Review of Quantitative Finance and Accounting

Dividend Irrelevance and Firm Control

--Manuscript Draft--

Manuscript Number:	REQU-908
Full Title:	Dividend Irrelevance and Firm Control
Article Type:	Original Research
Keywords:	Dividend; Irrelevance; Control; Miller; Modigliani; Perquisites
Corresponding Author:	William Steven Smith University of North Dakota Grand Forks, UNITED STATES
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	University of North Dakota
Corresponding Author's Secondary Institution:	
First Author:	Steven A. Dennis
First Author Secondary Information:	
All Authors:	Steven A. Dennis
	William Steven Smith
All Authors Secondary Information:	

Title Page with ALL Author Contact Information

Dividend Irrelevance and Firm Control

Steven A. Dennis, Ph.D.
Aarestad Endowed Chair of Financial Services
Professor and Chair, Department of Finance
University of North Dakota
Box 7096, Grand Forks, ND 58202
Ph. (701) 777-3700; fax (701) 777-5099
steve.dennis@business.und.edu

William Steven Smith, Ph.D.
Associate Professor, Department of Finance
University of North Dakota
Box 7096, Grand Forks, ND 58202
Ph. (701) 777-2318; fax (701) 777-5099
wsmith@business.und.edu

October 2011

Correspondence to:
William Steven Smith, Ph.D.
310 Gamble Hall
College of Business & Public Administration
University of North Dakota
Grand Forks, ND 58202-7096
Ph: (701) 777-2318; fax: (701) 777-5099
wsmith@business.und.edu

Dividend Irrelevance and Firm Control*

ABSTRACT

We examine co-founders of a firm and their ability to create an artificial (or "homemade") dividend as in Miller and Modigliani (1961). We show that creating an artificial dividend may decrease the value of the firm because it diverts funds from investment to the consumption of perquisites. Only where there is complete trust in the party to which the shares are sold can a co-founder costlessly create an artificial dividend. It seems likely that a dividend policy would be established at the founding of the firm and that it would be idiosyncratic to the firm's founders.

Keywords: Dividend, Irrelevance, Control, Miller, Modigliani

JEL Classification Codes: G35

Dividend Irrelevance and Firm Control

I. Introduction

Dividends have become an important topic of research again recently (see Fama and French (2001), Grullon, Michaely, and Swaminathan (2002), DeAngelo, DeAngelo, and Stulz (2006), and Brav, Graham, Harvey, and Michaely (2005)). In their seminal work on dividend policy, Miller and Modigliani (M&M, 1961) contend essentially that, in frictionless markets, the wealth of the ownership of a firm is not affected by the form in which the ownership receives returns to capital invested in the firm. Dividend policy is therefore irrelevant. However, DeAngelo and DeAngelo (2006) question the validity of the M&M conclusions. They argue that dividend policy matters because of the agency problems inherent in forcing the managers of the firm to implement a payout policy that maximizes shareholder wealth (i.e., policy of distributing the full present value of Free Cash Flow, as required by M&M).

We argue here that dividend policy is relevant if firm control is important. We follow up on a statement in DeAngelo and DeAngelo (2000) that the controlling family of the Times Mirror Company had "limited ability to create 'homemade' dividends by selling shares while preserving control" (p. 173). We extend the issue by considering co-founders of a firm with an inability to create homemade dividends without losing control of the firm. In contrast to Miller and Modigliani (1961), we show that when firm control is important, the dividend policy affects firm value through the diversion of funds from investment to the consumption of perquisites.

Where firm ownership is diffuse, shareholders can create the dividend as described in Miller and Modigliani (1961), and dividend policy is irrelevant. However, when firm control is important, the value of the firm is potentially lowered by the dividend creation process. This can only be avoided in situations where an ownership share of the firm is sold to a trusted new

investor who will vote to thwart perk consumption. If there is no trusted new investor to which to sell the share to create the dividend, the "outside" new investor will purchase it at a price that reduces the value of the firm by the (discounted) cost of monitoring and enforcing the contract constraining perk consumption. We suggest that co-founders who wish to sell shares to create a dividend will look for "insiders" to which to sell them. Moreover, we suggest that a dividend policy will be created when founding the firm.

We advance the study of dividends in three important dimensions. First, we show that dividend policy is relevant if firm control is important, and in so doing, we show that diffuse ownership of the firm is a necessary assumption in Miller and Modigliani (1961). Second, we introduce a "confidence factor" into financial markets in describing the new investor to which an ownership share of the firm is sold so as to create a homemade dividend. Third, we show that this confidence factor is important in the pricing of any share sold to a new investor. Shares sold to "insiders" are sold at a price that is higher than shares sold to "outside" new investors.

The remainder of this paper is organized as follows: Section II develops a formal model, Section III provides a discussion of important aspects of the formal model and Section IV concludes.

II. Development of a Formal Model

Consider a small firm, founded by two co-owner/operators possessing equal interests in the firm who agree that all decisions regarding the firm are subject to majority vote. The firm was organized and has since grown without the use of debt financing, and the ownership has no plans to use debt in the future. Since the firm's creation, the ownership has maintained a policy of retaining and re-investing 100% of the earnings the firm generates (implying that Free Cash Flow, as defined in DeAngelo and DeAngelo, 2006, equals zero) over each year. In making

investment decisions for the firm at any moment in time, all co-owners select the combination of investments that maximizes their common expected utility of wealth.

Any change in dividend policy intended to, for example, provide a (or increase the) cash dividend payout to current ownership without affecting the firm's investment policy, borrowing policy, or liquidity position would require sale of ownership interest(s). Ideally in this case, the reduction in value of the ownership interest of each current co-owner due to dilution would be offset by the increase in the cash dividend he or she receives. For convenience, we make the additional assumptions specified below.

1) All current and future potential co-owners have an interest in the firm remaining viable (i.e., a going concern) indefinitely into the future.
2) Markets are frictionless.
3) All investors possess (i) utility of wealth characterized as homogeneous Constant Relative Risk Aversion (i.e., homogeneous CRRA) and (ii) homogenous beliefs regarding investment opportunities available into the future.
4) Over each year into the future, the random continuously compounded rate of return to the investment opportunities collectively available to the firm is normally distributed (i.e., random value relative for the collection is lognormally distributed) with the same volatility.
5) The collection of these opportunities (the investment opportunity set, or IOS) evolves gradually over time, indefinitely into the future, in a deterministic "non-appreciating" fashion.
6) The behavior over time of the IOS (described in #5 above) is such that the expected rate of return to the set each year remains, into the near (foreseeable) future, no less than the constant return per year required (= r) by the ownership.
7) Since, at every moment in time, all information about the firm's IOS is symmetric among all co-owners (recall #3(b) above), for any co-owner there exists no "information content" in any change in dividend policy.

Assumptions #3 (homogeneous CRRA and beliefs) and #4 permit the existence of familiar equilibrium asset pricing relationships (see Rubinstein, 1976). These assumptions, in conjunction with #5, permit use of a rather simple present value approach for firm valuation.

Now suppose one of the co-owners (#2) desires to receive a one-time dollar dividend to which the other co-owner (#1) does not agree. Among the possible motivations underlying co-owner #2's desire for the dividend are that he is somehow liquidity-constrained or wishes, for purposes of consumption or diversification, to "cash out" some of the dollar gain (if any) accumulated on his total capital investment in the firm. In any event, since the co-owners have equal interests in the firm, the only way #2 can receive a dividend is by creating it artificially (i.e., the homemade dividend).

We assume that co-owner #2 will create an artificial dividend at the least cost to co-owner #2's wealth. However, he must sell a portion (< 100%) of his ownership interest to create the dividend, possibly automatically conferring majority control of the firm upon co-owner #1. With majority control, co-owner #1 would have the ability and incentive to appropriate some of the firm's resources for consumption of perks. What is the source of this incentive? As we will show formally (and consistent with Jensen and Meckling, 1976), it is that #1 would not bear the full cost of any perks she consumes.

With respect to its effect on the value of the firm, any consumption of perks by an owner is the same as the owner receiving dividend payouts totally funded by means other than issuance of new debt or sales of ownership interest(s) to new future co-owner(s). We can now let the subscripts "$\wedge$" and "$*$" refer, respectively, to the moment immediately before and immediately after co-owner #2 decides, at time $t=0$, to sell an ownership interest in the firm. Given all the foregoing, and for moment $j=\wedge,*$ and time $t=0$, we can also let

V_j = value of the firm;

PVGO = present value of expected opportunities for growth available to the firm into the future;

S_{ij} = value of ownership interest of co-owner # i , $i = 1, 2, \ldots$;

W_{ij} = level of total wealth of co-owner # i , where $W_{i\wedge} \geq V_{\wedge}$ for $i = 1, 2, \ldots$;

E_1 = earnings per share the ownership expects the firm to generate over the coming year (all earnings realized over the past year have already, as of $t = 0$, been re-invested);

P = present value, as of moment $j = *$ (only), of perks that all co-owners expect #1 to consume into the future; and

M = present value, as of moment $j = *$, of expected future costs associated with (i) monitoring #1's perk consumption into the future and (ii) possible enforcement of any contractual restrictions on perk consumption (note that, recalling specifically assumption #1 above, $0 \leq P + M \leq PVGO$).

With the above definitions and assumptions, it should be clear that $S_{i\wedge} = \frac{V_{\wedge}}{2}$ for $i = 1,2$, where

$$V_{\wedge} = \left(\frac{E_1}{r}\right) + PVGO$$

and *r* is the annually-compounded nominal return that is equivalent to the constant continuously-compounded nominal return required by the ownership (see Section A of the Appendix).

Now we can examine the following three scenarios relating to the decision of co-owner #2 to artificially create a dividend, the dollar amount of which always equals $\varphi\left(\frac{V_{\wedge}}{2}\right)$ where $0 < \varphi < \left(1 - \frac{PVGO}{V_{\wedge}}\right)$, as to become clear later, with $\left(1 - \frac{PVGO}{V_{\wedge}}\right) < 1$:

I) co-owner #2 sells a portion ($=\varphi$) of his ownership interest to #1 and there will be no consumption of perks, i.e., $P = M = 0$ (this scenario is intended simply to serve as a benchmark for comparison);

II) same as Scenario I except co-owner #1 is expected to consume perks; and

III) co-owner #2 sells a portion of his ownership to a third party (co-owner #3, who could possibly be a limited partner) and co-owner #1 is expected to consume perks.

Scenario I

For co-owner #1 immediately after #2's decision to sell,

$$S_{1*} = S_{1\wedge} + \varphi\left(\frac{V_{\wedge}}{2}\right) = \left(\frac{V_{\wedge}}{2}\right) + \varphi\left(\frac{V_{\wedge}}{2}\right) = (1+\varphi)\left(\frac{V_{\wedge}}{2}\right) < V_{\wedge} \text{ and}$$

$$W_{1*} = S_{1*} + \left[\left(W_{1\wedge} - S_{1\wedge}\right) - \varphi\left(\frac{V_{\wedge}}{2}\right)\right]$$

$$= S_{1*} + W_{1\wedge} - \left[S_{1\wedge} + \varphi\left(\frac{V_{\wedge}}{2}\right)\right] = S_{1*} + W_{1\wedge} - S_{1*} = W_{1\wedge}.$$

Note here that the dollar value of #1's ownership interest increases from $S_{1\wedge}$ to S_{1*} $\left(> \frac{V_{\wedge}}{2}\right)$ and her incremental wealth falls from its initial level $(= W_{1\wedge} - S_{1\wedge})$ by the dollar amount she pays to #2 $\left(\varphi\left(\frac{V_{\wedge}}{2}\right)\right)$. However, the level of her total wealth does not change (i.e. $W_{1*} = W_{1\wedge}$).

For co-owner #2,

$$S_{2*} = S_{2\wedge} - \varphi\left(\frac{V_{\wedge}}{2}\right) = (1-\varphi)\left(\frac{V_{\wedge}}{2}\right) \text{ and}$$

$$W_{2*} = S_{2*} + \left[\left(W_{2\wedge} - S_{2\wedge} \right) + \varphi \left(\frac{V_{\wedge}}{2} \right) \right]$$

$$= S_{2*} + W_{2\wedge} - \left[S_{2\wedge} - \varphi \left(\frac{V_{\wedge}}{2} \right) \right] = S_{2*} + W_{2\wedge} - S_{2*} = W_{2\wedge} .$$

Note that the dollar value of #2's ownership interest falls to $S_{2*} \left(< \frac{V_{\wedge}}{2} \right)$ and his incremental wealth increases from its initial level $\left(= W_{2\wedge} - S_{2\wedge} \right)$ by the dollar amount of the artificially-created dividend he receives. However, the level of his total wealth also remains unchanged. Therefore, as a consequence of #2's decision to sell, the proportionate ownership interest of co-owner #1 has increased, whereas that of #2 has fallen, such that #1 now holds the majority interest in, and therefore majority control of, the firm. Finally, for the firm itself, $V_* = V_{\wedge}$. So long as #2 can costlessly create the homemade dividend, dividend policy is irrelevant.

Of course, at $t = 0$ both co-owners could instead decide to distribute some earnings, paying themselves a one-time dividend. In this event, firm value would fall (since PVGO would fall), ex-dividend, by <u>more than</u> the dollar amount of the dividend the ownership would receive. Thus, without the sale of an ownership interest to create a homemade dividend, dividend policy is relevant where PVGO is positive (see Section B of the Appendix).

<u>Scenario II</u>

For co-owner #1 immediately after the sell decision (and letting

$$\gamma = \varphi \left\{ \left[1 - \left(\frac{P}{V_{\wedge}} \right) \right]^{-1} \right\}, \quad \varphi < \gamma < 1 \quad \text{since} \quad \varphi < \left(1 - \frac{PVGO}{V_{\wedge}} \right),$$

$$S_{1*} = S_{1\wedge} - \left(\frac{P}{2}\right) + \varphi\left(\frac{V_{\wedge}}{2}\right) = \left(\frac{V_{\wedge} - P}{2}\right) + \varphi\left(\frac{V_{\wedge}}{2}\right) = \left(\frac{V_*}{2}\right) + \varphi\left(\frac{V_{\wedge}}{2}\right) = (1+\gamma)\left(\frac{V_*}{2}\right) < V_* \quad \text{and}$$

$$W_{1*} = S_{1*} + \left[\left(W_{1\wedge} - S_{1\wedge}\right) - \varphi\left(\frac{V_{\wedge}}{2}\right) + P\right]$$

$$= S_{1*} + W_{1\wedge} - \left[S_{1\wedge} + \varphi\left(\frac{V_{\wedge}}{2}\right) - \left(\frac{P}{2}\right)\right] + \left(\frac{P}{2}\right)$$

$$= S_{1*} + W_{1\wedge} - S_{1*} + \left(\frac{P}{2}\right) = W_{1\wedge} + \left(\frac{P}{2}\right).$$

Notice that the dollar value of #1's ownership interest changes to S_{1*}. Her incremental wealth changes from its initial level $\left(= W_{1\wedge} - S_{1\wedge}\right)$ due to the dollar amount she pays to #2 $\left(i.e., \varphi\left(\frac{V_{\wedge}}{2}\right)\right)$ and her expected consumption of perks, the total dollar present value of which equals P $(\leq \text{PVGO})$. Overall, the foregoing causes the level of her total wealth to increase $(\text{i.e., } W_{1*} > W_{1\wedge})$. In fact, the net benefit of her perk consumption is derived from the fact that she bears only half the cost, in present value terms, of that expected total consumption.

For co-owner #2,

$$S_{2*} = S_{2\wedge} - \left(\frac{P}{2}\right) - \varphi\left(\frac{V_{\wedge}}{2}\right) = \left(\frac{V_*}{2}\right) - \varphi\left(\frac{V_{\wedge}}{2}\right) = (1-\gamma)\left(\frac{V_*}{2}\right) \quad \text{and}$$

$$W_{2*} = S_{2*} + \left[\left(W_{2\wedge} - S_{2\wedge}\right) + \varphi\left(\frac{V_{\wedge}}{2}\right)\right] = S_{2*} + W_{2\wedge} - \left[S_{2\wedge} - \varphi\left(\frac{V_{\wedge}}{2}\right)\right]$$

$$= S_{2*} + W_{2\wedge} - \left[S_{2*} + \left(\frac{P}{2}\right)\right] = S_{2*} + W_{2\wedge} - S_{2*} - \left(\frac{P}{2}\right)$$

$$= W_{2\wedge} - \left(\frac{P}{2}\right).$$

Here the dollar value of #2's ownership interest falls, but by more than in Scenario I, to S_{2*} and he must sell a larger proportion (γ, $\gamma > \varphi$) of his ownership interest to #1 to artificially create the dividend of the size he desires to receive. His incremental wealth increases from its initial level ($= W_{2\wedge} - S_{2\wedge}$) by the dollar amount of the dividend. However, the level of his total wealth falls (i.e., $W_{2*} < W_{2\wedge}$) due to the negative effect of #1's expected perk consumption on the value of the ownership interest of each co-owner. In fact, #2 bears half the cost, in present value terms, of #1's expected total perk consumption.

Therefore, as a consequence of #2's decision to sell, #1 holds the majority ownership interest in the firm, conferring upon her the ability to consume perks, half the current cost of which she is able to shift to (or impose upon) #2. Clearly, dividend policy matters to both co-owners, especially to #2, and the value of the firm is reduced such that now $V_* = V_\wedge - P$.

Scenario III

Since there exists at least some uncertainty regarding the actual extent of #1's perk consumption into the future, a future co-owner (#3) could insist that #1 enter into a contract restricting her consumption of perks after she achieves majority control. In this case, #3 expects the firm to incur consumption monitoring and contract enforcement costs into the future, the present combined value of which equals M such that $M < P \leq PVGO - M$. In the absence of such a contract, #3 assumes #1's perk consumption simply to be such that $P = PVGO$ (recall assumption #1 above), with $M = 0$.

Assuming future co-owner #3 insists on a contract, for co-owner #1 immediately after #2's decision to sell (and letting $\lambda = \varphi\left\{\left[1-\left(\frac{[P+M]}{V_{\wedge}}\right)\right]^{-1}\right\}$, $\varphi < \gamma \leq \lambda < 1$ again since $\varphi < \left(1 - \frac{PVGO}{V_{\wedge}}\right)$),

$$S_{1*} = S_{1\wedge} - \left(\frac{P}{2}\right) - \left(\frac{M}{2}\right) = \left(\frac{V_*}{2}\right) \text{ and}$$

$$W_{1*} = S_{1*} + \left[\left(W_{1\wedge} - S_{1\wedge}\right) + P\right] = S_{1*} + W_{1\wedge} - \left[S_{1\wedge} - \left(\frac{P}{2}\right)\right] + \left(\frac{P}{2}\right)$$

$$= S_{1*} + W_{1\wedge} - \left[S_{1*} + \left(\frac{M}{2}\right)\right] + \left(\frac{P}{2}\right)$$

$$= S_{1*} + W_{1\wedge} - S_{1*} - \left(\frac{M}{2}\right) + \left(\frac{P}{2}\right) = W_{1\wedge} + \left(\frac{[P-M]}{2}\right).$$

Notice that the dollar value of #1's ownership interest falls to S_{1*}, whereas her incremental wealth rises from its initial level $(= W_{1\wedge} - S_{1\wedge})$ by the current value of her expected constrained consumption of perks. As a result, the level of her total wealth increases (i.e., $W_{1*} > W_{1\wedge}$), yet not as much as in Scenario II due to expected monitoring and enforcement costs. Interestingly, co-owner #1 bears only half the combined costs, in present value terms, of her expected total consumption of perks and expected monitoring and enforcement.

For #2,

$$S_{2*} = S_{2\wedge} - \left(\frac{P}{2}\right) - \left(\frac{M}{2}\right) - \varphi\left(\frac{V_{\wedge}}{2}\right) = \left(\frac{V_*}{2}\right) - \varphi\left(\frac{V_{\wedge}}{2}\right) = (1-\lambda)\left(\frac{V_*}{2}\right) \text{ and}$$

$$W_{2*} = S_{2*} + \left[(W_{2\wedge} - S_{2\wedge}) + \varphi\left(\frac{V_{\wedge}}{2}\right)\right] = S_{2*} + W_{2\wedge} - \left[S_{2\wedge} - \varphi\left(\frac{V_{\wedge}}{2}\right)\right]$$

$$= S_{2*} + W_{2\wedge} - S_{2*} - \left(\frac{[P+M]}{2}\right) = W_{2\wedge} - \left(\frac{[P+M]}{2}\right).$$

Here the dollar value of #2's ownership interest falls, by possibly even more (but no less) than in Scenario II, to S_{2*} and he must sell possibly an even larger proportion (λ , $\lambda \geq \gamma$) of his ownership interest to artificially create the dividend of the size he desires to receive. As in Scenario II, his incremental wealth increases from its initial level ($= W_{2\wedge} - S_{2\wedge}$) by the dollar amount of the dividend. However, the level of his total wealth falls (i.e., $W_{2*} < W_{2\wedge}$) due to the negative effects on the ownership interests of co-owners #1 and #2 of: (i) #1's expected perk consumption and (ii) expected monitoring and enforcement of the contract. As does co-owner #1, #2 bears half the combined costs, in present value terms, of (i) and (ii).

Finally, for the new co-owner (#3), very simply

$$S_{3*} = \varphi\left(\frac{V_{\wedge}}{2}\right) = \lambda\left(\frac{V_{*}}{2}\right) \quad \text{and} \quad W_{3*} = W_{3\wedge},$$

and the value of the firm is reduced, possibly even relative to its reduced value in Scenario II, such that now $V_{*} = V_{\wedge} - P - M$. Note in this theoretical framework that, at least as of the moment of #2's decision to sell, #3's ownership interest and wealth level is totally unaffected by #1's expected perk consumption and expected monitoring and contract enforcement. Dividend policy matters, but only to the two co-founding owners.

III. Discussion

We now extend the analysis by introducing collusion, via a "confidence factor", into financial markets, which moves us away from arms-length transactions. Trust is very important,

especially within the context of small business. Many deals involving small businesses are consummated via handshakes. We can let $CFac_{ij}$, $0 \le CFac_{ij} \le 1$, denote the confidence that party *i* has in party *j*. A value of zero for the confidence factor indicates no confidence whatsoever, whereas a value of 1 represents complete confidence in the other party, as in the case where one party regards another as a close trusted friend or family member.

There are currently three parties in our example, co-owners #1 and #2, and a third party (potential future co-owner #3) interested in buying an ownership interest from co-owner #2. The value for $CFac_{21}$ reflects the confidence that co-owner #2, who wishes to create the dividend, has in his co-owner, #1. The value for $CFac_{23}$ is a measure of the confidence that co-owner #2 has in the third party, potential future co-owner #3, etc. Table 1 identifies the relevant confidence factors and their associated scenario outcomes. We should note that since co-owner #1 has no desire to create a homemade dividend and never possesses less than half an ownership interest in the firm, the level of trust she has in the other co-owner(s), as would be reflected in $CFac_{12}$ and $CFac_{13}$, is irrelevant to the analysis. Although #1 may not be unilaterally able to impose a change in established policy, she can always unilaterally prevent other co-owners from doing so.

If we assume that co-owner #1 is someone co-owner #2 can trust completely, so that $CFac_{21} = 1$, then "collusion" (cooperation) of the two co-owners results in creation of the dividend for #2 with #1 agreeing not to consume perks. Co-owner #2 sells to co-owner #1, and we have Scenario I above. Since no perks are consumed, no value is "destroyed" via the dividend creation process. One might consider such a scenario with family members. A father might sell an ownership interest to his son when nearing retirement, trusting the son not to consume perks, rightly or wrongly. A sibling might sell an interest to another sibling to create a

homemade dividend, again trusting his/her sibling not to consume perks. If, however, $CFac_{21} < 1$, then #2 may decide to sell to a third party, potential future co-owner #3.

When selling to a third party, other confidence factors also become important. For $CFac_{23} = 1$, $CFac_{32} = 1$, and $CFac_{31} < 1$, co-owner #2 and potential future co-owner #3 can trust each other to vote to thwart #1's intention to consume perks. As a result of collusion of #2 and #3, the effects on firm value and the total wealth of each of the two co-founding owners are the same as in Scenario I (i.e., none). This might be the case if co-owners #1 and #2 are not family, but #2 sells to a third party who is a trusted family relation.

Interestingly, if co-owner #2 sells to a third party where $CFac_{31} = 1$ and $CFac_{32} < 1$ (regardless of the value for $CFac_{23}$), then collusion of co-owners #1 and #3 causes the effects on firm value and the total wealth of the two co-founding owners to be the same as in either Scenario I or II, depending upon any previous agreement between #1 and #3 regarding perk consumption. If the effects are to be the same as in II, then #3 pays #2 an amount for the ownership interest that is discounted to reflect the above-mentioned mutually-agreed level of perk consumption into the future. In fact, #1 can even agree in advance to share perks with #3 (still at the expense of #2).

However, for $CFac_{31} < 1$ and $CFac_{32} < 1$ (regardless of the value for $CFac_{23}$), we have Scenario III. The third party (future co-owner #3) contracts for a level of perk consumption, and then pays a value for the ownership interest that discounts future perk consumption plus associated "deadweight" costs. Even if perk consumption is contracted to be at zero, the value of the firm is reduced by these deadweight costs of monitoring and enforcing the contract. This is consistent with Myers and Majluf's (1984) conclusions that outside equity will be expensive to procure, relative to internally generated funds.

Note that each of co-owners #1 and #2 will prefer "inside money," someone who trusts him, or her, completely. As ownership interests are sold to "outsiders," a market for those interests is made at a lower price, reducing the wealth of both co-owners #1 and #2. Moreover, #2 will likely need to sell a larger proportionate ownership interest to generate a homemade dividend of a given dollar size. Note also that any ownership interest in the firm has two prices, one if sold to a third party who completely trusts either co-owner #1 or #2, and another if sold to an outsider who completely trusts neither of these two co-founding owners. This may be a reason for the existence of "sale restrictions" in company bylaws, which restrict the selling of shares to outside parties.

IV. Conclusion

We have shown that when firm control is important, dividend policy is relevant, because owners of a firm where control is important have limited abilities to create a homemade dividend. In our example concerning co-founders of a firm, any attempt to create a homemade dividend may decrease the value of the firm because the selling of any ownership interest allows the controlling co-founder to consume (additional) perks. Therefore, we have shown that an implicit assumption in Miller and Modigliani (1961) is that ownership is sufficiently diffuse such that control issues can be ignored.

We introduce a "confidence factor" into financial markets, and we show that if the selling co-founder can completely trust the other co-founder, then the two partners can cooperate to create a homemade dividend costlessly. However, if the partners trust each other less than completely, a co-founder may decide to sell the ownership interest to a third party. If an ownership interest can be sold to a third party who completely trusts either of the co-founders, and especially the selling co-founder, then the homemade dividend can be created costlessly.

Conversely, if the third party completely trusts neither of the co-founders, then he pays a price for the ownership interest that reflects the discounted value of future perk consumption and any "deadweight" costs of monitoring and enforcing the contract. Even if future perk consumption is contracted at a rate of zero, the value of the firm is reduced by these deadweight costs. Therefore, each of the co-founding owners loses wealth in the transaction. Moreover, there are two prices for any ownership interest in the firm that is sold to a third party, one if the interest is sold to an "insider" and another if the interest is sold to an "outsider."

Therefore, it may be value enhancing for the co-founders to negotiate a dividend policy when the firm is founded. In this case, the dividend policy is relevant, and it represents the desired dividend for both parties and the bargaining power between the two. It seems, therefore, that dividend policy for a firm where control is important is idiosyncratic to the owners of the firm.

REFERENCES

Brav, Alon, John R. Graham, Campbell R. Harvey, and Roni Michaely (2005). "Payout policy in the 21st century," *Journal of Financial Economics*, Vol. 77, No. 3, 483-527.

DeAngelo, Harry and Linda DeAngelo (2000). "Controlling stockholders and the disciplinary role of corporate payout policy: A study of the Times Mirror Company," *Journal of Financial Economics*, Vol. 56, No. 2, 153-207.

DeAngelo, Harry and Linda DeAngelo (2006). "The irrelevance of the MM dividend irrelevance theorem," *Journal of Financial Economics*, Vol. 79, No. 2, 293-315.

DeAngelo, Harry, Linda DeAngelo, and Rene M. Stulz (2006). "Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory," *Journal of Financial Economics*, Vol. 81, No. 2, 227-254.

Fama, Eugene F. and Kenneth R. French (2001). "Disappearing dividends: changing firm characteristics or lower propensity to pay?" *Journal of Financial Economics*, Vol. 60, No. 1, 3-43.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan (2002). "Are dividend changes a sign of firm maturity?" *Journal of Business*, Vol. 75, No. 3, 387-424.

Jensen, Michael C. and William H. Meckling (1976). "Theory of the firm: Managerial behavior, agency costs and ownership structure," *Journal of Financial Economics*, Vol. 3, No. 4, 305-360.

Miller, Merton H. and Franco Modigliani (1961). "Dividend policy, growth, and the valuation of shares," *The Journal of Business*, Vol. 34, No. 4, 411-433.

Myers, Steward C. and Nicholas S. Majluf (1984). "Corporate finance and investment decisions when firms have information that investors do not have," *Journal of Financial Economics*, Vol. 13, No. 2, 187-221.

Rubinstein, Mark (1976). "The valuation of uncertain income streams and the pricing of options," *Bell Journal of Economics*, Vol. 7, No. 2, 407-425.

APPENDIX

A. Composition of *PVGO*

Let r_c denote the continuously-compounded return per year, constant over time, the ownership requires for the firm's investment opportunity set (IOS) into the future. Thus, $r = e^{r_c} - 1$. Also, let $\bar{r}_t$ represent the continuously-compounded return the ownership expects the IOS to provide over future year *t*, such that $\bar{r}_t > \bar{r}_{t+1} > r_c$ for $t = 1, \ldots, n-1$ and $\bar{r}_t = r_c$ for all $t > n$ and some arbitrary $n >> 1$ *(recall assumptions 5 and 6 in Section II)*.

Since ownership maintains a policy of retaining all the firm's earnings *(current earnings* $\equiv E_0$*)*,

$$V_\wedge = \frac{E_1}{r} + PVGO = \left[\frac{E_0(e^{\bar{r}_1})}{r}\right] + PVGO$$

$$= \left\{\frac{E_0\left[e^{(\bar{r}_1+\bar{r}_2+\cdots+\bar{r}_n}\right]}{r}\right\}\left[e^{-r_c(n-1)}\right]$$

$$= \frac{E_0\left\{e^{[\Sigma_1^n \bar{r}_t - r_c(n-1)]}\right\}}{r}, \tag{A1}$$

implying

$$PVGO = \left(\frac{E_0}{r}\right)\left\{(e^{\bar{r}_1})\left(e^{[\Sigma_2^n \bar{r}_t - r_c(n-1)]}\right) - e^{\bar{r}_1}\right\}. \tag{A2}$$

Thus, $PVGO > 0$ since the difference within the braces {•} on the right-hand side (RHS) of A2 is positive (recalling the specification of $\bar{r}_t$). Interestingly, the first expression within braces {•} on the RHS of A1 reflects that the ownership expects PVGO to have dropped to zero by time $n - 1$ (recall $\bar{r}_t = r_c$ for all $t > n$), where n is the future moment the ownership expects the firm to attain the "maturity stage" of its life cycle. This result implies that firm value expected as of

$n-1$ can be derived as if ownership had decided to receive as dividends all earnings per year expected subsequently.

B. Effect of one-time dividend on dividend relevance

Now, suppose the ownership decides to pay itself a one-time dividend equal to some proportion, $1-\propto$, $0<\propto<1$, of current earnings (E_0). Accordingly, letting the subscript $\propto$ refer to the moment immediately after the decision,

$$E_{1(\propto)} = E_0 + \propto E_0(e^{\bar{r}_1} - 1) = E_0[1 + \propto (e^{\bar{r}_1} - 1)]$$

such that

$$V_\propto = \left[\frac{E_0(e^{\bar{r}_1})}{r}\right] + PVGO_\propto$$

$$= \frac{E_0[1+\propto(e^{r_1}-1)]\left\{e^{[\sum_2^n \bar{r}_t - r_c(n-1)]}\right\}}{r}, \qquad \text{(B1)}$$

implying

$$PVGO_\propto = \left(\frac{E_0}{r}\right)\{[1+\propto (e^{\bar{r}_1} - 1)]\left(e^{[\sum_2^n \bar{r}_t - r_c(n-1)]}\right) - e^{\bar{r}_1}\}. \qquad \text{(B2)}$$

Comparing A2 and B2, since $\propto<1$ implies $e^{\bar{r}_1} > 1+\propto (e^{\bar{r}_1} - 1)$, it must be true that $PVGO > PVGO_\propto$ and thus $V_\wedge > V_\propto$. The decision causes firm value to fall, ex-dividend, by the difference $PVGO - PVGO_\propto$.

Indeed, as we can readily show,

$$V_\wedge - V_\propto \ (= PVGO - PVGO_\propto)$$

$$= \left(\frac{E_0}{r}\right)\left\{e^{[\sum_2^n \bar{r}_t - r_c(n-1)]}\right\}(e^{\bar{r}_1} - 1)(1-\propto) \qquad \text{(B3)}$$

which exceeds $E_0(1-\propto)$, the dollar amount of the dividend. Hence, firm value falls, ex-dividend, by more than the amount of the dividend (paid from earnings), implying dividend policy is relevant where $PVGO > O$. However, if it's actually the case that $\bar{r}_t = r_c$ for all t (as would generally be the case for a firm that had reached the maturity stage of its life cycle), then $PVGO = 0$. B3 reduces to $E_0(1-\propto)$, recalling $r = e^{r_c} - 1$, reflecting that firm value falls, ex-dividend, by only a dollar amount equal to the dividend. Thus, dividend policy is irrelevant where $PVGO = 0$.

Table 1

Relationships among Scenario Outcomes and Confidence Factors

$CFac_{ij}$ denotes the confidence that co-owner *i* has in co-owner *j*. There are up to three co-owners: co-owner #1 who wishes to retain at least half ownership of the firm, #2 who wishes to sell some of his ownership interest to create an artificial (or homemade) dividend, and #3 who wishes to purchase an ownership interest from # 2.

Scenario Outcome	**2 Co-owners**	**3 Co-owners** $CFac_{21} < 1$ *and*
I	$CFac_{21} = 1$	$\begin{bmatrix} CFac_{23} = 1 \\ CFac_{31} < 1 \\ CFac_{32} = 1 \end{bmatrix}$ *or* $\begin{bmatrix} CFac_{31} = 1 \\ CFac_{32} < 1 \end{bmatrix}$
II	$CFac_{21} < 1$	$\begin{bmatrix} CFac_{31} = 1 \\ CFac_{32} < 1 \end{bmatrix}$
III	---	$\begin{bmatrix} CFac_{31} < 1 \\ CFac_{32} < 1 \end{bmatrix}$