Timing of earnings and capital structure ☆

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ABSTRACT

This paper shows that asymmetric information about the timing of earnings can affect capital structure. It sheds new light on the following issues: why profitable firms may be interested in issuing equity and why debt does not necessarily signal a firm's quality. These issues seem to be puzzling from the classical pecking-order theory or signalling theory point of view. The paper also contributes to the analysis of the link between capital structure choice and a firm's expected performance (short-term and long-term). An empirical analysis confirms most of our theoretical results.

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1. Introduction

This paper builds on "pecking-order theory" (POT) and signaling theories of capital structure. These theories directly relate to asymmetric information. According to POT (Myers & Majluf, 1984) equity represents an inferior security (firms prefer internal funds and debt). Empirical evidence usually supports one of the main predictions of the POT that there is a negative share price reaction on equity issue announcements. The evidence is mixed about whether firms always follow a pecking order hierarchy.[1]

According to POT, good quality firms have to use internal funds to avoid adverse selection problems and losing value. The signalling theory of capital structure offers models (Ross, 1977; Leland & Pyle, 1977) where good quality firms usually increase leverage to signal quality. Although the empirical evidence finds some support of negative market reaction on leverage-decreasing transactions and a positive reaction on leverage-increasing transactions, in general it does not support a positive market reaction to debt issues. The negative correlation between debt and profitability also contradicts signaling

[1] For a review of theoretical and empirical literature on POT and signalling theories see, for example, Klein, O'Brien, and Peters (2002) and Miglo (2011). For a more recent analysis see, for instance, Komera and Lukose (2015).

theory. Third, the evidence is mixed regarding the predictions of signaling theory regarding links between capital structure choice/change and future operating performance especially with regard to short-term performance.[2]

The literature analyzing financing-investment games where firm insiders have private information usually deals with situations where firms differ in their qualities or overall intrinsic values. Typically, there are two types of firms: good (high value) and bad (low value). In the present paper, we argue that a situation where a firm has private information about the timing of earnings may generate predictions that are not explained by POT or signalling theory and that also may shed new light on some puzzles including the existence of a signalling equilibrium where firms issue equity. In particular we argue that firms with early expected earnings prefer issuing equity as opposed to firm with late earnings. We then test empirically some of our results and find confirmation.

A situation where firms' insiders have private information about the timing of earnings is quite intuitive. For example, firms' major contracts may be public knowledge while their timing and details may only be known to managers. Asymmetric information regarding the timing of earnings may take place because managers often have private information about the choice of inventory and depreciation methods, estimation of pension liabilities, capitalization of leases and marketing expenses, recognition of sales not yet shipped, and delay in maintenance expenditures and delays in production (Miglo, 2007). Pereira and Sousa (2015) noted that it is likely that equity-issuing firms are often involved in earnings management.

Our analysis is related to the asymmetric information literature analyzing situations where firms have equal values (qualities) and private information concerns other parameters. Examples include Daniel and Titman (1995), Brick, Frierman, and Kim (1998), Giammarino and Neave (1982) and Miglo and Zenkevich (2006). Miglo and Zenkevich (2006) argue that if firms differ in the timing of earnings a separating equilibrium may exist where some firms issue equity. They noted, however, that the problem of private information regarding the timing of earnings can be mitigated by the up-front equity financing that is not considered in their paper.[3] Up-front financing is a part of our model.[4] Up-front financing takes a large portion of equity from existing shareholders magnifying potential moral hazard problems (Jensen & Meckling, 1976). Hence, we include moral hazard considerations in our model as well.

Our article is also related to the literature analyzing capital structure choice under asymmetric information in a dynamic environment (multi-period decision-making situation). Some examples in previous literature include Lucas and McDonald (1990), Miglo (2007, 2012) and Viswanath (1993). Miglo (2007, 2012) are the closest models because they consider situations where firms have long-term private information and firm types' order may change over time. However Miglo (2007) only considers a special case where firms with higher value also have higher growth rates and neither article considers the case where private information exclusively concerns the timing of earnings.

The summary of our main results is as follows. First, we confirm the intuition described previously that if information about the timing of earnings is asymmetric, but no moral hazard is involved, an equilibrium is one where all firms use up-front equity financing and the fractions of equity are negotiated with investors initially regardless of the timing of future earnings. When both asymmetric information and moral hazard are present, multiple equilibria may exist. We find that up-front financing and long-term debt are never part of efficient separating equilibria. We show that the only efficient separating equilibrium is one where a firm with late earnings issues short-term debt and a firm with early earnings issues equity. This equilibrium implies that the debt/equity ratio is negatively correlated with firm's short-term earnings and positively correlated with long-term earnings. Similarly it predicts that firms issuing equity have higher earnings soon after the issue and lower long-term earnings compared to non-issuing firms. These firms also have lower operating performance in the long run. Leverage is negatively correlated with profitability because firms with higher profits in the first period issue equity in the first period. Firms with a low rate of earnings growth issue equity and firms with a high rate of earnings growth issue debt (Chichti & Bougatef, 2010; Mohamed & Eldomiaty, 2009).

We also test our model using a sample of 501 firms listed on NYSE, NASDAQ and TSX and their capital structure choice in 2010. We find that the debt/equity ratio is negatively correlated with short-term earnings and positively correlated with long term earnings, which is one of our main results.

The rest of this paper is organized as follows. The next section describes the basic model and presents some preliminary theoretical results. Section 3 analyses the case with asymmetric information and moral hazard and contains major results. It also discusses the model's implications. Section 4 discusses model extensions and robustness. Section 5 reports the results of empirical analysis and the conclusion is drawn in Section 6.

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[2] See, for example, Jain and Kini (1994), Loughran and Ritter (1997), Mickelson, Partch, and Shah (1997), Pereira and Sousa (2015) and discussions in Miglo (2007, 2011, 2016).

[3] This argument is stronger when interest rates are lower. In recent years, for example, we observe a histroically low (sometimes even negative) interest rate environment. In this case the difference between the values of firms that have different timings of earnings (same amounts) is negligible and up-front financing can completely eliminate an asymmetric information problem about the timing of earnings.

[4] Existing literature focuses on the following differences between up-front and staged financing: advantages of staged financing in mitigating moral hazard issues in venture financing (Neher, 1999); regulation requirements (Hart, 2009); impact on taxes (Mercer-Blackman, 2008). Our paper adds an asymmetric information aspect to this list.