INVESTOR PROTECTION, SHARE REPURCHASES, IRRATIONALITY AND AGENCY CONFLICTS: THE IMPLICATIONS FOR CORPORATE GOVERNANCE

Ganggang Zhang*, Richard Fairchild**

Abstract

This paper provides a theoretical analysis of the effects of the strength of investor rights on a firm's share repurchase policy in the face of agency conflicts and behavioural biases. We consider three reasons for firms to repurchase their shares; to eliminate agency costs of free cash-flow, to time the market, and to cater to investors. In the first case, we demonstrate that investor rights and repurchases may be complements or substitutes in addressing free cash flow problems. In the second case, we argue that stronger investor rights increase informational disclosure which reduces the ability to time the market using repurchases. In the final case, we argue that stronger investor rights may reduce value-reducing repurchase catering. We consider the corporate governance implications of our analysis, and discuss the effects of behavioural factors, such as bounded rationality, overconfidence, and regret, on the efficacy of governance systems to deal with the problems relating to repurchases.

Keywords: corporate governance, agency conflicts, investor protection

**School of Management, University of Bath, Claverton Down, Bath BA2 7AY, U.K., E-mail: mnpgz@bath.ac.uk*
***School of Management, University of Bath, Claverton Down, Bath BA2 7AY, U.K. mnsrf@management.bath.ac.uk*

1. Introduction

In recent years, researchers have been increasingly analysing the complex inter-relationship between a society's legal system, its corporate governance measures, the strength of shareholder rights, and corporate financing choices. For example, La Porta et al. have written several research papers on the effects of the legal system and shareholder protection on the development of capital markets (1997), dividend policies around the world (2000), the concentration of equity ownership (1999), and the relationship between investor protection and corporate governance (1998). Klapper and Love (2004) examine the relationship between corporate governance rankings and legal systems in emerging markets. Laeven and Majnoni (2004) demonstrate that an increase in judicial efficiency lowers the cost of credit in a large sample of countries. Demirguc-Kunt and Maksimovic (1999) examine the relationship between a country's institutions, the nature of its financial markets, and the maturity of debt. Some researchers (e.g., Allen and Song (2003), Botazzi and Rin (2002), and Fairchild and Yiyuan (2006)) examine the relationship between legal systems, corporate governance, and the performance of the venture capital sector. Other scholars have focused on governance and corporate finance in specific emerging countries, such as Mexico (e.g., Castaneda Ramos 1999, and Lopez-de-Silanes 2002) and China (e.g., Liu 2003). Furthermore, de Miguel et al (2005) provide an extensive analysis of the complex interactions between institutional factors, ownership structure, and firm performance.

In this paper we develop the research agenda on the corporate governance and corporate financing choices by focussing on the relationship between the strength of shareholder rights, monitoring and a firm's stock repurchase activities[1]. We believe that this is an interesting area to consider for several reasons. Firstly, relatively little work has been carried out in this area, compared with the emerging research on other corporate financing activities (an exception to this is the work by Jiraporn 2006). Secondly, our

[1] Our analysis is similar to Burkart and Panunzi's (2005) excellent game-theoretic model of the complex interaction between ownership concentration, monitoring, and legal shareholder protection. They show that, through the intermediating monitoring variable, ownership concentration and legal shareholder protection may be complements or substitutes in constraining agency problems. In our model, monitoring is the intermediate variable between repurchases and legal shareholder protection, which again may be complements or substitutes in constraining agency problems.

analysis will complement La Porta et al.'s (1997) analysis of corporate governance and dividends. Thirdly, we have previously employed survey techniques (see Fairchild and Zhang 2005a) that demonstrate that investors have relatively little understanding of the firm's motivations for repurchasing shares, compared to dividends, and that firms exploit this by timing the market in order to transfer wealth from tendering to non-tendering shareholders. In this paper, we discuss the corporate governance issues surrounding this managerial exploitation of investors. Fourthly, share repurchase timing and catering policies are interesting because they may be based on investors' behavioural biases. Therefore, our analysis motivates consideration of the effect of behavioural factors on effective corporate governance. Finally, share repurchases were, until very recently, illegal in many countries (especially emerging countries)[2]. In this paper, we ask why this may have been the case, and suggest that policy makers in these countries may have been concerned with the exploitation of irrational investors through repurchase timing. Now that repurchasing is legal in many of these countries, what are the governance implications? We consider the effect of shareholder rights on three aspects of repurchase policy: repurchasing and the agency costs of free cash flow, repurchase timing, and repurchase catering. We have been motivated by Jiraporn (2006), who considers the effect of shareholder rights on repurchase activity in the face of agency problems of free cash flow. In particular, he discovers a positive relationship between the strength of shareholder rights and repurchases (that is, they are complements). We ask, are they complements or substitutes[3]?

In order to analyse the relationship between share-holder rights and repurchases, and the governance implications, the remainder of the paper is organized as follows. Section 2 motivates our analysis by providing the background to the corporate sector's burgeoning usage of share repurchases as a payout mechanism. In section 3, we develop our share repurchasing models. In section 4, we outline our survey evidence that demonstrates that investors have little understanding of share repurchases, and that managers can exploit this to expropriate wealth from irrational shareholders. Section 5 presents the policy and governance implications of our analysis. Section 6 concludes.

2. Background to Share Repurchases

For decades, corporations have overwhelmingly preferred distributing cash in the form of dividends over repurchases. However, the landscape has changed dramatically over the last twenty years, with open-market share repurchase programs becoming increasingly popular.

In 1985 only 129 open-market share repurchase programs were announced, but in 1996 there were 1,319 programs announced in the US (Jagannathan and Stephens, 2001). Furthermore, these authors observed that in 1986 only about 27% of the firms announcing an open-market repurchase program had previously initiated an open-market share repurchase program in the prior five years, but in 1996 this figure was nearly 54% and over a half of them had two or more open-market share repurchases in the prior five years. Fried (2002) also documents that between 1980 and 1998, share repurchases rose from 1.4 billion to 220 billion annually, accounting for more than 50% of the total cash distributed by publicly traded US firms in 1998.

Researchers (e.g., Wansley et al 1989, McNally 1999, Wada 2005) have recognized that there are 5 main motives for firms to undertake share repurchases; the capital structure motive (repurchases increase leverage, and are therefore useful if a firm believes that it is operating below its optimal leverage level), the free cash flow motive (following Jensen 1986, repurchases eliminate free cash flow at the manager's discretion), the anti-takeover motive, signaling of undervaluation, and wealth transfer due to market timing (repurchasing undervalued shares at bargain prices). In addition to these motives, Fairchild and Zhang (2005) have suggested that repurchases may be driven by the same catering motive identified by Baker and Wurgler (2004) for dividends.

In considering these motives, it is interesting to relate three particular motives to our present study. The free cash flow motive suggests that, when the firm lacks desirable investment opportunities, repurchases are beneficial and value-adding, since they return cash to the shareholders, rather than leaving free cash flow at the discretion of the firm's self-interested management. In our study, we then consider whether repurchases and legal share-holder protection are complements or substitutes in eliminating the agency problems of free cash flow.

In contrast, the last two motives mentioned above, the timing motive and the catering motive, reveal the potentially damaging nature of repurchases. In both cases, managers exploit investor irrationality, and in the catering case, this may lead to long-run value-destruction. We suggest that this explains why repurchases have been illegal in many countries until recently.

2.1. Evidence on shareholder protection and repurchases

Jiraporn (2006) examines the relationship between share repurchases and shareholder rights in the face of

[2] For example, please see Zhang (2002) and Wada (2005) for Japan, Lamba and Ramsay (2000) for Australia, Brockman and Chung (2001) for Hong Kong.

[3] Hence, our analysis provides a natural complement to the analysis of La Porta et al. (1997) who analyze whether dividends and investor protection are substitutes or complements.

the agency costs of free cash flow. He demonstrates a positive relationship between shareholder rights and repurchasing activity; firms where shareholder rights are weaker (stronger) tend to repurchase less (more) shares. He argues that this is because managers of firms with weak shareholder rights are better able to exploit the weak shareholder rights and retain more cash with the firm. Managers of firms with strong shareholder rights, however, are forced to disgorge cash to stockholders in the form of repurchases. His work implies share repurchases and shareholder rights are complements.

This is consistent with the results from La Porta et al. (1997), who use the data of more than 4,000 firms from 33 countries around the world to test two agency models of dividends: the outcome model and the substitution model. According to the 'outcome model', dividends are paid because outside shareholders pressure corporate insiders to disgorge cash. Therefore, if the outside shareholder rights are *strong* we should expect higher dividends. According to the 'substitution model', insiders interested in issuing equity in the future pay dividends to establish a reputation for decent treatment of outside shareholders.

Therefore, if the outside shareholder rights are *weak* we should expect higher dividends. La Porta et al.'s (1997) results support the outcome model. But they did not examine whether share repurchases have the same function as dividends. Jiraporn (2006) finished their work, and his result is also in support of the 'outcome agency model', i.e. there is a positive relationship between shareholder rights and share repurchases.

It is interesting to note that, in many countries, especially emerging countries where shareholder right are weak, share repurchases have been illegal initially (see eg; Zhang (2002) and Wada (2005) for Japan, Lamba and Ramsay 2000 for Australia, Brockman and Chung (2001) for Hong Kong). It seems a supporting evidence of Jiraporn (2006) and La Porta et al. (1997). However, over time, the regulations in these countries have gradually been relaxed, resulting in a fast increase in share repurchases. Does this imply shareholder rights in these countries increase as well or does it suggest there is a negative relationship between shareholder rights and share repurchases (i.e., they are substitutes) instead? In the current paper, in contrast to Jiraporn (2006) we argue that the motives behind share repurchases may make a difference so that share repurchases and shareholder rights may be substitutes instead of complements. We examine the three most popular motivations behind share repurchases: repurchases as a commitment device in the face of free cash flow; repurchases as a timing device; repurchases as a catering device. In each case we use a very simple theoretical model to demonstrate how share repurchases and shareholder/investor rights could become substitutes rather than complements.

3. Analysis of Models

In this section, we develop our three repurchase models which examine the effects of legal shareholder protection on repurchasing in the face of agency problems of free cash flow, repurchase timing, and repurchase catering.

3.1. Repurchases and the agency costs of free cash flow

Jensen (1986) considered the agency costs of free cash flow. He argued that a firm with excess free cash flow is inclined to over-invest by adopting investment projects with negative NPV. If managers are over-investing, an increase in dividends will reduce the amount of free cash flow, which mitigates the over-investment problem. Hence dividends can help control agency problem by getting rid of the excess free cash flow.

Based on Jensen's agency problem (1986), Jiraporn (2006) suggests that, like dividends, share repurchases can function as a device to control agency problem. Further he argues that agency theory predicts that the extent to which firms repurchase their stock is a function of the severity of agency costs and agency costs in return are related to the strength of shareholder rights (Gompers et al. 2003). Therefore, he assumes that the amount of share repurchases is influenced by the strength of shareholder rights. He finds that firms where shareholder rights are weaker (stronger) tend to repurchase less (more) stock. Therefore, he argues that shareholder rights and share repurchases are complements.

In La Porta et al's (2000) analysis of dividends, investor rights and dividends are complements, because stronger rights enable investors to force the firm to disgorge free cash flow in the form of dividends rather than waste it on pet negative NPV projects. They contrast this with the substitution model, where, in the face of investor weakness, firms need to establish a reputation for doing the right thing by paying dividends.

Our first model demonstrates that shareholder rights and repurchases may be complements or substitutes. We consider the interaction of shareholder rights, investors' monitoring incentives, managerial compensation, and private control benefits on the manager's incentives to repurchase shares.

The model is as follows. At date 0, the manager of a firm has the opportunity to invest in a new project. The project requires investment I and is expected to provide income of X. The project has negative NPV; that is, $X - I < 0$, but provides private benefits to the manager of B. Hence, there may be agency problems of free cash flow.

At this date, the manager makes a payout/investment policy decision. In order to simplify the model, the firm happens to have free cash flow at date 0 equal to I. Therefore, he has exactly

enough cash flow to take the project[4]. Alternatively, he can refuse to repurchase shares and use the cash flow in two alternative ways. He can use the free cash flow I to repurchase the shares. If he does not do so, then he can invest the free cash flow I in the negative NPV project, or he can invest it in the financial markets at zero NPV. Investors can observe the manager's decision. However, the manager's investment in the negative NPV project is non-verifiable in the absence of monitoring by the investors (hence we consider an incomplete contracts framework). At date 1, the investors choose whether to monitor the firm at cost $M > 0$. This has the following effect. If investors monitor, they prove (to the courts) that the manager invested in the negative NPV project. The manager is penalised by an amount $F > 0$, which is transferred to the investors as compensation. However, if the investors monitor, and the manager has not invested in the project, there is no penalty transfer. Therefore, since the investors can observe the manager's payout investment choice, they will only monitor if the manager has invested in the project (otherwise, they will be expending monitoring costs M without any gain. At date 2, the manager and the investors receive their payoffs.

The manager has the following compensation scheme:

$$M = \alpha V + b,$$

where $b \in \{B > 0,0\}$ if he takes/does not take the project respectively, α represents the manager's equity stake, and V is the value of equity. We consider two versions of this game. In the first version, the manager has a long-term incentive scheme. That is, he receives his equity (and his private benefits) at date 2. Therefore, the market observes his investment decision (in the financial markets or the project) before valuing the equity. In the second version, he has a short-term incentive scheme, whereby he receives his equity at date 0, when he makes his payout/investment decision. In this case, the value of equity represents the market's expectation of the manager's future investment decision. We solve the model using backward induction.

a) Long-term managerial compensation.

First, we note that if investors observe that the manager has repurchased shares or invested at zero NPV in the financial market at date 0, they will have no incentive to monitor the manager at date 1. This is because the investors' respective payoffs with and without monitoring are

$$\prod_I = (1-\alpha)V - M, \quad (1)$$

$$\prod_I = (1-\alpha)V. \quad (2)$$

If investors observe that the manager has invested in the negative NPV project, their respective payoffs with and without monitoring are

$$\prod_I = (1-\alpha)(V + X - I), \quad (3)$$

$$\prod_I = (1-\alpha)(V + X - I) + F - M. \quad (4)$$

Therefore, having observed that the manager has invested in the negative NPV project, they will monitor only if $F > M$. We define strong shareholder rights as the case where $F > M$ (high penalty/low monitoring costs) and weak shareholder rights as the case where $F < M$ (low penalty/high monitoring costs). Later, we discuss the relationship to common law countries (strong shareholder protection) and civil law countries (weak investor protection).

We now move back to the manager's date 0 investment/payout decision. If investor rights are strong $(F > M)$, the manager knows that, if he invests in the project, the investors will monitor at date 1. He also knows that if he repurchases shares, or invests in the financial market, the investors will not monitor him. Therefore, his respective date 0 expected payoffs from repurchasing, investing in the financial market, or investing in the project are;

$$\prod_m = \alpha V,$$

$$\prod_m = \alpha V, \quad (5)$$

$$\prod_m = \alpha(V + X - I) + B - F. \quad (6)$$

Therefore, he will invest in the new project if $\alpha(X - I) + B - F \geq 0$; otherwise, he randomizes between repurchasing or investing in the financial markets.

Next, consider the case where investor rights are weak $(F < M)$. In this case, the manager knows that if he invests in the project, the investors will not monitor him. Now the manager's payoff from investing in the new project is

$$\prod_m = \alpha(V + X - I) + B. \quad (7)$$

Hence, the manager will invest in the new project if

$$\alpha(X - I) + B \geq 0. \quad (8)$$

We focus on the case where

$$\alpha(X-I)+B \geq 0 > \alpha(X-I)+B-F.$$

Therefore, if investor rights are weak $(F < M)$, the manager will not repurchase, but will invest in the negative NPV project. If investor rights are strong $(F > M)$, the manager will randomise between repurchasing or investing in the financial markets, rather than invest in the negative NPV project. This analysis supports Jiraporn's (2006) and La Porta et al's (2000) analysis that investor rights and repurchases are complements. When investor rights are weak, the manager chooses to eliminate repurchases, so that he can invest in the value-reducing project without fear of monitoring and penalties. When investor rights are strong, the manager does not want to invest in the bad project,

[4] Isagawa (2000) makes the same simplifying assumption in his model; the free cash flow exactly equals the required project investment funds.

due to investor monitoring and penalties. Hence, he repurchases shares instead.

b) Short-term managerial compensation.

In the previous case, the manager chose his repurchase policy according to his desire to invest in the negative NPV project, and repurchases and shareholder rights were complements.

Now we consider the case where he is compensated in the short-term. In this case, repurchases may be used as a commitment device (not to take the value reducing project). Now, repurchases and share-holder rights may be substitutes[5].

This game is different from the previous case in the following respect. When the manager makes his date 1 decision whether to invest in the financial markets or the new project, he has already received his equity compensation (based on his date 0 decision whether to repurchase shares or not).

Therefore, his date 1 decision is purely determined by the private benefits and the penalty. As before, if the investors observe that the manager has invested in the new project, investors will monitor only if $F \geq M$. Therefore, if $F \geq M$, the manager compares $\prod_m = 0$ and $\prod_m = B - F$, his respective payoffs from investing in the financial markets or the project. Therefore, if shareholder rights are strong, the manager will invest in the new project only if $B - F \geq 0$ (note the difference between this and the previous case. The manager's incentive condition in the previous case included the effect of his decision on his equity stake. Recall that in the current case, the manager has already been paid).

If $F < M$, the investors do not monitor when the manager takes the bad project. Therefore, the manager compares $\prod_m = 0$ and $\prod_m = B$, his respective payoffs from investing in the financial markets or the project. Therefore, if shareholder rights are weak, the manager will invest in the new project only if $B \geq 0$.

From this point, we make the following simplifying assumption; $F > B > 0$. This assumption enables us to focus the analysis. It says that if shareholder rights are strong, the manager will not take the new project, since he fears the penalty from monitoring. If shareholder rights are weak, he will take the new project, since he knows that he will not be monitored.

Now, we move back to examine the manager's date 0 repurchase/investment decision. If investor rights are strong, the market knows that the manager will not invest in the new project. This will be priced into the current market value of equity. Therefore, the manager's date 0 payoff will be

$$\prod_M = \alpha V \qquad (9)$$

regardless of whether he repurchases or not at date 0. Since he is indifferent, he randomizes, and repurchases with probability of ½.

If investor rights are weak, the market knows that the manager will invest in the new project at date 1 if he does not repurchase at date 0. Since there will be no monitoring at date 1, the manager compares

$$\prod_M = \alpha V \qquad (10)$$

and

$$\prod_M = \alpha(V + X - I) + B \qquad (11)$$

from repurchasing/not repurchasing respectively. Therefore, when shareholder rights are weak, the manager will not repurchase if

$$\alpha(X - I) + B \geq 0, \qquad (12)$$

and will repurchase if

$$\alpha(X - I) + B < 0. \qquad (13)$$

In this latter case, he is using the repurchase to eliminate free cashflow, as a commitment device not to invest in the bad project. We note here that, if $\alpha(X - I) + B < 0$, shareholder rights and repurchases are substitutes (in contrast to Jiraporn). When shareholder rights are weak, the manager repurchases (in order to commit not to take the bad project). When shareholder rights are strong, the manager randomizes between share repurchases and investing in the financial markets. The intuition is that repurchases are employed as a commitment not to take the bad project, and substitute for shareholder rights.

Finally, note that, if $\alpha(X - I) + B > 0$, shareholder rights and repurchases are complements. When shareholder rights are weak, the manager will not repurchase (so that he can take the new project). When shareholder rights are strong, the manager randomizes between share repurchases and investing in the financial markets.

Therefore, our model has identified that the relationship between investor rights, repurchases, and performance may be complex. Investor rights and repurchases may complement each other, in eliminating agency problems of free cash flow. On the other hand, they may be substitutes[6].

3.2. Repurchase Timing and Share-holder Rights

Isagawa (2002), and Fairchild and Zhang (2005a) develop timing models, in which managers exploit investor irrationality to repurchase undervalued shares at bargain prices. These repurchase timing models are based on the vast evidence of managerial timing using open market share repurchases. Cook, Krigman and

[5] Jiraporn (2006) does not consider the commitment role of repurchases.

[6] Two governance papers that analyse such complex relationships are Burkart and Panunzi (2005) who analyse the complex relationship between ownership concentration, monitoring and performance, and Miguel et al (2003) who analyze the relationship between ownership structure and firm value.

Leach's (2000) find that NYSE firms on average beat their benchmarks while Nasdaq firms do not. Ginglinger and Hamon (2003) use data from Euronext Paris (the Paris Stock Exchange) to study repurchase timing and the impact of repurchase activities on liquidity. They find that on average managers have some timing ability. Brockman and Chung (2001), Zhang (2002) and Lamba and Ramsay (2000) also find significant timing evidence in Hong Kong, Japan and Australia respectively. Brav et al's (2004) extensive survey reveals that managers are even awarded financially for buying back their shares cheaply.

If the market is efficient, and investors are rational, managers should not be able to time the market using repurchases. The large timing evidence, therefore, points to market inefficiency and/or investor irrationality. In order to be able to time the market profitably, the firm's shares must be undervalued at the time of the repurchases, and the market must react with a delay to the repurchase. Indeed, Ikenberry, Lakonishok, and Vermaelen (1995) find that the market has a slow reaction to share repurchases.

In this paper, we incorporate the effect of investor rights into Fairchild and Zhang's (2005a) timing model. The idea behind our model is that a firm's shares are currently undervalued, and, due to investor irrationality, the market price reacts slowly to the share repurchase. This provides an incentive for the manager to repurchase shares cheaply in order to transfer wealth from tendering to non-tendering shareholders. We incorporate investor rights by assuming that these rights enforce some disclosure of the firm's private information. The greater the investors' rights, the higher the disclosure. Hence, as investor rights increase, the profit of buying back shares is reduced and managers would choose to repurchase less shares. On the other hand, if investor rights are low or weak, they get very limited information about the firm and they would have a lagged reaction to share repurchases. Managers would take advantage of this to buy back more shares. Hence, share repurchases and investor rights are substitutes for each other. We use a simple model to explain this. The manager's profit from timing is

$$\prod_{timing} = (V_1 - V_0) N_1 - C \qquad (14)$$

where V_0 represents the current market value of the equity, and V_1 is the fundamental value of the equity. Assume that the market price does not immediately react to the share repurchase, but later increases to equal fundamental value. The manager is rewarded based on the timing profit.

The difference between the fundamental value and the current market value depends on disclosure, which is a function of investor rights I. Therefore,

$$V_1 = V_0 + \varepsilon(\Delta I) \qquad (15)$$

where $\varepsilon'(\Delta I) > 0$ and

$$\Delta I = I_m - I_i \qquad (16)$$

Because of asymmetric information problem, we assume managers have more private information about the firm than investors (i.e., $I_m > I_i$), and we also assume that the information gap between managers and investors is depending on investors rights. That's, if investor rights are strong, the information gap (i.e., $\Delta I = I_m - I_i$) is narrowed, while if investor rights are weak, the information gap is expanded. We define

$$I_m = I_i + I(q) \qquad (17)$$

Where $I(q)$ is the private information that managers have. $I(q)$ is decreasing when investor rights q is increasing (i.e., $I'(q) < 0$). Under extreme condition where share holder rights are very strong (or very weak), the private information is 0 (or 1).

Using (10) to substitute I_m in (9) and using (9) to replace ΔI in (8), we can get

$$V_1 = V_0 + \varepsilon(I(q)) \qquad (18)$$

Now using (11) to replace V_1 in (7), we can get that

$$\prod_{timing} = (V_1 - V_0) N_1 - C = \varepsilon(I(q)) N_1 - C \qquad (19)$$

Equation (19) is very interesting because it relates investor rights to the timing profits managers can obtain from share repurchases. We know $I'(q) < 0$, so if investor rights are strong, $I(q)$ is getting smaller and so is the timing profits (i.e., $\prod_{timing}$). If investor rights are strong enough and information gap between managers and investors ($I(q)$) is close to 0, the timing profit is not sufficient to cover the costs of share repurchases (i.e., $\varepsilon(I(q)) N_1 \le C$). At this time managers will choose not to repurchase at all. However, when investor rights are weak and so the information gap is getting bigger, the timing profits are far more than the costs of share repurchases (i.e., $\varepsilon(I(q)) N_1 > C$). At this time, managers will find buying back shares are profitable and decide to buy back more shares. From the analysis of the simple model above, we can see that in the case of repurchases as a timing device, share repurchases and investor rights are substitutes for each other.

3.3. Repurchase Catering and Investor Rights

In this case we examine whether repurchases and investor rights are substitutes or complements when repurchases are used as a catering device.

Baker and Wurgler (2004) develop a theory to explain that managers' decision to pay dividends is

driven by investor demand. Managers try to cater to investors and just give investors what they want. They assume when investors put a stock premium on dividend payers managers pay dividends to cater to this demand and don't pay dividends when investors prefer non-payers. Their empirical test also supports the catering theory.

Fairchild and Zhang (2005b) develop a theoretical model in which managers can use repurchases instead of dividends to cater to investor payout demand. Their model are also based on market irrationality as well (i.e., investors have a lagged reaction to share repurchases). They show us that repurchase catering instead of dividend catering could be the best choice for managers of catering investors. But they point out that catering through dividends or repurchases is inefficient since managers pass up positive NPV projects.

To show the relationship between share repurchases and investor rights, we also use a simple theoretical model to demonstrate it. Following Baker and Wurgler (2004) and Fairchild and Zhang (2005b) we also assume that there is irrational repurchase demand from investors. Managers are rational in this model and so they know that catering will make them miss some positive NPV projects. But they just do what investors want. Besides, in this model managers' compensation is also partially relying on the short-term market price after catering. Hence, catering will also give managers chances of making their own profits. There is no investing in this model for the firm, and so we assume the firm's fundamental value is constant throughout the dates. And we also assume before catering the market value is exactly the same as its fundamental value.

If catering, Managers' compensation is given by

$$\prod_M = \alpha V_1 - q.F(\Delta V), \qquad (20)$$

where α represents the manager's equity stake, and V_1 represents the current market value of the firm after share repurchase catering. $q.F$ represents the expected penalty for the manager for his misdeeds. Similarly, $q \in [0,1]$ is the measure of investor rights, and is the probability of the manager being disciplined, and depends on the strength of the investors and the legal system. $F(\Delta V)$ is function of the difference between the firm's fundamental value and market value. That is,

$$F(\Delta V) = F(V_1 - \overline{V}) \qquad (21)$$

Where, $\overline{V}$ is the firm's fundamental value at date 1 and V_1 is the firm's market value at date 1. Here, $F(0) = 0$ and $F'(V_1 - \overline{V}) > 0$ which implies $F(V_1 - \overline{V})$ is increasing with the difference between V_1 and $\overline{V}$. According to Baker and Wurgler (2004), if managers cater to the market's irrational payout demand at date 1, the market reacts positively to the catering and thus make the firm's market value deviates form its fundamental value at date 1. That's, if managers cater to investors using share repurchases, $V_1 > \overline{V}$.

From (20) and (21) we can see that here managers' penalty is depending on two factors: the shareholder rights and the difference between the firm's market value and its fundamental value. When investor rights are high or strong, they react strongly and positively to repurchase catering. As a result V_1 is getting very high, which, on the other hand, increases their penalty as well. Obviously, managers' decision on repurchase more or less depends on the trade off between the market positive reaction and their penalty.

If not catering, the market value is the firm's fundamental value, and so there is no penalty for managers. Managers' compensation is given by

$$\prod_M = \alpha \overline{V} \qquad (22)$$

Comparing (20) and (22), we can get when $q < \frac{\alpha(V_1 - \overline{V})}{F(\Delta V)}$ (i.e., investor rights are low), managers will choose catering. When $q > \frac{\alpha(V_1 - \overline{V})}{F(\Delta V)}$ (i.e., investor rights are high), managers will choose not to cater to investors. The result is interesting because in this model share repurchases and investor rights are substitutes as well. When investor rights are low, managers' private benefit is increasing and their penalty is too small to be a big concern for them. They'll choose catering. When investor rights are high, the penalty is getting too much for managers even if their private benefit is increasing as well. As a result of this trade off, they'll choose not to cater instead. Therefore, under this model repurchase catering and shareholder rights are substitutes as well.

4. Repurchases and Irrationality: Our Survey Evidence

In case 2 and 3 we talked about investor irrationality. In case 2 we assume investors have a lagged reaction to share repurchases and managers try to exploit this to time the market profitably by using share repurchases. But, a) do investors under-react, with lagged reaction over time, following share repurchases? b) do managers believe that they can time the market profitably using share repurchases? If so, what is their timing policy (that is, do they repurchase intensively an immediately, or do they repurchase slowly and gradually)? c) do investors react to repurchases and dividends differently? d) do managers believe that investors react to repurchases and dividends differently? If so, how does this affect the manager's payout policy (that is, his choice between dividends and repurchases)?

In order to provide support for the assumptions of our model, we surveyed managers and investors

regarding their attitudes to share repurchases and dividends (for the details of the survey, like questionnaire structure, delivery methods, etc, please see Fairchild and Zhang (2005a))[7]. Here, we just briefly introduce some related results from our survey.

From our survey we observe that over 80 percent of investors believe that their reaction to dividends announcements is 'very quick' (Question 6.1). Interestingly, although 37.3 percent think their reaction to repurchase announcements is 'slow' or 'very slow', the majority of them (62.7 percent) still think that their reaction to repurchase announcements is 'quick' or 'very quick' (Question 6.2). It seems that investors believe that their reaction to both dividend announcements and repurchase announcements are 'quick' or 'very quick'. But, when comparing their reaction to dividends announcements with their reaction to repurchase announcements, 58.1 percent think their reaction to dividend announcements is 'quicker' or 'much quicker' than to repurchase announcement. This result implies that investors have a lagged reaction to repurchases relative to dividends.

When asking managers whether they attempt to time the market by using repurchases (Question 11.1), 74.2 percent say 'Yes'. The mean value is –1.74, and the result is significant. This is consistent with Brav et al's (2004) survey result, in which most CFOs believe that they can time the market and buy back their shares profitably. When managers are asked about how they execute share repurchases (Question 11.2), 43.5 percent say that they will do it intensively while 56.5 percent think that they will do it slowly and gradually over time. The mean value is –1.43 and is significant at 0.05 level. This result is very interesting. Our model predicts that share repurchases becomes more immediate and intensive as investor rationality increases. Hence, if investors are highly rational (but not fully), managers should repurchase intensively. The result that 56.5 percent think that they will do it gradually implies that at least managers believe that investors are very irrational, and their rationality is growing slowly so that managers can take their time over repurchases. Therefore, our survey supports the view that managers believe that investors reaction slowly to repurchase announcements.

Furthermore we think it might be interesting to make a comparison between answers from "Investor" and answers from "Manager" to those questions both of the groups are required to answer. Question 7 investigates the share price behaviour following dividend increase announcements and share repurchase announcements. Although most of investors and managers believe that share prices will go up immediately following dividend increase announcements, most investors still believe that share price will go up *immediately* following repurchase announcements while most managers believe that share price will go up *gradually* following repurchase announcements. And this difference is significant. Manager's answers are in support of the empirical evidences which find the market has a slow and lagged reaction to share repurchases. However, investors seems have no idea about repurchases. To get to know and understand repurchase, it will take time and so investors' reaction is slow and lagged. Managers, on the other hand, can take advantage of this to time the market profitably. These provide strong support to our model assumptions. And we think these could partially explain why investors have a differential reaction to dividends and repurchases.

In summary, the results of our survey provide direct evidence of investors' and managers' view toward open-market share repurchases. Our survey supports the hypothesis that investors exhibit differential reaction to dividend and repurchase announcements. Managers believe that they can time the market profitably, and investors believe that their reaction to repurchases is affected by the intensity of actual share repurchases.

The results of our survey are consistent with the survey results of Wansley, Lane and Sarkar (1989) and Brav, Graham, Harvey and Michaely (2004). Wansley, Lane and Sarkar (1989) conducted a survey of management's view on share repurchase and tender offer premiums. They investigated management's view on the determinants of tender offer premiums. They found that the tender offer premium was affected by the size of the repurchase. Brav, Graham, Harvey and Michaely (2004) investigated CFOs' belief on payout policy. They also found that managers use repurchases to time the market, and repurchase premium is affected by size of repurchase. Thus, their surveys obtain the same results as ours.

5. Implications of our models for corporate governance

In order to consider the implications of our models for corporate governance, it is worth noting that the managerial motives for repurchasing are different in each of the models, and that each model incorporates different levels of rationality.

In model 1, the manager and the investors are fully rational, and repurchasing addresses the agency problem of free cash flow. We demonstrated that repurchases and investor rights may be complements or substitutes in eliminating free cash flow problems. The governance implication of our first model is that if all of the players are rational, and the agency problem results from pure managerial rational self-interest, it should be relatively straight forward to address this problem by strengthening shareholder rights, which (in the complement version) encourages the manager to increase repurchases, hence eliminating the free cash flow problem.

In model 2, investors are irrational (reacting

[7] In the paper of Fairchild and Zhang (2005a), the survey results are from the responses by March 2005. In this paper our survey analysis, however, is based on the updated survey responses.

slowly to repurchases), and the rational self-interested manager exploits this to transfer wealth. As in model 1, it should be relatively straight forward to design a governance system that strengthens share-holder rights to eliminate this problem. Note the contrast between model 1 and model 2. In model 1, we seek to encourage repurchases to eliminate agency problems. In model 2, we seek to eliminate repurchases, since, according to Jensen (2005), "we should not legitimise the principle that "it is OK as a matter of practice to engage in transactions that benefit one group of share-holders at the expense of another … managers and the board will maximise long run value by treating all shareholders equally."

In discussing the implications of model 3 (the catering model), we refer to the paper by Jensen (2005). In Jensen's paper, he conducted a pioneering discussion of the agency costs of overvalued equity. He said "when a firm's equity becomes substantially overvalued, it sets in motion a set of organisational forces that extremely difficult to manage- forces that almost inevitably lead to destruction of part or all of the core value of the firm." In this paper, we draw a parallel with repurchase catering, whereby managers are rewarded on short-term (overvalued) equity, and so exploit investor irrationality to cater.

Jensen argues that often these forces are dangerous because the manager initially is unaware of the forces involved (bounded rationality). Once the manager realises the problem it is too late, and he must keep catering (to the outside pressure). Jensen also considers how behavioral factors can expand the range of costly conflicts of interest arising from agency problems. For example, managerial optimism can lead to the vicious circle of catering.

Jensen likens this manipulation to managerial heroin (which we also liken to behavioral factors like overconfidence, emotional attachment to the firm etc). "Like an addictive drug, manning the helm of an overvalued company feels great at first… but as drug users learn, massive pain lies ahead." In our model of which share repurchases are used as a catering device, managers try to exploit weak shareholder rights by using share repurchases to maximize their compensation. When the share price is far above the firm's fundamental value, managers cannot and do not intend to derive the price down. At the end, the price is getting too high and destructs the firm value. Once you start it, you cannot stop it.

Jensen argues that the massive agency costs of overvalued equity point to the failure of the current corporate governance system. Further, Equity-based contracts exacerbate the problem of overvalued equity (like our models demonstrated above). One obvious way out seems to abandon the equity-based compensation contracts. Jensen mentioned that the New York Stock Exchanges suggested director fees as the only type of compensation for the chairman of the audit committee. But he argues this type of compensation is not sufficient to attract top persons for such a position given the work and risks of this position. What can we do about it now? Stopping overvaluation (like our catering) from happening in the first place is an obvious solution. But the main difficulty, as Jensen said, is the fact that it's really hard for us to bear the costs in the short-term for the benefits in the long-term.

From the perspective of our paper, we do actually have some solutions to the agency problems. If share repurchases are used as a commitment device, we can solve this rational problem by increasing long-term equity, and/or increasing corporate governance/investor protection.

If share repurchases are used as a timing device (in this model manager is still rational, but investors are irrational (market mispricing)), again we can solve this problem by increasing long-term equity/reducing short-term rewards, and/or increasing corporate governance/investor protection.

If share repurchases are used as a catering device, and if managers still rational, we can solve as before. However, if the overvaluation is fed by managerial irrationality, then we may not be able to solve by increasing long-term equity/reducing short-term rewards, and/or increasing corporate governance/investor protection. We may need to address the managerial biases of overconfidence, regret etc.

6. Conclusion

In this paper, we have considered the governance implications of the increasing use of share repurchases as a payout mechanism. Further, we examined the relationship between share repurchases and investor rights. We developed 3 models; a model of repurchases and agency costs of free cash flow, a repurchase timing model, and a catering model. We demonstrated that share holder rights and repurchases may be complements or substitutes. Further, we demonstrated that governance systems may be able to address agency problems associated with repurchases when managers and investors are rationally self-interested.

However, when managers are irrational, it may be much more difficult to design effective governance systems. We considered this problem in the light of repurchase catering, and drew parallels with Jensen's (2005) agency costs of overvalued equity. Finally, we note that our paper has contributed to the debate on the relationship between corporate governance and corporate financing decisions.

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