



Optimal execution of open-market stock repurchase programs

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Abstract

This paper formalizes the following intuition about open-market share repurchases. Firms do open-market share repurchases to return free cash, which would otherwise be wasted. However, when the firm goes to buy its own shares with this cash, it has inside information and hence the actual execution is characterized by adverse selection. The market knows that the firm has inside information, and consequently the ask price is high to compensate for this adverse selection problem. This implies that, all else equal, the greater the adverse selection problem compared to the cash waste problem, the higher the ask price, and, therefore, the wider the bid–ask spread and the lower the share repurchase completion rate. We test this implication on a sample of U.S. firms and report evidence consistent with the model.

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1. Introduction

Over the last two decades, announcements of open-market stock repurchase programs (henceforth, “open-market programs”) have become common practice (see, for example, Grullon and Michaely, 2002). Yet, empirical evidence suggests there is great variability associated with their execution. First, there is great variability documented about actual

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completion rates. In the United States, [Stephens and Weisbach \(1998\)](#) and [Jagannathan et al. \(2000\)](#) document that average actual repurchase rates are only 70–80%. Frequently only a small fraction of the quantity announced is actually repurchased, and many announcing firms do not repurchase at all. [Chan et al. \(2005\)](#) report similar results. Actual repurchase rates are even lower outside the U.S. [Ikenberry et al. \(2000\)](#) find average actual repurchase rates to be as low as 28% in Canada, and [Rau and Vermaelen \(2002\)](#) find average actual repurchase rates of only 37% in the United Kingdom.

Empirical studies also disagree on the effect of open-market program announcements on liquidity, as measured by the bid–ask spread. In the U.S., [Barclay and Smith \(1988\)](#) find widening of the spread. [Miller and McConnell \(1995\)](#) find no widening of the bid–ask spread, while [Wiggins \(1994\)](#), [Franz et al. \(1995\)](#), and [Cook et al. \(2004\)](#) actually find narrowing of the spread during periods of actual repurchases. Outside the U.S., [Brockman and Chung \(2001\)](#) and [Ginglinger and Hamon \(2007\)](#) find widening of the spread during actual repurchase periods in Hong Kong and France, respectively.¹

Why is there variability in actual repurchase and in the bid–ask spread during the repurchase period across firms and across studies? What is the optimal way to execute an open-market repurchase program? The purpose of this paper is to develop a theoretical framework with which to answer these questions.

Unlike most earlier theoretical investigations of open-market programs, we build on the motivation to distribute free cash in order to avoid its waste. Growing empirical evidence suggests that the availability of free cash, and the need to avoid wasting it, play an important role in decisions to execute open-market programs. For example, [Stephens and Weisbach \(1998\)](#) and [Oswald and Young \(2004\)](#) find that actual repurchases depend on the availability of free cash. [Nohel and Tarhan \(1998\)](#) find that repurchasing helps firms that are likely to overinvest improve their performance.²

We take the program announcement as given in order to focus on the execution.³ Assuming uncertainty and asymmetric information about firm value, we show that the execution is the solution to an optimization problem over waste-prevention benefits from paying out free cash and gains (or losses) from the informed trade of the firm. Specifically, if the firm learns that it does not have free cash, it refrains from executing the program so as not to hurt investment. If, instead, the firm learns that it does have free cash, it will always execute the repurchase when the stock is undervalued, because in this case it benefits from preventing the waste of free cash, and it also accrues trading gains from the (informed) repurchase trade. When the stock is overvalued, however, the firm is less likely to execute the repurchase because in this case it faces a tradeoff between waste prevention gains and trading losses. The greater the overvaluation, the less likely the execution. Thus, open-market programs enhance value to shareholders by distributing free cash, but also result in wealth transfers among shareholders because of the informed/strategic trade of the firm.

¹Most of the above studies also report findings on market depth consistent with their findings about bid–ask spread. That is, studies that find narrowing of the spread also find an increase in market depth measured by the price impact on order imbalances, and studies that find widening of the spread find a reduction in market depth.

²On the agency costs of free cash flow see, for example, [Jensen \(1986\)](#).

³Extensive literature investigates the motivation to announce a repurchase program and the choice between a repurchase program and other payout methods such as a self-tender offer repurchase and a dividend (for a review of this literature, see, for example, [Allen and Michaely, 2003](#)). We acknowledge that these questions are also important, but we do not model them in this paper.

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