts payable, increasing inventory turnover, and accelerating accounts receivable (Paulo, 1990a, pp. 12-13; Paulo, 1990b, pp. 5-6; Paulo, 1990c, pp. 10-11; Paulo, 1990d, pp. 12-13; Paulo, 1990e, pp. 10-11; Paulo, 1990f, pp. 13, 17; Paulo, 1990g, pp. 18-19).

## 2.5 Investment, financing, and dividend decisions, as well as total net profit are all irrelevant

A dividend in the normal course of business comes about as a result of the successful application of capital. It is treated as income by shareholders, the tax authorities, and investment analysts. It is not capital, and together with earnings is a way of measuring the return earned from the successful application of capital. If distributable profit is not distributed but it retained, it forms part of equity capital. In total disregard of these conceptual differences, MiMo 1961 equate these distinctly different concepts, "...the two dividend effects must always exactly cancel out so that the payout policy to be followed in  $t$  will have *no* effect on the price at  $t$ ." (1961, p. 413), and generate their equation [4]:

$$m(t+1)p(t+1) = I(t) - [X(t) - D(t)] \quad (3)$$

Equation (3) (MiMo 1961 equation [4]) says that the quantity of new equity finance raised from the issue of new shares ( $m(t+1)p(t+1)$ ) is equal to the increase in investment ( $I(t)$ ) minus total net profit ( $X(t)$ ) less dividends ( $D(t)$ ). Since MiMo 1961 have defined:

$$m(t+1)p(t+1) = I(t) - D(t),$$

equation (3) (MiMo equation [4]) can be re-written as:

$$m(t+1)p(t+1) = m(t+1)p(t+1) - [X(t) - m(t+1)p(t+1)] \quad (5)$$

or as,

$$I(t) = I(t) - [X(t) - I(t)] \quad (6)$$

or as,



$$D(t) = D(t) - [X(t) - D(t)] \quad (7)$$

When (5) is rearranged:

$$m(t+1)p(t+1) = m(t+1)p(t+1) - [X(t) - m(t+1)p(t+1)]$$

$$m(t+1)p(t+1) - m(t+1)p(t+1) = - [X(t) - m(t+1)p(t+1)]$$

$$-X(t) + m(t+1)p(t+1) = 0$$

$$X(t) = [m(t+1)p(t+1)] \quad (8)$$

which says that the firm's total net profit in period  $t$  is equal to the funds generated from the new issue of shares.

When (6) is rearranged:

$$I(t) = I(t) - [X(t) - I(t)]$$

$$I(t) - I(t) = - [X(t) - I(t)]$$

$$- [X(t) - I(t)] = 0$$

$$X(t) = I(t) \quad (9)$$

which says that the firm's total net profit in period  $t$  is equal to new investment.

When (7) is rearranged:

$$D(t) = D(t) - [X(t) - D(t)]$$

$$D(t) - [X(t) - D(t)] - D(t) = 0$$

$$X(t) = D(t) \quad (10)$$

which says that the firm's total net profit in period  $t$  is equal to the dividend.

When considered in combination, equations (5), (6), and (7) say that:

$$X(t) = I(t) = m(t+1)p(t+1) = D(t) \quad (11)$$

i.e. net profit = new investment = new shares issued = dividend paid.

When MiMo 1961 substitute their equation [4] into their equation [3], the  $D(t)$  cancel and the value of the firm at the beginning of  $t$  becomes their equation [5]:

$$V_t = \frac{1}{1+\rho^{(t)}} [X(t) - I(t) + V(t+1)] \quad (12)$$

Equation (12) (MiMo 1961 equation [5]) says that the value of the firm in period  $t$  equals the firm's total net profit for period  $t$ , minus the firm's investment made in period  $(t+1)$ , discounted at the cost of capital. At this point in their analysis MiMo 1961 become shy or bored, for their equation [5] can be reconfigured in terms of the identities they themselves specify to yield a result that reveals other irrelevance conclusions, if the consistency of their analysis and interpretive logic applied thus far is continued a bit further.

Since  $X(t) = I(t) = m(t+1)p(t+1) = D(t)$ , equation (12) (MiMo 1961 equation [5]) can be re-written:

$$V_t = \frac{1}{(1+\rho)^t} [0 + V_{(t+1)}]$$

$$\text{i.e. } V_t = \frac{V_{(t+1)}}{1+\rho^{(t)}} \quad (13)$$

This equation says that the value of the firm in period  $t$  equals the discounted value of the firm in period  $(t+1)$ . Since neither  $D(t)$ ,  $m(t+1)p(t+1)$ ,  $I(t)$ , nor  $X(t)$  feature in:

$$V_t = \frac{V_{(t+1)}}{(1+\rho)^t} \quad (13)$$

using the interpretative logic applied by MiMo 1961 thus far in their article, it can be said that the dividend decision, the additional financing decision, the investment decision as well as the firm's total net profit are irrelevant. In this regard, it is useful to recall and explicitly state their interpretative argument:

“Since  $D(t)$  does not appear directly among the arguments and since  $X(t)$ ,  $I(t)$ ,  $V(t)$  and  $\rho_t$  are all independent of  $D(t)$  (either by their nature or by assumption) it follows that the current value of the firm must be independent of the current dividend decision.” (1961: 414).

If the investment, financing and dividend decisions, as well as the firm's total net profit are irrelevant, as suggest by the equation:

$$V_t = \frac{V_{(t+1)}}{(1+\rho)^t} \quad (13)$$

then only  $\rho$ , the cost of capital, and time  $(t+1)$  are the determinants of value. Well, perhaps it was motive and not gravity that was responsible for the fall of Newton's apple !

If the same interpretive logic were applied to valuation criteria such as the price earnings ratio, the price to book value ratio, and the price to sales ratio, none of which feature investment, financing or dividends explicitly, it would be laughable to conclude that investment, financing and dividend decisions are irrelevant to the value of the firms being considered. Specifically, consider the Gordon-Shapiro dividend growth model (Gordon and Shapiro, 1956, pp. 102-110):

$$P_0 = \frac{D_1}{(k_s - g)} \quad (14)$$

where:

$P_0$  = expected share price in time period zero;

$D_1$  = the expected dividend time period one;

$k_s$  = the cost of capital or discount rate of ordinary shares; and,

$g$  = the growth rate.

Since  $D_1 = \text{EPS}_0(\text{payout ratio})(1+g)$ ,

where:

$\text{EPS}_0$  = earnings per share in period zero,  
the value of a firms shares is:

$$P_0 = \frac{\text{EPS}_0(\text{payout ratio})(1+g)}{(k_s - g)} \quad (15)$$

which can be rearranged, by dividing by  $\text{EPS}_0$  to yield:

$$P/E = \frac{(\text{payout ratio})(1+g)}{(k_s - g)} \quad (16)$$

which is none other than an algebraic expression of the price earnings ratio. Since  $D_1$  appears in neither equation (15) nor (16), can it be said *a priori* that  $D_1$  is independent or irrelevant to equations (15) and (16) when a deliberate and conscious decision has been made to replace  $D_1$  with an accounting identity as a substitute for  $D_1$  in equation (16) ? Invoking the interpretive logic of MiMo 1961 this can be done and a firm conclusion reached regarding dividends.

By definition,  $\text{ROE} = \frac{\text{EPS}_0}{\text{BV}_0}$ ,

where:

$\text{ROE}$  = return on equity;  
 $\text{EPS}_0$  = earnings per share in period zero; and,  
 $\text{BV}_0$  = book value of equity in period zero.

in which case, equation [b] can be rewritten:

$$P_0 = \frac{\text{BV}_0 (\text{ROE})(\text{payout ratio})(1+g)}{(k_s - g)} \quad (17)$$

When equation (17) is divided by  $\text{BV}_0$  the result is the price to book value ratio. Since  $D_1$  does not appear in equation (17) can it be said *a priori* that  $D_1$  is independent or irrelevant to this equation ? Yet again an accounting identity has been used to express the Gordon-Shapiro dividend model in terms of an equivalent equation whose focus is return on equity, book value, and the payout ratio, and not dividends.

If equation [b] is re-written in terms of the profit margin, specifically:

Profit margin =  $\frac{\text{EPS}_0}{\text{Sales per share}}$ , then, equation [b] becomes:

$P_0 = \frac{\text{Sales}_0 (\text{Profit margin})(\text{payout ratio})(1+g)}{(k_s - g)}$ , which if divided by  $\text{Sales}_0$  results in:

$$\frac{P_0}{\text{Sales}_0} = \frac{(\text{Profit margin})(\text{payout ratio})(1+g)}{(k_s - g)} \quad (18)$$

Equation [e] is an expression for the price to sales ratio. Since  $D_1$  does not appear in equation (18) can it be said *a priori* that  $D_1$  is independent or irrelevant to this equation? Yet again an accounting identity has been used to express the Gordon Shapiro dividend model in terms of an equivalent equation whose focus is return on sales, profit margin, and the payout ratio, and not dividends.

## 2.6 Perfect competition and $\rho$ and $\rho^*$

In Section 2.4 of this article, non-zero growth rates were discussed from the perspective of unstated assumptions necessary to underpin the analysis and interpretive logic of MiMo 1961. In contrast, this section discusses non-zero growth rates from the perspective of perfect competition.

MiMo 1961 invoke the assumptions of perfect competition and stipulate the condition of perfect competition as the basis for the model they use to generate the conclusion that dividends are irrelevant. With regard to perfect competition it is insightful to consider the position of Lachmann (1977, p. 150), citing Hayek (1949, p. 94), “competition is by its nature a dynamic process whose essential characteristics are assumed away by the assumptions underlying static analysis.” Similar sentiments are expressed by O’Driscoll and Rizzo (1985, p. 97) that in economic theory “competition” means the opposite of its meaning either in ordinary language or in common sense economic discussions on economics. Perfect competition is a theory of states, not of processes. Competition is in fact a continuous process and not a set of conditions, and perfect competition should be a perfectly continuous process. Nishiyama and Lenke (1984, p. 257) observe that the usual procedure of starting the analysis with a situation in which all the facts are supposed to be known is a state of affairs which economic theory curiously calls “perfect competition” is absurd precisely because it leaves no room whatsoever for the activity called competition which is presumed to have already done its task. This state of economic activity is most clearly revealed by

Hayek when he writes that in the case of perfect competition, “... its essential characteristics are assumed away by the assumptions underlying static analysis ...” (cited in O’Driscoll and Rizzo (1985, p. 97). Thus, “... the theory of perfect competition analyzes the state of affairs or equilibrium conditions that would exist if all competitive activity ceased. *It is not an approximation but the negation of that activity.*” (O’Driscoll and Rizzo, 1985, p. 94).

From the perspective of analysis, perfect competition “... usually describes the order which competition produces as an equilibrium” (Nishiyama and Lenke, 1984, p. 259), in which case the numerical values of  $\rho$  and  $\rho^*$  are likely to be the same, namely  $\rho = \rho^*$ . Since MiMo 1961 do not relax the assumptions of perfect competition until *Section V Dividend Policy and Market Imperfections* on page 431, the basis of their analysis commencing on page 416 where they introduce  $\rho^*$ , the expected or internal rate of return, that has a different numerical value from  $\rho$ , the cost of capital or discount rate, with  $\rho^*$  featuring in their equation [12] (1961, p. 417), their equations [22], [22a], [22b] and [23] (1961, p. 421), their equation [25] (1961, p. 423), and their equation [27] (1961, p. 426) is inappropriate. Up until this point, the assumptions of perfect competition and general equilibrium have not been relaxed or revoked and form the substrate of their modelling and analysis. With the inclusion of  $\rho^* \neq \rho$  (internal rate of return differs from the cost of capital) in their equations [21], [22], [22(a)], [22(b)], [23] and [25], MiMo 1961 are able to introduce the topic of growth (positive or negative) into their analysis and discussion, and this adds a dimension of unintended consequences for their findings. With growth as evidenced by  $\rho^* > \rho$  (internal rate of return exceeds the cost of capital in which case net present value > zero), capital invested is more productive than in the case where  $\rho^* = \rho$  (in which case by definition net present value equals zero). Growth is not synonymous with ‘expansion without an increase in yield’ and since growth can be defined:

[ $G = ROE^* \text{retention ratio}$ ],

an increase in ROE (which is none other than an increase in the internal rate of return,  $\rho^*$ ) can be accompanied by a decrease in the retention ratio (increase in the payout ratio) which amounts to an increase in the dividend per share, and does not require an accompanying equivalent new issue of ordinary shares to provide for the replenishment of capital distributed as a dividend.

If anything, when MiMo 1961 introduce the topic of growth and  $\rho^* > \rho$  situations into their article, they further weaken their argument and conclusion of dividend irrelevance because the amount of capital invested generates higher returns than under a  $\rho = \rho^*$  regime. This

means that  $D_t > I_t$  and not  $D_t = I_t$  which underlies their analysis explicitly stated in their equation [4], and that impacts their subsequent equations, and conclusions. With negative growth,  $\rho^* < \rho$ , the reverse holds true, and  $I_t > D_t$ , and effectively capital is being consumed in the production transformation process. In essence, situations where  $\rho^* \neq \rho$  give rise to situations where  $D(t) \neq I(t) \neq X(t) \neq m(t+1)p(t+1)$ , and this substantially dislocates the MiMo 1961 analysis and model. It is poor style for MiMo 1961 to commence a discussion and analysis of  $\rho \neq \rho^*$  on page 416 when presenting an “Investment Opportunities Approach” to the valuation of shares, without relaxing the assumptions of perfect competition.

### **3. MiMo 1961, the Sarbanes-Oxley Act of 2002 and sound research methodology**

The finance industry and profession are required to comply with legislation, much of which is well publicized, and includes the Securities Act of 1933, the Securities and Exchange Act of 1934, the Investment Advisers Act of 1940, and the Sarbanes-Oxley Act of 2002 (henceforth SOX).

Sound research methodology requires performance and valuation metrics that ethically and accurately report, describe and explain the phenomena being researched (Cooper & Emory, 1995, p. 9; Sekaran, 2000, pp. 19-34; Cavana et al., 2000, pp. 27-44), and that these metrics be *valid, reliable* and *interpretable* (Cooper and Emory, 1995, pp. 148-156; Ghauri et al., 1995, pp. 46-51; Davis, 1996, pp. 172-180; Sekaran, 2000, pp. 204-210; Cavana et al., 2000, pp. 210-215). A model, performance metric or decision rule that is to be used by financial economists, statisticians, actuaries, managers, analysts, bankers, consultants and other professionals, whether it be for appraisals, valuations, asset pricing or asset allocation, needs to satisfy the minimum requirements of sound research methodology and sound ethics.

From the analysis and discussion presented in this article, it is not possible to justify the conclusions of MiMo 1961 that the dividend policy is irrelevant in terms of their model and analysis; neither is it possible to substantiate their claim that they have contributed to the theory of dividend policy in a way that enables a better understanding of the impact of dividends and payout ratios on shareholder wealth. Assumptions that are critical to their interpretation of the equations that comprise their model are absent. Crucial differences between the concepts income and capital from the perspectives of accounting, economics, and law are disregarded. Postulates, such as those concerning the equivalence of net profit,

dividends, investment and issues of new shares are presented as if they were factual. Their interpretive logic leaves much to be desired. Epistemologically, their model is quite unsatisfactory, and as a consequence it is hardly surprising have not done what they purport to have done. The epistemological insufficiencies are of such a nature that their model is neither valid nor reliable, is mis-specified, and unambiguous interpretation of models with these types of deficiencies, is not possible.

Attempts to apply MiMo's 1961 dividend model to corporate financial decision-making are likely to preclude meaningful interpretation, evaluation, and decision making, to confound sound and ethical research, and may have legal implications, not only in terms of the Securities Act of 1933 and the Securities Exchange Act of 1934, but also in terms of the SOX, and Rule 702 of the Federal Rules of Evidence (henceforth Rule 702).

In 2000 an important change was made to the rules of evidence in the USA with the enactment of the new Rule 702 that replaced the Daubert rule. Rule 702 attempts to provide guidance for the courts and litigants regarding the factors that need to be considered in determining whether an expert witness's testimony is reliable. The new Rule 702 states:

*"If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise if:*

- a) the testimony is based upon sufficient facts of data,*
- b) the testimony is the product of reliable principles and methods, and,*
- c) the witness has applied the principles and methods reliably to the facts of the case.*

Clearly Rule 702 requires an expert witness to provide sufficient supportive empirical evidence and reliable methodology in order to provide a sufficient basis for application, and furthermore it requires a proper application of the methodology to the facts of the case under discussion. Scientific, technical, or other specialised evidence that does not satisfy the criteria prescribed by Rule 702 significantly impacts upon the admissibility of expert witness testimony and the role played by the trial court in the USA, and is likely to contravene the spirit and content of SOX. SOX substantially augments the Securities Act of 1933 and the Securities and Exchange Act of 1934, and has the stated express purpose of protecting investors by improving the accuracy and reliability of corporate disclosures, that in turn are contingent on valid and reliable data, methodologies, and application processes. Presentation

of expert witness testimony that does not satisfy Rule 702 in an attempt to justify or defend corporate financial managerial decision making and valuations, such as reliance on MiMo 1961 dividend irrelevance, may be construed as a violation of SOX, in particular Section 807, §1348 regarding securities fraud of securities registered in terms of the Securities and Exchange Act of 1934.

Section 807 “Criminal Penalties for Defrauding Shareholders of Publicly Listed Companies” §1348 states:

*“Whoever knowingly executes, or attempts to execute, a scheme or artifice -*  
*(1) to defraud any person in connection with any security ... registered under ... of the Securities Exchange Act of 1934 ...; or,*  
*(2) ... to obtain, by means of false or fraudulent pretenses, representation, or promises, any money or property ... under ... Securities Exchange Act of 1934 ... shall be fined under this title, or imprisoned not more than 25 years, or both.”*

SOX explicitly defines “financial expert” in Section 407 (with reference to the Securities and Exchange Act of 1934), includes “security analysts and research reports” in its ambit in Section 501 (also with reference to the Securities and Exchange Act of 1934), and specifies the qualifications required of “associated persons of brokers and dealers” in Section 604 (yet again with reference to the Securities and Exchange Act of 1934), and prescribes corporate responsibility for financial reports in Section 906, § 1350 “Failure of corporate officers to certify financial reports”. In consideration of these specific sections of SOX, in conjunction with other legislation that preceded SOX, it is not particularly clear how a corporate financial manager could invoke MiMo 1961 as a defence when challenged on a dividend decision based on dividend irrelevance.

#### **4.0 MiMo 1961 and corporate finance theory**

De Angelo and De Angelo (2006, p. 294) observe that the MiMo 1961 dividend irrelevance theorem forms the foundational bedrock of modern corporate finance theory, and that it has conditioned generations of researchers to view payout policy as a “poor sister” to investment policy (2006, p. 314). Handley states that De Angelo and De Angelo have challenged part of the foundational bedrock of modern corporate finance theory (2008, p. 528). Since publication of the MiMo article in 1961, the vast majority of textbooks on business finance, financial management, and corporate finance, have uncritically presented this dividend irrelevance model as part of core theory of the dividend decision. A non-exhaustive sample



of some of financial management textbooks that report MiMo 1961, presented in Table 1 below, provides an indication of the prominent position their model of dividend irrelevance occupies in the literature.

Table 1: Authors of Textbooks who have Reported MiMo 1961

Year	Author	Textbook Title	Page(s)
1965	Porterfield, J.T.S.	Investment Decisions and Capital Costs	101-104
1966	Weston, J.F. and E.F. Brigham	Essential of Corporate Finance, 2 ed.	481-482
1968	Van Horne, J.C.	Financial Management and Policy,	182-188
1971	Hunt, P., C.M. Williams and G. Donaldson,	Basic Business Finance, 4 ed.	407-408
1972	Van Horne, J.C.	Financial Management and Policy, 2 ed.	245-253
1973	Freear, J.	Financing Decisions in Business	173-174
1979	Gitman, L.J.	Principles of Managerial Finance, 2 ed.	688-690
1984	Bishop, S.R., H.R. Crapp, R.W. Faff and G.J. Twite	Corporate Finance, 3 ed.	506-512
1985	Brigham, E.F.	Financial Management: Theory and Practice, 4 ed.	538-541
1986	Bierman, H. Jr., and S. Smidt	Financial Management for Decision Making.	494-496
1990	Weston, J.F. and E.F. Brigham	Essential of Corporate Finance, 9 ed.	734-735
1993	Ross, S.A., R.W. Westerfield and J.F. Jaffe	Corporate Finance, 3 ed.	524-530
1994	Levy, H. and M. Sarnat	Capital Investment and Financial Decisions, 5 ed.	573-575
1995	Seitz, N. and M. Ellison	Capital Budgeting and Long-Term Financing Decisions, 3ed.	593-596
1996	Brealey, R.A. and S.C. Myers	Principles of Corporate Finance, 5 ed.	423
1998	Grinblatt, M. and S. Titman	Financial Markets and Corporate Strategy	518-519; 522-524
2001	Damodaran, A.	Corporate Finance, 2 ed.	666-669
2002	Van Horne, J.C.	Financial Management and Policy, 12 ed.	311-313
2008	Brigham, E.F. and M.C. Ehrhardt	Financial Management: Theory and Practice, 12 ed.	641-642
2009	Gitman, L.J.	Principles of Managerial Finance, 12 ed.	606-607
2009	Berk, J., P. De Marzo and J. Harford,	Fundamental Corporate Finance.	531-532

These are the very textbooks that deal extensively with short term investments (working capital), long term investment decisions (capital budgeting), the financing decision, the dividend decision and growth, as cornerstones of creating shareholder wealth. These authors have uncritically and unquestioningly included MiMo 1961, and in so doing it may be argued that they have provided an endorsement of the validity of a model that is far from robust, as part of the “missal of financial management”. The authoritative prominence of the authors in Table 1, as well as in some cases, the repeated inclusion of MiMo 1961 in more than one edition of the same textbook by the same author, may be interpreted as a continuing endorsement, and may serve to mislead students, researchers, and practitioners seeking guidance on the distribution decision.

## **5. Summary and conclusion**

Although SOX, in particular Section 807 §1348 concerning criminal penalties for defrauding shareholders of publicly listed companies, in conjunction with Rule 702, place considerable emphasis on the importance of sound research methodology and rigorous epistemology with regard to the valuations that underlie decision making in financial management, little analysis or discussion of the impact of these legislative changes has yet appeared in the literature. This article illustrates the impact of recent compliances requirements for the theory and practice of financial management by scrutinizing the analysis and conclusions of MiMo 1961.

MiMo 1961 do not do what they purport to do. They exclude dividends as a determinant of share value even though it is the variable they seek to examine. Their analysis and model is reliant on unstated assumptions, and the interpretive logic they use not only enables the conclusion of dividend irrelevance, but also irrelevance of financing and investment decision, as well the firm’s total net profit. Just as alarming is their disregard of the differences between income and capital, and when published in 1961 was in conflict with the Securities Act of 1933 and the Securities Exchange Act of 1934. In short, their model is neither valid nor reliable, and unambiguous interpretation of models with these types of epistemological deficiencies, is not possible. An unreliable and invalid decision-making model, such as MiMo 1961, because of its epistemological weakness, cannot measure what it purports to measure, is likely to confound sound and ethical research, and preclude meaningful interpretation, evaluation, and decision making, and may have legal implications, not only in terms of the Securities Act of 1933 and the Securities Exchange Act of 1934, but also in

terms of the Sarbanes-Oxley Act of 2002 (henceforth SOX) and Rule 702 of the Federal Rules of Evidence. The continued uncritical presentation of MiMo 1961 in authoritative financial management textbooks and prestigious journals, despite its far from trivial insufficiencies, cannot be justified as an approach consistent with sound research methodology and compliant with recent legislation.

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