

Payout Policy and Employee Share Options

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1. Introduction

Over the last decade the importance of share repurchases in corporate payout policy increased considerably. At the same time there was a substantial growth in employee share options (ESO) issues. Under several hypotheses these two phenomena may be linked with each other in more or less direct way.

Both dividends and repurchases are major methods of returning cash to shareholders and it is a widespread opinion among executives that repurchases represent a more flexible way to do it. Traditional explanations of repurchase decisions are related to basic corporate balance sheet and share price characteristics: repurchases are thought to be motivated predominantly by a desire to signal share undervaluation or to mitigate the agency problems of cash holdings. (Brav et al., 2005)

Granting employee options has a number of consequences for a firm, which may be different in various regulatory regimes. As far as options substitute for cash wages there could be an increase in earnings if options are not expensed. There may be more subtle earnings increase effect if options influence positively employee incentives and efficiency, as they are supposed to do. The tax treatment of options may impact corporate cash flow as well: for example, in the U.S., firms receive a tax benefit on option exercise. A major reporting effect of options, however, is that in-the-money options dilute earnings. Since earnings per share (EPS) are a common gauge of corporate performance managers have incentive to cut dilution by reducing the number of shares outstanding through repurchases, in case such reduction is accretive. In this way option programs may result in EPS management to meet desired EPS targets. Further, since dividends reduce the value of non-dividend-protected options, managers have another reason to substitute repurchases for dividends. Obviously they have also an incentive to influence the share price so that the options finish in-the-money. Repurchases may therefore be a result of several motives: the desire to counter dilution, to provide shares in option exercise, to support the share price and the option value or to take an opportunity to buy back shares cheaply. The agency,

undo-dilution, timing and signaling characteristics of repurchase programs are therefore not easy to separate.

Here are the major hypotheses on the repurchase-options relationship put forward and tested in empirical research, together with their brief description and paper references:

- the substitution/managerial wealth hypothesis (option-influenced preference for repurchases over dividends; Kahle, 2002; Liljeblom and Pastermack, 2003);
- agency hypothesis (option-induced earnings retention and payout adjustments; Weisbenner, 2000);
- undo-dilution hypothesis (repurchases are related to dilutive characteristics of option plans (Weisbenner, 2000; Kahle, 2002; Bens et al., 2003; Lee and Alam, 2004);
- option-funding hypothesis (repurchasing shares for reissue in option exercise; Kahle, 2002; Lee and Alam, 2004);
- EPS management hypothesis (options influence managers to manage EPS to meet certain targets; Bens et al., 2003).

2. Empirical evidence

Weisbenner (2000) examines two sets of data to investigate the relationships between the repurchase activity and the earnings retention rate on one hand and the number of total and executive outstanding options, as well as the relationship between the change in shares outstanding and options outstanding and granted in the repurchase year and in the preceding four years. The objective is to test the undo-dilution hypothesis and the agency hypothesis. The first estimation is performed using cross-sectional data on over 800 U.S. firms at the end of 1994. He uses an adjusted Compustat measure of repurchases which includes also the outcome of other equity-linked transactions. He estimates Tobit regressions of, first, repurchases and, second, total payout, both scaled by the market value of a firm on the option measures and selected corporate financial characteristics and then, a regression of the retention rate in 1995–6 on most of his variables. The retention rate seems to be negatively correlated with the number of the total options outstanding and positively with the executive options lending some support to the agency hypothesis. Another explanation offered in the paper is that executives in firms with good investment opportunities prefer to retain cash and boost performance. The repurchases, to a larger degree than the total payout, are positively associated with outstanding options. The second model is based on an unbalanced panel of 144 U.S. firms from 1990–1998 and, by including the current and the previous four years of grants, tries to capture the importance of past grants (dependent variable: change in shares outstanding). The results show that the current change in the number of shares is negatively and significantly influenced by all five grants included in the model. The coefficient at current option exercises is close to one. That indicates that companies repur-

chase shares taking into consideration the previous grants as well. The coefficient at options outstanding is negative if past grants are not included and is close to zero and not significant if they are.

Kahle (2002) investigates the substitution and option-funding hypotheses and their relationship to both total outstanding and executive options. She selects a sample of 712 repurchases and 205 dividend increases (with firms different from the repurchase sample) from 1993–6. She uses a modified Compustat value of actual repurchases and the option data from Execucomp database and annual reports. First, she estimates a logit regression to check the substitution hypothesis. The repurchase decision is positively associated with the firm size, free cash flow as well as with the total options outstanding and exercisable and negatively with the price run-up before the announcement. This is consistent with the signaling and undervaluation hypotheses for repurchases. In her second model she studies determinants of the actual repurchases defined as the sum of the announcement and post-announcement year transactions and finds positive relationship between repurchases and total options outstanding and exercisable. She estimates also a model for the change in shares outstanding in the post-announcement year on the control and option variables and finds a positive correspondence with exercised options and a negative relationship with total and exercisable options. She also finds a negative link between announcement day return and total options outstanding and positive with executive options outstanding. In her regressions the repurchase amount is related negatively and the change in shares related positively to the one-year post-announcement stock return.

Liljeblom and Pasternack (2002) study repurchase activity on a sample of listed Finnish companies from 1996–2001. The regulatory environment in Finland is different from the U.S. Firms are allowed to repurchase a maximum of 5% of shares under a single authorization and have to report immediately their repurchase transactions. Further, the dividends are virtually tax-free to local citizens but are subject to a source tax for foreign shareholders. The employee stock options are frequently dividend-protected (41% in their sample), in contrast to the U.S. The Finnish dataset allows therefore checking some of the repurchase and ESO-related hypotheses in another setting. The authors study the following questions: are the repurchase decisions related to the permanent/temporary portion of earnings, to the scope of the option program (defined a little imprecisely as “the maximum number of shares that can be obtained from the option exercise divided by the total number of shares outstanding”), or to the shareholder tax regime? The option dividend-protection feature in their sample allows investigating in more detail the substitution hypothesis. The detailed data for repurchase transactions make it possible to examine the timing of repurchases relative to some option plan characteristics (their measure of “out-of-moneyness”, which is defined as $\min[(S - X)/X, 0]$, with S the spot share price and X “the lowest option strike in effect at that time”, and the option maturity) to find if managers

use these operations to influence the share price. The authors find in a probit regression that the repurchase authorization is positively associated with the foreign ownership, permanent component of corporate income and the scope of the option program. In a Tobit regression (dependent variable: dividends/assets) they find that the dividend amount is positively linked to the scope of the option program, a finding contrary to the results on the U.S. samples. This result is even stronger when the regression is run separately on the subsamples with and without the dividend protection. In the timing regression (dependent variable: repurchase amount/total repurchases) they find significant negative relationship with their measure of out-of-moneyness and virtually no relationship to the option maturity and the stock 6-month return. The Lee and Alam study provides interesting new evidence on the substitution hypothesis. The reviewed version of the paper, however, suffers from some imprecision in the definition of key variables relating to the option program—the outstanding options are not clearly contrasted with the exercisable options, and it is not clear what the “options in effect” refer to.

Bens et al. (2003) design a regression to test the relationship between the repurchase activity (dependent variable: shares repurchased/shares outstanding) and the EPS management as well as the dilutive effects of options. To capture the need for the EPS management they construct a repurchase variable describing how many shares a firm would have to repurchase if a certain EPS growth target (previous year EPS growth in their study) were not met. They decompose the dilutive impact of options into the dilutive impact of options granted, outstanding and exercised in a given year due to the change in the stock price (average strikes and stock prices are used). They also include a number of financial control variables in the regressions: log total assets, operating cash flow, the book-to-market ratio, the change in log sales, the current period stock return as well as year dummies. Additional variables include total options outstanding, options exercised, deviation from target leverage, other stock issues and an indicator “high P/E ratio” variable (showing if the P/E ratio is higher then the inverse of their definition of a firm’s opportunity cost of funds) and its interaction with dilution variables. In a variant of the model they also use the IBES EPS forecasts to compute their repurchase variable and test the model also with an indicator for the repurchase variable. They include measures for executive options and their exercisable and unexercisable components as well. They estimate Tobit regressions based on a sample of 357 S&P 500 industrial firms from 1996–9. They find a positive association between repurchases and their repurchase variable. The significance of this effect increases if the indicator variable is used, and disappears in IBES-based models. Among option dilution variables the relationship is significant and positive only for outstanding option dilution as well as dilution on actual exercise. The coefficient on P/E dummy is negative suggesting that high P/E firms repurchase less, but the coefficient on high P/E -outstanding options dilution interaction variable is pos-

itive, which points to some high P/E firms repurchasing firms despite its high cost (Larcker, 2003). They also find the positive association with unexercised portion of executive options.

Lee and Alam (2004) investigate the link between the repurchase activity of a firm and a number of common ESO plan measures: the FASB dilution, the Core-Guay-Kothari (CGK) economic dilution (Core et al., 2002) and the number of granted, exercised, outstanding and exercisable options. The CGK dilution is in fact a Black-Scholes model-dependent measure, estimated in the paper with parameters provided in annual reports, which should also be subject to some caution. Many data points are dropped before arriving at the final sample e.g. repurchases by firms assuming option plans in M&A and involved in pooling-of-interest M&A transactions are excluded. The observations for repurchasing firms are included only in the years when they actually repurchase shares. The final sample consists of 1205 firm-years for 545 U.S. firms from 1996–2000. Lee and Alam perform a logit regression for the decision to repurchase with a single measure of option plan added one at a time to measure its incremental impact. The model includes the following control variables: the lagged value of cash-to-assets ratio, an indicator variable for the increase in dividend payout, the lagged book-to-market ratio, an indicator variable for the lagged earnings-to-price ratio greater than 3-year Treasury yield, the stock return over the repurchase year, logarithm of assets and the historical three-year sales growth rate. The results of the estimation show positive link between the decision to repurchase and both measures of dilution as well as with the number of options outstanding and exercisable. There is also a positive sign at the coefficient for the cash proceeds from exercised options. It is difficult to interpret, though, as the proceeds-variables seem not to be adequately explained in the paper (they are based on averages of exercise prices and the number of exercised options scaled by assets). The explanation of the link between repurchases and exercisable options provided in the paper-expected cash proceeds influence positively current cash expenditure on repurchases-may be incomplete. In fact the proceeds may be small, e.g. when long-term options were issued at very low prices, for example by a young tech company. The arguments they provide on the basis of the number of treasury stock may be limited since many firms do not keep treasury stock after repurchasing shares. The sample preparation, as authors themselves point out, may also have been too restrictive.

3. Results and methods: a discussion

The reviewed papers investigate major hypotheses proposed to explain links between share repurchases, dividends and employee option plans. The hypotheses have relevance for different areas of corporate finance: the substitution and agency hypotheses refer to key problems of payout policy, the undo-dilution and funding hypotheses to the financial management of option

plans and the problem of corporate cost of options, and the EPS targeting hypothesis to the behavioral corporate finance.

Variants of undo-dilution, option-funding and substitution hypotheses are tested in most papers. Liljeblom and Pasternack test also agency/timing and shareholder tax regime hypotheses and Bens et al. investigate the EPS target management.

The following dependent variables are used in the models: a measure of repurchases, an indicator for the decision to repurchase and change in shares outstanding. In a few papers the repurchase data are taken from the modified Compustat item despite the fact that the information on actual repurchases is provided in corporate annual reports. There may be also result differences due to the specification of repurchase and change in shares measures. The explanatory variables include option variables and control variables (general financial characteristics of a firm). Option variables are based on reported option plan details and are represented by the number of options granted, outstanding, exercisable and exercised. Some papers include more option characteristics: FASB and CGK dilution (Lee and Alam), a measure of option out-of-moneyness (Liljeblom and Pasternack) and dilution resulting from various groups of options (Bens et al.). All discussed papers focus on total options but some of them examine also data on executive options (Weisbenner, Kahle, Bens et al.). In some other research not reviewed here (e.g. Fenn and Liang, 2001), only executive options are investigated. The empirical data come from large samples of U.S. firms (except Liljeblom and Pasternack) and cover mostly various periods from the 1990s. Since mainly the years of significant stock market expansion are reflected in the data, the emerging picture of repurchase behavior may be ultimately one-sided. The dependent variables and estimation techniques differ in their informativeness with regard to questions posed. While probit/logit regressions are adequate to test the substitution effect they are not enough to study option management details. Overall, the reported findings support primary aspects of the hypotheses as formulated in the individual papers.

There are, however, some points to note, related mainly to the way the contractual characteristics of ESO are used in the research and to the study of the costs and efficiency of both repurchases and option grants.

I think it is useful to distinguish between two major classes of option characteristics available in corporate financial reports. First, we have data on the number of options granted, outstanding, exercisable, cancelled and exercised in a given year, which inform us about the overall plan dynamics and the vesting situation; we may call it the option vesting structure. Then there is more specific information about the option contracts granted: their strike prices and average expiry times; we may call it the option moneyness structure. The dilution effect of options is determined by the moneyness structure. To test the undo-dilution hypothesis it is therefore best to concentrate on moneyness characteristics. Yet only Lee and Alam as well as Bens et al. in-

clude moneyness-related dilution measures in their explanatory variables. Liljeblom and Pasternack include a measure of moneyness to test their version of the agency hypothesis. The remaining papers use the vesting structure information, which although related in a way to the ultimate dilution, is bound to measure imprecisely the dilution motivation to repurchase. This may be reflected in the fact that the results for total options outstanding are mixed.

The key question in repurchase-options research is to capture the actual corporate cost of employee options. This question is important, first, to assess the execution quality and efficiency of repurchase operations, and, second, to provide an empirical perspective for the results from ESO pricing models. A relationship between a measure of repurchase activity and a measure of option dilution may be positive but the repurchases may not be accretive. This problem is addressed to some extent only in the Bens et al. paper. Their method of computing the P/E ratio is, however, not reported in detail. The estimation results are not fully informative, since the variable design does not seem to capture the price at which actual repurchase transactions were made. Lee and Alam also use the E/P variable but they only estimate logit regressions.

There is no direct reference in the papers to the impact of actual volatility on repurchase decisions (a measure of volatility is reflected in the CGK dilution used in the Lee and Alam paper). Volatility influences repurchase-option problem in at least two major ways. First, it makes options more valuable, and, second, it provides more opportunity to time repurchases in a more opportunistic way.

In the papers based on the U.S.-data there is no discussion on the impact of option tax benefits, which in some cases may also turn out to be significant for repurchase decisions.

Finally, large samples miss some individual firm detail and repurchase policy characteristics including derivative management of option plans and the interaction between the grant timing and repurchases.

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