Do Financing, Investment and Dividend Policy Decisions of Jordanian Industrial Firms Interact? Simultaneous Equations Analysis

Ziad Mohammad Zurigat[1]

[1]PhD, Associate Professor of Finance, Department of Banking and Finance Sciences, Yarmouk University. Email: zeyad@yu.edu.jo

ABSTRACT

The current study aims at investigating the interactions of financing, investment and dividend policy decisions using a sample of 84 industrial and Services Company listed in Amman stock Exchange for the period of (2000-2015). Using Simultaneous Equations Analysis, the study found that financing, investment and dividend policy decisions of Jordanian firms are mutually determined. Moreover, the causality relationship exists in two directions for firms' decisions. The results reveal that the firm-specific factors such profitability, size and growth opportunities have a considerable influence on the firm's financing, investment and dividend policy decisions. These findings suggests that agency costs, asymmetric information and bankruptcy costs are relevant and influence the firm's financial and investment decisions which implies that Jordanian capital market frictions affect the degree and direction of decisions interactions. Therefore, the study concludes that agency theory, pecking order theory and free cash flow hypothesis with the bankruptcy model are relevant to Jordanian capital market.

Keywords: Simultaneous analysis, asymmetric information, agency costs, investment and financing decisions, dividend policy.

1. INTRODUCTION

The past sixty years have seen numerous attempts to set the core stone of the corporate finance theory. One of the most important issues in designing the corporate finance theory nowadays is the capital market frictions. The debate in academic cycles was centered on how the capital structure is determined in the presence of these frictions, and to what extent they make financing, dividend and investment decisions interrelated and interacted. The most relevant explanations as to why these decisions interact are mainly attributed to the agency costs, bankruptcy costs, asymmetric information, transaction costs and corporate

income taxes. These explanations have generally postulated that the capital structure choice and dividend policy decisions are largely affected by capital market frictions. The presence of these frictions largely influences the firms' ability to raise funds externally which increases their reliance on internal funds through retaining large part off their earnings. This action would affect their decisions to pay out earnings as cash dividend to stockholders. Moreover, they make firms more financially constrained which in turn make their investment decisions exceedingly sensitive to the availability of cash flow. This makes firms' financing and dividend and investment decisions dependent and mutually determined and interacted. However, the direction of causality relationships among these decisions is largely influenced by numerous factors such as firm-specific factors (unsystematic risks), market factors (systematic risks), severity of capital market frictions, features of capital market. These factors differ from one country to another, from market- to-market and form market based system to banking based system. Hence, we expect that the financial behavior of companies in developing countries differ from those in developed countries.

It is worth noting that developed countries have early paid extensive efforts to develop capital market and maintain their market frictions controllable (Greenwald et. al., 1984). However, there is evidence to suggest that the capital market frictions still be one of the main problems of firms in developed countries that have more developed, high liquid, and competitive markets. Charton el at., (2002) and Fazzari el at (1988) amongst others provide evidence suggesting that firms' investment decisions in developed capital market are highly sensitive to the availability of internally generated funds, implying that market frictions are much critical for firms listed in developed capital market. This finding has changed the believe that the market frictions are matter only for developing countries, where capital markets are not well-developed with low level of competition and lack of compatible regulations and sufficient control and supervision.

As this is the case in developed countries. A key question arises. What should be expected regarding the relationship among the firm's financing, dividend and investment decisions in the presence of market frictions in developing countries as Jordan?

In Jordan, where the capital market is not perfect, market frictions such as information asymmetry, agency problems and bankruptcy costs are much relevant and may influence a firm's investment and financial decisions and thereby its value. These frictions, along with the thin and small size of its capital market, make the cost of raising external funds in primary market relatively high (see Gandhi et. al., 1980). In fact, the low liquidity and competition of developing markets, including Amman Stock Exchange, make the capital market frictions in these countries more severe and substantially influence the way and degree of interactions of financial and investment decisions of firms listed in these markets. Therefore, this study is carried out to investigate whether financing, dividend and investment decisions interact and if they, what is the degree and directions of this interaction using data from industrial firms listed in the Amman Stock Exchange over the period of 2000-2015.

2. THEORETICAL AND EMPIRICAL FRAMEWORK

The theoretical framework of this study is generally referred back to Modigliani and Miller (1958 and 1961) who introduced their famous irrelevancy propositions of capital structure and dividend policy. In their irrelevancy theory of capital structure, Modigliani and Miller (1958) conclude that the firm's capital structure has no influence on its value. Hence, the firm will be indifferent between the use of internal and external capital to finance its new investment opportunities and consequently, making internal capital

(retained earnings) and external capital (Debt and equity) are perfectly substitute for each other. Modigliani and Miller suggest that profitability of new investment opportunities is the main determinant of a firm's investment decision. Hence, investment and financing decisions are not interrelated or interacted. On other words, they are separately, not mutually, determined. The underlying argument behind their irrelevancy propositions is that, the capital market is perfect, where no market frictions, such as asymmetric information costs, transaction costs, bankruptcy costs and agency costs, exist and influence a firm's financing and then its investment decisions. But in reality, the capital market is not perfect and hence, market frictions are relevant. This, in fact, makes investment decisions are relevant, largely affected by the way of financing and highly sensitive to the availability of internal funds. This is because the presence of capital market frictions makes costs of externally generated funds higher than those of internally generated ones, which in turn, making investment decisions are highly sensitive to the availability of internally generated funds (Charton *el at.,* 2002; Fazzari *el at.,* 1988). This contradicts the suggestion of Modigliani and Miller (1958 which states that internal funds and external funds are a perfect substitution for each other. This implies that, for the consideration of costs minimization, firms may prefer internally generated funds more externally ones. Even if external funds are needed, firms show preferences of debt over equity. Myers and Majluf(1984) argue that information asymmetries makes equity a last choice for financing and rarely used, even if some valuable investment opportunities are gone and created underinvestment problem.

In 1961 Miller and Modigliani added new dimension of debate among financial economists and scholars on the subject of dividend policy. Using the same assumptions of their irrelevancy proposition of the capital structure, Miller and Modigliani (1961) argue that a firm's dividend decisions are not relevant which implies that a firm value is independent of its dividend policy. They conclude that the value depends only on the income stream from a firm's assets, not by the way of distributing this income between retained earnings and cash dividend. Hence, investors are indifferent between dividend payment and capital gain. However, Fama and French, (2002) argue that the dividend policy may be used as a technique to convey information to outsiders (potential investors) regarding a firm's future prospects. According to Fama and French, (2002), pay out earnings as cash dividend to stockholders would reduce asymmetric information, creating a positive market reaction and consequently increasing the firm's value. Fama and French, (2002) supports the finding of Baskin (1989) who concludes that there is an information content of dividend policy, therefore, he argues that information asymmetries is not only restricting the firm's ability to raise capital externally, but also to raise capital internally.

The two propositions of Modigliani and Miller (1958) and Miller and Modigliani (1961) suggest that a firm's investment decisions and value are independent of it is dividend and financing decisions. Moreover, profitability is the only factor that may influence and change a firm investment decisions, and the value of the firm.

However, Modigliani and Miller (1958) and Miller and Modigliani (1961) built their irrelevancy theories of capital structure and dividend policy using invalid assumptions. The capital market is not perfect and the presence of market frictions may affect a firms' investment, financing and dividend policy decisions and thereby the firm's value. The first who are relaxing the perfection assumption of capital market was Modigliani and Miller themselves. In 1963, they developed their tax model assuming that debt has a tax shields benefits because of the tax deductibility advantage of interest payments from taxable income. Hence, for tax consideration, debt will be more attractive than equity. For this reason, they conclude that

the firm value will be maximized by using as much debt as possible. This argument is valid only if debt has no costs. Modigliani and Miller (1963) pay no attention to the bankruptcy and agency costs of debt. But the presence of these costs may totally outweigh the tax benefits of debt. In fact, the large use of debt will increase the probability of bankruptcy, reducing the net tax savings of debt and consequently, reducing the impetus of firms to use debt for tax consideration (DeAngelo and Masulis, 1980). For this reason, Myers, (1977) has argued that firms should pay their attention toward the borrowing reserve capacity to avoid losing some of their valuable investment opportunities in the future. Jenson and Mekling (1976) provide another explanation as to why firms can not behave freely in using debt for financing or for tax consideration. They addressed the effect of agency costs of debt on investment decisions. Jenson and Mekling (1976) attributed the reason to the assets substitution problem that might are arise when debt is created. As capital suppliers are risk averse investors, they demand a risk premium, increasing the cost of debt financing and consequently, forcing firms to forgo some of their profitable investment opportunities and thereby, creating an underinvestment problem. Therefore, one could expect a negative relationship between investment and debt (leverage). Jenson *el at* (1992), Stulz(1990), Agrwal and Jayaraman, (1994) provide empirical evidence the prediction of the agency theory of debt and free cash flow.

It is cleared from the above analysis that the agency theory of Jenson and Mekling (1976) and Jenson (1986) provides firms with another incentive use debt for its considerable role in mitigating the conflicts between mangers and stockholders that arises as a result of the separation between ownership and control. Jenson and Mekling (1976) argue that this separation provides managers with incentive to accomplish their objectives while ignore those of shareholders. As this managerial behavior leads a reduction in cash flows available for distribution to the stockholders, they should take the actions that control the managers from wasting a firms funds. Jensen (1986) argue that the agency conflict of interests will be exaggerated in the presence of free cash flow under management control who will use these cash flows for their benefits by investing in negative net present value projects which creates an overinvestment problem. Jensen (1986) suggests the use of debt and dividend as a substitute tools for mitigating overinvestment problem, making financing and dividend policy decisions interrelated and affecting investment decisions. Hence, a negative relationship is expected between dividend and leverage. Furthermore, negative relationship runs from dividend and leverage to investment, where dividend and leverage tend to reduce overinvestment behavior.

It is worth noting that the corporate income tax, bankruptcy and agency costs of debt are not the only factors that have broken down the gripe of capital structure and dividend irrelevancy propositions developed by Modigliani and Miller (1958) and Miller and Modigliani (1961). Myer and Majluf (1984), and Myers (1984) argue that information is not symmetric to insiders (managers) and outsiders (potential investors). According to Myers and Majluf(1984), managers know more about their firms prospects, values and risk, than do the potential outside investors which implies that information is asymmetric not symmetric. The underlying argument behind their statement is that, the adverse selection behavior that might arise due to the asymmetric information places lose to outside investors. Therefore, outside investor will interpret the financing decision as a signal about the performance of the firm and then priced stocks accordingly. This indeed was the ground of signaling theory of Ross (1977) who concludes that the type of financing source used by the firm send a good or bad signal to the market. More precisely, he concludes that using debt will be interpreted as a good signal while, using equity will be considered as a bad signal

about the current and future performance of the company. Moreover, Bhattacharya and Dittmar (2004) argue that firms tend to use the costly signals by increasing their leverage instead of using the costless ones through announcement the superior news that they have to the market to avoid the competition of other companies that may use the same news without being valid. Myers (1984) uses asymmetric information hypothesis of Myers and Majluf (1984) to introduce the pecking order theory. This theory suggests that, for cost considerations, a firm's financing practice takes the form of hierarchy. This implies that firms will finance their new investment opportunity by internal funds as a first cheaper source, then, by debt and finally by issuing equity as a last resort.

Therefore, the pecking order theory adds another explanation as to why earnings and investment determine a firm's leverage and dividend. For this reason, it predicts a negative relationship between investment and dividend, positive relationship between investment and leverage on one hand, and between dividend and leverage from the other hand. Numerous empirical studies have provided evidence supporting the interaction among investment, financing and dividend policy decisions. Using data from USA market, Baskin, (1989) find that dividend and leverage are positively related. He attributes the reason to the fact that paying out earnings as dividend will reduce the amount of internally generated funds for financing, and consequently, increasing the need for raising debt. Moreover, he finds that investment and leverage are positively related, where debt is raised to achieve the desired interment level when a firm has valuable investment opportunities. With respect to the relationship between investment and dividend, Basking (1989) finds evidence supporting the pecking order theory which suggest that firms with valuable investment opportunities tend to use internally generated funds for their cost advantage. Hence, Baskin (1989) concludes that using internally generated funds would reduce the amount of funds available for distributions to its stockholders. White (1992) finds results supporting Basking (1989) in USA market. Using simultaneous equations, Jensen et. al.,(1992) provide evidence suggesting that investment financing and dividend policy of USA companies are mutually determined. Smith and Watts (1992) provide evidence supporting the findings of Jensen et. al., (1992) that investment, Financing and dividends are jointly determined.

In Australia, Allen (1993) provides evidence suggesting that dividend and leverage are positively related, supporting the prediction of pecking order theory. He finds that dividend paying firms needs to generate more debt in the future to finance their investment opportunities. Moreover, he finds that leverage is an increasing function of a firm's investment. Using data from UK market, Adedeji (1998) finds that leverage and dividend are positively related. However, Adedeji (1998) contradicting the reason that might give rise to hierarchy behavior. He argued that asymmetric information or any market frictions alone will not be capable to explain why firms are reluctant to issue equity.

In Karachi stock exchange, Aasia et. al., (2010) find that financial leverage influence dividend negatively leverage. Moreover, they found that the change in earnings has no considerable influence on the dividend policy which implies that dividend policy is sticky. Using data from Indian market, Franklin and Muthusamy (2011) find positive relationship between leverage and investment however, a negative relationship between leverage and investment is found when tested is restricted to medium firms while it become positive when the model is tested for large firms. Using sample from Tehran stock exchange, Khanqah and Ahmadnia (2013) investigate the relationship between financing and investment decisions in different economic conditions. They found that investment decisions financing decisions are positively related when economy experiences low and high level of uncertainty. Karachi Stock Exchange, Hussain

and Ahmad (2015) found a strong relationship between dividend and investment where investment and dividends have two ways causality relationship.

In emerging economy with imperfect capital market Bhaduri and Durai (2006) found that dividends decisions and investment decisions are jointly determined. Their finding support shows how large will the impact of market frictions on financial decisions of firms in developing countries. In Tunisia market, Abid and Trabelsi (2012) examine the relationship between investment, financing and dividend distribution decisions. They found that the level firm's earnings is not the only factor that influence dividend decisions; investment and financing decisions have a considerable impact on dividend decisions, implying that investment, financing and dividend distribution decisions are mutually determined.

Using data from Mauritian market, Odit and Chittoo (2008) investigate the interaction between investment decisions and financing decisions. They found a significant negative relationship investment decisions and financing decisions. Moreover, they found that the power of this interaction largely influenced by the firm's growth level; it's stronger for low growing firms than for high growing firms. The reason is mainly attributed to the fact that high growth firms are expected to face higher agency costs of debt than do low growth firms. Using data from Pakistani Banks, Rizwan et. al., (2015) examine the impact of investment decisions on financing decisions. They found that investment opportunities have a significant impact on leverage with no effect on leverage when actual investment used as a proxy for investment decisions.

Based on the above analysis, there is theoretical and empirical evidence to suggest that the capital markets in both developed and developing countries are not perfect, and relaxing any assumption used by Modigliani and Miller (1958) and Miller and Modigliani (1961) will break down the gripe of their irrelevance propositions of capital structure and dividend policy, and making them relevant. This conclusion makes investment; dividend and financing are also relevant and mutually determined and affected the firm value. However, it is worth to note that the effect of market frictions in developing capital markets is expected to be more server than would be in developed ones (reference Arabic). The reason may be attributed to the fact that developing countries are suffering from the lack of financial resources, which increases their reliance on external debt to finance their growth and development programs. This creates a new challenge for listed firms to raise funds whenever required. Moreover, Governments of developing countries extensively intervene in financial system to support economic sectors, specially the industrial ones. This intervention may change the way of interaction among investment, financing and dividend policy, taking in consideration that asymmetric information and agency costs of debt and free cash flows are much severe in their capital market. Cull and Xu 2005 argue that the government regulations make the costs of external funds lower than that of internal funds which reduces the impetus of firms to follow a certain forms of financing. This, along with the variation in the institutional characteristics of developing countries (Kunt, and Maksimovice,1994), influences the causality relationship among a firm's financial decisions.

3. RESEARCH METHODOLOGY

4.1. The Study Sample and Data Collection

The population of the current study consists of all Jordanian companies listed in Amman Stock Exchange during the period of 2000-2015. The study sample is selected using the following sample selection criteria; all companies work in financial sector are excluded because the nature of these sectors makes their capital

structure somehow different as well as they have different tax treatment. These institutional differences may affect the nature and the degree of investment, financing and dividend interaction. Moreover, it excludes firms that are liquidated during the study period. Finally, the study excludes the new firms that have been incorporated after 2000. The use of these criteria results in 84 companies that are continuously listed in ASE during the study period. The data of the study sample is collected from the firm's annual reports issued by the companies and from the Jordanian Shareholding Companies Guide.

4.2. Empirical Model Specification

It is well-known that the perfection assumption of capital market that Modigliani and Miller (1958) and Miller and Modigliani(1961) used to build their irrelevancy theory of capital structure and dividend makes these decisions independent and have no influenced on each other. However, Nemours theoretical and empirical studies have violated their critical assumption, suggesting that all market frictions such as transaction costs, bankruptcy costs, agency costs and asymmetric information costs are relevant and affecting the firm value. Myers (1974) who analyzed the interaction of investment and financing decisions argues that the existence of this interaction effects may be attributed to the presence of adjustment costs, corporate income taxes, or to the other market frictions such as asymmetric information and agency costs.

McCabe (1979) argues that when the capital market is sufficiently imperfect, the firm's value must mull over financing in its investment decisions. This view suggests that the firms must raise and allocate funds between investment and dividend. However, this action may create an adverse selection behavior for potential investors due to the asset substitution problem which in turn create an underinvestment problem (Jensen and Meckling, 1976). For this reason, McCabe (1979) argues that a firm's investment, dividend and financing decisions are jointly determined when capital market frictions are relevant. Hence, they must be investigated using simultaneous equations model. This is because the simultaneous equations model considers the link among the three decisions financing, investment and dividend policy made by financial managers. According to Ackert and Athanassakos (2003), a single decision model results in a misspecification known as simultaneous equations bias. They attributed the reason to fact that the residual and explanatory variables are correlated, violating the underlying assumption of the Ordinary Least Squares (OLS) which states that no correlation exists between explanatory variables and error term(residuals). This correlation makes the results created by OLS regression inefficient (Guajarati, 2003). Therefore, Ackert and Athanassakos (2003) conclude that conclusions derived from a single-equation approach are tricky because regress investment, financing and dividend models in segregation way makes estimations of these models loose the feedback effect. This supports the view of Hausman, (1983) who argues that the best solution for missing feedback effect is the mutual estimation of the three models because the joint estimation tends to reduce a single-equation bias.

Therefore, the current study aims at investigating investment, dividend and financing decisions within a simultaneous framework to avoid the endogenously problem that might arise due to least squares bias. It also capture the causality that runs from one decisions to another, helping avoid the loss of the feedback effect when each decisions is isolated regressed and consequently, generate an efficient and consistent results.

In consistence with the majority of previous studies such as Baskin (1989), Allen(1993), Adadji (1998) and Jensen et. al., (1992), the current study has developed three empirical models that will be tested using

simultaneous equations analysis (seemingly unrelated regression estimation). For accomplishing the study objective, the following three models are formulizing as follows:

$$\text{LEV}_{it} = \beta_0 + \beta_1 \text{DIV}_{it-1} + \beta_2 \text{INV}_{it-1} + \beta_3 \text{PROF}_{it-1} + \beta_4 \text{GRWTH}_{it-1} + \beta_5 \text{SIZ}_{it-1} + \varepsilon_{it} \qquad (1)$$

where, LEV_{it} is the leverage ratio for firm i at time t.

$\text{DIV}_{it-1}, \text{INV}_{it-1}, \text{PROF}_{it-1}, \text{GRWTH}_{it-1}$ and SIZ_{it-1} are the explanatory variable, taking in consideration that DIV_{it-1} and INV_{it-1} are endogenously determined in this equation

$$\text{DIV}_{it} = \lambda_0 + \beta_1 \text{LEV}_{it-1} + \beta_2 \text{INV}_{it-1} + \beta_3 \text{PROF}_{it-1} + \beta_4 \text{GRWTH}_{it-1} + \beta_5 \text{SIZ}_{it-1} + \varepsilon_{it} \qquad (2)$$

where, DIV_{it} is the dividend payout ratio.

$\text{LEV}_{it-1}, \text{INV}_{it-1}, \text{PROF}_{it-1}, \text{GRWTH}_{it-1}$ and SIZ_{it-1} are the explanatory variable, taking in consideration that LEV_{it-1} and INV_{it-1} are endogenously determined in this equation

$$\text{INV}_{it} = \lambda_0 + \beta_1 \text{DIV}_{it-1} + \beta_2 \text{LEV}_{it-1} + \beta_3 \text{PROF}_{it-1} + \beta_4 \text{GRWTH}_{it-1} + \beta_5 \text{SIZ}_{it-1} + \varepsilon_{it} \qquad (3)$$

where, INV_{it} is the dividend payout ratio.

$\text{LEV}_{it-1}, \text{DIV}_{it-1}, \text{PROF}_{it-1}, \text{GRWTH}_{it-1}$ and SIZ_{it-1} are the explanatory variable, taking in consideration that LEV_{it-1} and DIV_{it-1} are endogenously determined in this equation

As seen in section of this study, the theoretical framework of the pecking order theory, trade-off theory, agency theory and free cash flows hypothesis of capital structure has suggested the prospective for exhibiting joint determination of dividend, investment and financing decisions. So, they are mixed up with each other and then simultaneously determined. In this context, the decision to pay out a firm's earning as dividend to shareholders may increase the need for raising debt in the future (Baskin, 1989), which in turn may influence its investment decision through the asset substitution problem that may create underinvestment problem. However, using debt may reduce overinvestment problem when managers have free cash flows under their control. Furthermore, using internally generated funds for financing will not only reduce the need for creating debt but also reduce the firm's ability to distribute dividend. However, Jensen (1986) debt and dividend can be used interchangeably to mitigate the agency cost of free cash flows. With respect to investment decisions, he argues that using debt will force firms to forgo some of its valuable investment because of assets substitution problem that make debt less attractive for the cost consideration. However, different views suggest that dividend decision is note motivated by investment decisions. They conclude that the decision to pay dividend is affected by previous dividend payment and profits (Pruitt and Gitman (1991). This may explained in the context to smoothing dividend policy that firms follow to maximize value. Adedeji (1998) pointed out that the relationships among investment, leverage and dividend payout ratio are largely influenced by the way of responding to earnings deficiency.

The selection of other explanatory variables such as profitability, growth opportunity and the firm's sizes $(\text{PROF}_{it-1}, \text{GRWTH}_{it-1}$ and $\text{SIZ}_{it-1})$, is based on alternative theories that predict relevant effect of these variables on a firm's investment, dividend and financing decisions and that literature provide evidence regarding their impact of these three decisions. In what follows, we provide some theoretical and empirical evidence for their expected impact on firm's decisions.

– **profitability:** It is worth noting that in Modigliani and Miller (1958)'s word, profitability is the only factor that affecting the firm's investment decisions, implying that there is a positive

relationship between profitability and investment. For tax considerations, profitable firms should use more debt in their capital structure to gain the tax benefit of debt (Modigliani and Miller, 1963) which suggests that profitability and leverage are positive related. However, Modigliani and Miller (1963) ignore other capital market frictions such as agency, asymmetric information and bankruptcy costs that tend reduce the net tax saving of debt. Although trade-off and agency theory of capital structure have predicted the same relationship between profitability and leverage, different explanation are given as to why profitability and leverage are positively related. The trade-off theory states that profitable firms are expected to be less likely subject to the financial distress. So, they can obtain debt at more attractive rate and therefore, more debt will be used in a firm's capital structure. While agency theory suggests that profitable firms will have the capability to retain more funds, increasing the amount of funds under management control which in turn increases their impetus to invest in less profitable investment opportunities for their own benefits, and consequently creating overinvestment problem (Jensen, 1986; Jensen and Meckling, 1976). This suggests that agency theory predict a positive relationship between profitability and investment. Furthermore, profitable firms will have sufficient cash to pay dividend, implying a positive relationship between profitability and dividend. The free cash hypothesis of Jensen (1986) provides another explanation as to why profitability has a positive impact on dividend and leverage. He argues that debt and dividend can be used as a substitute mechanism for mitigating the agency problem of having free cash flows and thereby, overinvestment. This implies a negative relationship between debt and dividend. When debt or dividend is used to reduce the agency costs of free cash flows, negative relationship is expected between debt or dividend and investment. This because using debt will increase the cost of debt through the costs of assets substitution problems that tends to reduce investment, while the negative impact of dividend on investment is mainly attributed to the fact that paying out free cash will restrict managers from investing in less valuable. Unlike agency and trade of theory, the pecking order theory predicts the opposite relationship. Myers and Majluf (1984) and Myers (1984) argue that because of asymmetric information, firms prefer to use internal funds for cost consideration. This suggests that profitable firms will generate more internal funds, reducing the need for creating debt, hence negative relationship between profitability and debt is expected. With respect to the dividend policy, it states that the dividend policy is sticky, while it expects a positive relationship between profitability and investment.

– **Growth Opportunities:** It has been argued that growth opportunities represent the expected growth in a firm's intangible assets that have no collateral value which declines rapidly when a firm goes bankrupt. So, it is expected that firms with a high growth opportunities will not be able to raise debt at attractive rate (Rajan and Zingales, 1995), making leverage and growth opportunities negatively related and consequently increasing the reliance on internally generated funds. Therefore, one could expect that growing firms will pay less of its earning as dividend, making dividend and growth opportunities negatively related. However, Myers and Majluf (1984) expect that growing firms need more debt for to finance new valuable investment opportunities. Therefore, they expected a positive relationship between a firm's financial leverage and itts growth opportunities. Furthermore, Titman and Wessels (1988) argue that growing firms will experience a severe conflict between shareholders and bondholders, inducing lenders demand a

higher risk premium due to the assets substitution problem and consequently making debt not attractive for cost considerations. In this case, firms may be enforced to give up some of their valuable investment projects. If this is happened, we expect a negative relationship between growth opportunities and investment.

– **The Fir's Size:** Theoretically, the firm's size is usually used as an indicator for the bankruptcy risks (Warner, 1977 and Titman and Wessels (1988). However, in the context of pecking order theory, Kadapakkam *et. al.*, (1998 and Rajan and Zingales, 1995) considered it as a proxy for an information asymmetries. This is the reason as to why previous studies provide mixed results regarding the impact of a firm's size on leverage, dividend and investment. According to Titman and Wessels (1988), large firms are more diversified, hence; they are less subject to the risk of financial distress which increases the possibility of raising debt at more attractive interest rate. This helps firms avoiding underinvestment problems and saving cash to pay dividend, suggesting a positive impact of the firm's size on leverage, investment and dividend. However, Kadapakkam *et. al.*, (1998) and Rajan and Zingales, (1995) argue that large firms are expected to be less subject to the asymmetric information problem because they are more closely observed by potential investors and financial analysts. This implies that issuing equity for financing is more attractive, reducing the need for using debt, and consequently, increasing the possibility of paying dividend. Therefore, a negative relationship is expected between the firm's size and leverage while a positive one is expected between the size and dividends.

4. ESTIMATION RESULTS

This section consists of two sub-sections. The first one provides the descriptive statistics using the pooled data of the study sample. The second section presents the estimation results using panel data analysis and simultaneous equations regressions where the three empirical models are run jointly to avoid the single-equation bias and then capture for the feedback effects that missed when each equation is regressed in isolation. However, for the purpose of comparison, fixed and random effects regressors are used to test each equation separately.

5.1. Descriptive Statistics

For the purpose of estimating the descriptive statistics, the pooled data for a sample of 84 firms listed on Amman Stock (ASE) over the period of 1997-2014 is used. This typically results in 1512 observation for each variable. The results of descriptive statistics are presented in Table 1. As can be seen, the leverage has a mean value of 0.332 and standard deviation of 0.194. This suggests that Jordanian firms do not depend heavily on debt for financing. The reason may be attributed to the absent of well developed Jordanian bond market as well as to the use of conservative credit policy by Jordanian banks. The low mean value of dividend payout ratio, that is to be 0.042 with Standard deviation of 0.128, makes this explanation more reasonable and implying that they are extensively depending on internally generated funds. With respect to an investment variable, the results show a mean value of 0.374 with a 0.195 standard deviation. The higher mean value indicates that Jordanian firms using less of non-earning assets. For other explanatory variable, the mean values are found to be 0.109, 1.825 and 17.304 for profitability, growth opportunities and size respectively. The higher standard deviation of the profitability variable indicates how large the impact of political instability on Jordanian firms' performance.

Table 1
Results of Descriptive statistics

Variables	*Mean*	*Std. Dev*	*Min*	*Max*
LEV_{it}^*	0.332	0.194	0.004	0.864
INV_{it}	0.374	0.195	−0.467	0.721
DIV_{it}	0.042	0.241	0.000	0.108
$PROF_{it}$	0.109	0.081	0.009	0.326
SIZ_{it}	17.304	1.981	11.021	19.188
$GRWTH_{it}$	1.825	.277	0.353	13.265

Notes: Leverage (LEV): is measured by the total liabilities to total assets. Profitability (PROF): is measured by the operating profits (EBIT) divided by total assets.. Size (SIZ): the natural logarithm of total assets. Growth (GRW): measured by the market to book ratio.

5.2. Estimations Results

The diagnostic tests suggest that all empirical models used in the study have no multicollinearityand and hetrokedasticity problems, where the VIF for all models as seen in the bottom of table (2) are found to be less than 10. With respect to the Breuch-Pagan test for hetrokedasticity, the results shows that Ch2 for all models are found statistically insignificant, hence, the null hypothesis that the variance of the error terms is homogeneous is accepted. Moreover, the results show that residuals of three models are correlated, suggesting that OLS regression will not be efficient to create accurate estimations.

Table 2
The estimation results using simultaneous equations techniques

Dependent variable	*Model 1* *Dependent Variable: LEV_{it}*	*Model 2* *Dependent Variable: INV_{it}*	*Model 3* *Dependent variable: DIV_{it}*
Intercept	2.026	3.001	2.140
	(0.023)	(0.012)	(0.020)
LEV_{it}^*	–	−0.135	−0.097
		(0.034)	(0.015)
INV_{it}	0.079	–	−0.094
	(0.001)		(0.025)
DIV_{it}	0.140	−0.092	–
	(0.009)	(0.040)	
$PROF_{it}$	−0.207	0.115	0.162
	(0.009)	(0.009)	(0.182)
SIZ_{it}	0.097	0.181	0.143
	(0.004)	(0.010)	(0.031)
$GRWTH_{it}$	−0.084	0.325	−0.062
	(0.000)	(0.000)	(0.000)
R^2	0.22	0.18	0.24
F~statistic	113.216	119.65	124.24
p~value	(0.000)	(0.000)	(0.000)
Breuch-Pargan~Ch^2	0.956	1.01	1.09
	(0.000)	(0.000)	(0.000)
VIF - Mean	1.54	1.51	1.53

As can be seen from table (3), firms' leverage, investments and dividend are mutually determined. In fact, the nature of Jordanian capital market makes is mutual determination much possible. It's small and thin market with low level of competition, liquidity and investors' protections. These features make Jordanian capital market frictions more severe, making the ability of raising external funds at more attractive interest rate very low and consequently, affecting their investment, financing and dividend decisions. According to Zurigat et. al., (2014), the low liquidity of Amman Stock exchange with the absent of developed bonds market makes the process of raising funds in primary market much expensive. In the line with this argument, Myers (1974) attributed the existence of firms' decisions interactions to the capital market frictions which make our explanation much reasonable.

In general, the estimation results shows that a firm's leverage is positively influence by both dividend and investment decisions. This finding supports the underlying argument of pecking order theory which states that firms will start first with retained earnings as the cheaper source of financing, followed by debt and then stock as the last choice and rarely used (Myers and Majluf, 1984). This is because the adverse selection of using stock finance is much higher than debt and retained earnings. Moreover, the bad signal that issuing new stock sends to the potential investors induces them to pricing new stock issuance at discount. In the context of pecking order theory, Pay out earning as dividend to the stockholders convey information to the outsiders about a firm's future prospective, reducing the asymmetric information (Fama And Frank, 2002), and consequently influencing the firm's value. However, this dividend behavior will reduce the amount of internally generated funds and thereby, increasing the need for creating debt. Because of the asymmetric information in Jordanian capital market, the possibility of having high agency cost of debt will increase due to assets substitution problem, making the cost of debt finance high and consequently, creating underinvestment problem (Jensen and Meckling, 1976). This explanation is supported by the obtained results of model 2. These results show that investment is negatively influenced by leverage and dividend. The estimated coefficients of both leverage and dividend are found to be statistically significant at 5%. The above analysis of the existence interaction among investment and dividend and financing decisions of Jordanian firms suggests the importance of retrained earnings for Jordanian listed firms. The estimated coefficient on profitability variables provides evidence to what extent retained earnings are important for financing new investment opportunities. The increased reliance of Jordanian firms on retained earnings is mainly attributed to the nature of Jordanian capital market that makes its market frictions more severe and then the cost of raising funds externally too high. It is found that leverage is negatively influenced by profitability. This suggests that high profitable firms will use less debt due to their ability to retain more funds. The possibility of increasing the amount of earnings retained increase for high profitable firms with stable dividend policy. This would be possible where the majority of Jordanian listed firms follow stable dividend policy and the other pays no dividend at all (Zurigat and Gharaibeh, 2011). This explanation can be supported by the statistically insignificant coefficient of profitability variable on dividend model. This finding support the view of Myers (1984) the dividend policy is sticky. With respect to the impact of profitability on investment, it is found to be positively related to investment where, profitability variable on investment model was positively statistically significant at 1% level. This result suggests that high profitable firms have more internally generated funds to finance new valuable investment opportunities. The positive effect of profitability on a firm's investment comes from the fact that firms in Jordanian capital market find difficult to raise external funds at more attractive interest rate due to the severity of market frictions and their effects on the costs of external capital. This is the reason why investment and profitability are positively

related. The finding that leverage and profitability are negatively related in leverage model suggests firms with more profit have the chance to finance their new investment opportunities with internally generated funds. Another explanation to the positive relationship between profitability and investment could be attributed to the agency costs of free cash flows where high profitable firms may have more funds under management control. For the purposes of achieving their goals, managers may uses free cash flows to carry out negative Net Present Value projects, creating overinvestment problem, and consequently increasing the need for using debt or dividend to mitigate the agency costs that might arise due to having free cash flows (Jensen,1986, Jensen and Meckling,1976). As Jordanian firms tend to stabilize their dividend policy (Zurigat and Gharaibeh, 2011), using debt to reduce the agency costs of free cash flows would be possible. According to Jensen and Meckling, 1976), using debt may create a conflict of interest between shareholders and debt holders due the assets substitution problem that makes the cost of debt finance high and hence, creating underinvestment problem. This is might be the reason of having a negative relationship between investment and leverage in investment model.

With respect to the firm's size (SIZ_{it}) and growth opportunities ($GRWTH_{it}$), they can be explained in the context of agency theory and bankruptcy hypothesis. The size variable is found to positively statistically significant in the three simultaneous equations. These results suggest that large firms have more tangible assets that store value in case of liquidating the firm. Hence, they can raise debt at more attractive interest rate. Moreover, they are more diversified; therefore, they face low risk with more growth opportunities which increases the need for raising debt. These elements will reduce the chance of losing valuable investment opportunities, increasing investment and thereby, the firm's value. Furthermore, high growth opportunities imply that the market value of the firm is high which indicates that the firm is facing a low asymmetric information problem. Fama and Frank (2002) argue that firms use dividend to convey information to the outsiders to reduce the cost of information asymmetries. As high growth firms are expected to have low asymmetric information, there is no need to use dividend to convey information to the outsiders through pay out earnings to the shareholders. This explains why growth opportunities and dividend are negatively related. This negative impact of growth opportunities is found also with leverage which indicates that the financing decisions of Jordanian firms is largely affected by the agency costs of debt where growing firms have low collateral value with high level of adverse selection problem and thereby the cost of debt.

5. CONCLUSION

The current study aims at investigating the mutual determination of financing, investment and dividend policy decisions by investigating the possibility of interactions among these decisions. Using Simultaneous equations analysis to accomplish the study objectives, the study found that financing, investment and dividend policy decisions of Jordanian firms are mutually determined. Moreover, the firm specific factors such profitability, size and growth opportunities have a considerable influence on the firm's financing, investment and dividend policy decisions. Based on the findings of this study, we can conclude that agency costs asymmetric information and bankruptcy costs exist and influence the firm's financial and investment decisions which imply that Jordanian capital market frictions affect the degree and direction of decisions interactions. Moreover, it can be concluded that, in the presence of these market frictions, retained earnings fluctuations significantly influence the firm's financial and investment decisions where these frictions make the cost of raising external capital much high which in turn increase its reliance on internally generated

funds. Furthermore, Jordanian firms follow a sticky dividend policy, where the priority of these firms is given finance new investment opportunities with the cheaper source of financing. Finally, we can conclude that the current study findings and be explained in the context of agency theory, pecking order theory and free cash flow hypothesis with the bankruptcy model. Based in these findings, the study recommends that Jordanian firms need to increase the level of transparency and investors protection.

References

Abid, F and Trabelsi, L. (2012). "Does A Logical Coherence Relationship Exist between Strategic Financial Decisions?" Journal of Asian Business Strategy, 2(4), pp. 77-83

Ackert, L. and Athanassakos, G. (2003). 'A Simultaneous Equations Analysis of Analysts' Forecast Bias, Analyst Following, and Institutional Ownership", Journal of Business Finance & Accounting, 30(7)

Adedeji, A., (2002). "A Cross Sectional Test of Pecking Order Hypothesis Against Static Trade-Off Theory On Uk Data", Working Paper, University Of Birmingham, UK.

Adedeji, A. (1998). "Does the Pecking Order Hypothesis Explain the Dividend Payout Ratios of Firms in the UK". *Journal of Business Finance and Accounting,* **25**, 1127-157.

Allen, D. (1993). "The Pecking Order Hypothesis: Australian Evidence". *Applied Financial Economics,* **3,** 101-120.

Agrawal, A.and Jayaraman, N., (1994). "The Dividend Policies of All-equity firms: A Dirict Test of the Free Cash Flow Theory". *Managerial and Decision Economiocs*, 15, pp.139-148,

Anderson, M., and Prezas, A. (1998). "The Interaction Of Investment And Financing Decisions Under Moral Hazard". *International Review of Economics and Finance*. Vol. 7, pp. 379-392.

Baker, M., and Wurgler, J. (2002). "Market Timing and Capital Structure". *Journal of Finance*, 57 (1).

Baskin, J. (1989). "An Empirical Investigation of the Pecking Order Theory", *Journal of Financial Management*, 18, pp. 26-35.

Cull, R. and Xu, L.(2005). Institutions, ownership, and finance: the determinants of profit reinvestment among Chinese firms. *Journal of financial economics*, 77, pp.177-146.

DeAngelo, H., and Masulis, R., (1980). "Optimal Capital Structure under Corporate and Personal Taxation". *Journal of Financial Economics*, 8, pp. 3-29

Fama, E. F. and French, K. R. (2002). "Testing Tradeoff and Pecking Order Predictions about Dividends and Debt". *The Review of Financial Studies*, 15 (1), pp. 1-33

Fama, F. and French, R. (2005), "Finance Decisions: Who Issue Jtock?". *Journal of Financial Economics*, 76, pp. 549-582.

Fazzari, S., Hubbard, G. and Petersen, B. (1988). "Financing Constraints and Corporate Investment". *Brookings Papers on Economic Activity* I, pp. 141-195.

Frank, M and Goyal, V.,(2003). "Testing the Pecking Order Theory of Capital Structure". *Journal of Financial Economics*, 67, pp.217-248.

Franklin J. S, and Muthusamy. K, (2011). 'Impact of Leverage on Firms Investment

Decision, International Journal of Scientific & Engineering Research, 2(4)

Gillan, S., and Starks, L. T. (2003). "Corporate Governance, Corporate Ownership, and the Role of Institutional Investors: A Global perspective". *Journal of Applied Finance*, *13*(2), pp. 4–22.

Greene, W.H. (2003). *Econometric Analysis*. Prentice Hall: Upper Saddle River, NJ.

Gujarati, D.N., (2003). *Basic Econometrics* Fourth Edition, Irwin/McGraw-ill: New York.

Hausman, J. (1983), 'Specification and Estimation of Simultaneous Equations Models,' in Z. Griliches and M. Intriligator (eds), Handbook of Econometrics (Horth-Holland, Amsterdam).

Hussain, I. and Ahmad, I. (2015)." Dynamic Relationship Between Investment, Earnings and Dividends: Evidence From Engineering Sector of Pakistan", *Pakistan Business Review*, pp. 917-945

Jensen, M. (1986). "Agency Cost Free Cash Flow, Corporate Finance, and Takeovers". *American Economic Review*, 76(2), pp. 323-329.

Jensen, M. and Meckling, W. (1976). 'The theory of the Firm: Managerial Behaviour, Agency Costs, and Ownership Structure". *Journal of Financial Economics*, 3(4), pp. 305-360.

Kadapakkam, P., Kummar, P. & Riddick, L. (1998) The Impact of Cash Flows and Firm Size on Investment: the International Evidence. *Journal of Banking and Finance*, **22**, 293-320.

Khanqah, V. T. and Ahmadnia, L. (2013). "The Relationship between Investment Decisions and Financing Decisions:Iran Evidence", *Journal of Basic and Applied Scientific Research*, 3(3), pp. 144-150

Kunt, A. & Maksimovice, V. (1994). "Capital Structure In Developing Countries: Evidence From Ten Countries". *Working Paper*, the World Bank, Policy Research Paper, No. 1320.

McCabe, G. M. (1979). " The Empirical Relationship Between Investment and Financing: A New Look" Journal of Financial and Quantitative Analysis, 149(1), pp 119-135

McDonald, J., Jacquillat, B., and Nussenbaum, M., (1975). "Dividend, Investment and Financing Decisions: Empirical Evidence on French Firms". *Journal of Financial And Quantitative Analysis*,. pp. 741-755.

Miller, M. and Modigliani, F. (1961). "Dividend Policy Growth and the Valuation of Shares", *Journal of Financial E conomics*, 34, pp.411-433.

Modigliani, F. and Miller, M. (1958). "The Cost of Capital, Corporate Finance and the Theory of Investment", *American Economic Review*, 48, pp.261-297.

Modigliani, F and Miller, M. and. (1963). "Corporate Income Taxes and the Cost of Capital, A Correction"., *American Economic Review*, 53, pp.433-443.

Morellec, E., Nikolov, B., & Schürhoff, N. (2012). "Corporate Governance and Capital Structure". *The Journal of Finance*, *67*(3), 803–848.

Morellec, E., & Schürhoff, N. (2011). "Corporate investment and financing under asymmetric information". *Journal of Financial Economics*, *99*(2), 262 – 288.

Myers, S. (1984)."The Capital Structure Puzzle". Journal of Finance, 39, pp. 575-592.

Myers, S. (1977). "The determinants of Corporate Borrowing", *Journal of Financial Economics*, pp. 147-75.

Myers, S. (1974). "Interactions of Corporate Financing and Investment Decisions Implications for Capital Budgeting", *Journal of Finance*, 24(2), pp. 1-25.

Myers, S. and Majluf, N. (1984). "Corporate Finance and Investment Decisions When Firms Have Information That Investors Do not Have". *Journal of Financial Economics*, 13, pp. 187-221

Odit, M.P., Chittoo, H.B., 2008. Does Financial Leverage Influence Investment Decisions: The Case of Mauritian Firms? *Journal of Business Case Studies*, Volume 4 (9).

Rajan, R. & Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. *Journal of Finance,* **50**, 1421-1460.

Pruitt, S W. and Gitman, L. J, (1991) "The interaction between the investment, financing and dividend decisions of Major U.S. firms", *The Financial Review,* Vol. 26(2), pp. 409-30.

Rizwan, M., Ishfaq, M, Mahmood, S. and Randawa,. N. R. (2015). "An Examination of the Empirical Relationship between Investment Decision and Financing Decision: The Case Study on Pakistani Banks", *Research Journal of Finance and Accounting*, 6(13), pp. 84-91

Ross, S. (1977). "The Determination of Financial Structure: the Incentive-Signalling Approach". *Bell Journal of Economics*, 8 (1), pp. 23-40.

Shyam-Sunder, L. and Myers, S.C. (1999). "Testing static tradeoff against pecking order models of capital structure". *Journal of Financial Economics,* **51**(2), 219-244.

Titman, S. & Wessels, R. (1988). The Determinants of Capital Structure Choice. *Journal of Finance,* **43**(1), 1-19.

Tong, G. and Green, C.J. (2005). «Pecking Order or Trade-off Hypothesis? Evidence on the Capital Structure of Chinese Companies». *Applied Economics,* **37**(19), 2179-2189.

Jenson,.M, Geralg, P, and Thomas, S. (1992). Simultaneous Determination of Insider Ownership, Debt, and Dividend policies, Journal of financial and Quantitative Analysis,.27.pp.247-263.

Rajan, R., & Zingales, L., (1995). "What Do We Know About Capital Structure? Some Evidence from International Data". Journal Of Finance, Vol, L, No. 50, pp. 1421-1460.

Ross, S. (1977) The Determination of Financial Structure: the Incentive-Signalling Approach. Bell Journal of Economics, 8 (1), pp. 23-40.

Singh, A. (1994) How Do Large Corporations in Developing Countries Finance Their Growth. Finance and International Economy, (8), pp. 120-142.

Smith, W. and Watts, L. (1992) "The investment opportunity set and corporate financing dividend, and compensation policies", Journal of Financial Economics, Vol. 32(2), pp. 263-92.

Stulz, R. (1990) Managerial Discretion and Optimal Financing Policies. Journal of Financial Economics, 26, pp. 3-27.

Warner, J. (1977). Bankruptcy Costs: Some Evidence. *Journal of Finance,* **32**, 337-347.

Whited, T. (1992) Debt, Liquidity Constraints and Corporate Investment: Evidence From Panel Data. Journal of Finance, 47(4), pp. 1425-1460.

Zurigat, Z., and AL-Gharaibeh, M., (2011) Do Jordanian Firms Smooth their Dividends? Empirical Test of Symmetric and Asymmetric Partial Adjustment Models. International Research Journal of Finance and Economics. Issue 81, pp.160-172.

Zurigat, Z., and AL-Gharaibeh, M., (2011) Financial Liberalization and Investment Sensitivity to the Cash Flow. European Journal of Economics, Finance and Administrative Sciences. Issue 42, pp.76-89.

Zurigat, Ziad, Sartawi, Iaad and Aleassa, Hassan (2014). Empirical investigation of Free Cash Flow hypothesis: Evidence from Jordanian Capital Market, *International Business Research*, 7(3), pp. 137-148