What is the relationship between asset liquidity and capital structure in each business life cycle stages?

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Literature Review

1. Background

Capital structure refers that how a firm finances its overall operations and growth by using its asset with a combination of equity and debt. To maximize firm-value, firms choose the most efficient and costless combination of equity and debt. Different forms and types of financial funds affects the capital structure of a firm. This capital structure choice is one the most important decision in firm's financial economic management. The theory on what factors affect on capital structure has been controversial debates, but research on capital structure has not reached to the conclusive results.

Capital structure choice are affected by several factors. Some theories have tested these general factors which include the asset structure, tangible asset, the value of tangible asset, collateral value of asset, liquidity and etc. to verify the impact on capital structure.

One of interesting approach is asset structure (tangibility). Many researchers have found that the asset structure plays a positive factor to capital structure. According to Koralun-Breznicka (2013), there exists the significance and the direction of the way asset structure positively correlates with capital structure on private firms across 9 EU countries. However, there is opposite view on the relationship between asset structure and capital structure. Especially, Morellc(2001) argued with unsecured debt, asset structure increases credit spreads on corporate debt and reduces optimal leverage.

The tangible asset (real asset) is also one of important determinant in capital structure. Tangible assets are more valuable to the firm's creditors because when a firm fall in default or bankruptcy states, they are easy to transfer the ownership. Campello and Giambona (2013) argued that the asset redeployability has been a main driver of leverage when credit frictions are high. By analyzing public firms in major industrialized countries,

Rajan and Zingales (1995) argued that if a firm has large share of tangible asset which can serve as collateral, the risk of the lenders regarding the agency cost of debt reduces, therefor the lenders are willing to supply more loans and it will increase the leverage.

The value of tangible assets and collateral value of assets are also another important determinant in capital structure. Two determinants are related because in general collateral value is determined based on the value of assets. Flor (2002) argues that real assets implicitly provide a collateral for debts and it influences when a capital restructuring takes place in a firm. By testing the pecking order theory on a broad cross-section of publicly traded American firms, Frank and Goyal (2003) empirically tested hypothesis that collateral supports debt using the common idea that tangible assets serve as collateral and showed collateral is associated with increased leverage.

The liquidation value and liquidity is also found to be an important determinant of the capital structure. Asset loses its value when it is liquidated so it is imprecise to conclude that whether the asset affect a firm's capital structure. It is commonly accepted that the higher the asset liquidity, the higher the liquidation value. Harris and Raviv (2001) argues that firms that have more tangible assets tend to have higher liquidation value of a firm and the liquidation level affect on capital structure strategy. By using U.S public companies, Sibilkov(2009) found that the relationship between the asset liquidity and the leverage is positive and this results are consistent with the view that the cost of financial distress and constraint are important and they affect on capital structure adjustment. Ortiz-Molina and Phillips (2013) also argue that asset liquidity lowers the implied cost of capital and increases firm's operating flexibility and leverage.

2. Asset liquidity

Among the important factors introduced in above section, I particularly focus to research on the relationship between the asset liquidity and the capital structure. The impact of the asset liquidity on leverage (capital structure) has been a long contentious issue in corporate finance field. Some researchers have tested the relationship and identified there is positive relationship between the asset liquidity and the capital structure, however its results are opposite in some research. Sometimes when the theory tested empirically in different countries and industries, the results showed in negative, weak or curvilinear

relationship which means that the effect of asset liquidity is different from the results of past researches. So the research on the relationship between the asset liquidity and capital structure has not been concluded, further research on this topic is needed.

A. Positive relationship between asset liquidity and capital structure

The positive relation between asset liquidity and leverage is consistent with trade-off theory. When investors or creditors offer financing to a firm, they observed the firm's financial statement and cash flow to examine their ability to pay back the principal and interest cost. The investors trade off the cost of default and potential growth of a firm. So as an asset liquidity increases, the cost of default decreases.

Sibilkov (2009) and Ortiz-Molina and Phillips (2013) argued that the asset liquidity increases the leverage and there is positive relationship between the asset liquidity and the capital structure. When a firm resell the asset, the asset value is often discounted and the procedure also cost the capital of company. The asset liquidity is related with the cost of capital. Shleifer and Vishny (1992) argued that asset liquidity affects the the cost of distress since in economy-wide recession or when industry buyers are not allowed to bid, the assets fetch high discounted process when sold. With higher asset liquidity, a firm can reduce the cost of distress and a firm can use the cost to increase the leverage. Sibilkov (2009) found that asset liquidity affects the costs of financial distress. The cost of financial distress and inefficient liquidation are economically important determinants and they affect on capital structure.

B. Negative or weak relationship between asset liquidity and capital structure

Even though there are many evidences that argued positive relationship between asset liquidity and capital structure, there are studies argued exactly opposite results. Morellec (2001) argued that the asset liquidity affects on capital structure only when bond covenant restricts the disposition of assets. This is because higher asset liquidity makes easy to resell asset and causes low cost on selling. So this trend affects in negative way on the credit of a firm. The firm size and firm-value will decrease and it will make firm's credit ratings lower. Morellec (2001) also predicted that when there is no relationship between

collateral value and asset value, the relationship between asset liquidity and leverage is negative. Myers and Rajan (1998) argued that the greater asset liquidity reduces the firm's ability to commit to financial action. This is because even though a firm has high asset liquidity, the managers will not sell at low price.

C. Liquidity index

Many models are used to measure and test the relationship between asset liquidity and the leverage, one of the difficulties is attaining a measure of asset liquidity. Existing theories has tested the relationship between asset liquidity and capital structure using their own liquidity indexes, but those liquidity indexes are made for their specific purpose includes special samples of firm-size and assets (Kim (1998) and Alderson and Betker (1995)) so those indexes are not appropriate for our research.

Asset liquidity should be considered within the its particular industry so the asset liquidity index is industry-level measure. Considering the innate characteristics of asset liquidity, we will use the liquidity indexes introduced by Ortiz-Molina and Phillips (2013) because this method considered industry aspects. First method is to measure the number of potential buyers for a firm's asset minus the number of rival firms in the industry that have debt ratings. Second method is the average book leverage net of cash of rival firms in the industry.

3. Life cycle stages

Many studies on the relationship between asset liquidity and capital structure has done in many aspects includes firm-size, industry and countries. The researchers widely researched the scope from Croatia small and medium sized firms (Harc (2015)) private firms in 9 EU countries (Koralun-Breznicka (2013), private firms in U.S.((Campello and Giambona (2013), Frank and Goyal (2003)) private firm in US (Ortiz-Molina and Phillips(2014)) and U.S public companies((Sibilkov (2009)). To extent existing research, our work will research on the relationship between asset liquidity and capital structure in business life cycle stages. The relationship between capital structure and life cycle tested

for a long time but to my knowledge, the research on the relationship between asset liquidity and capital structure in business life cycle has not been done yet.

It is commonly accepted that a firm changes the capital structure over the life cycle. The firms in introduction stage usually have large share of assets and tend to borrow external finance that the firms decline stage so the leverage in introduction stage is higher than the decline stage. DeHan (2014) argued and empirically showed that firms in highly innovative industries tend to have high leverage than the firms in mature industries and it is consistent with trade-off theory.

In addition to the liquidity index, life cycle stage index is also an important computation index in our research. The firm life cycle stages have important meanings for understanding firm's performance, researchers have developed many different methods to measure firm life cycle stages (Anthony and Ramesh (1992)). As liquidity index considers firm's innate characteristic such as industry, we choose the method that considers firm's accounting information on operation performance and the allocation of resources. We will divide the firm life cycle as five stages: Introduction, Growth, Mature, Shake-out and Decline. This model is motivated by Dickinson (2011) and uses the combination of a firm's net operating, investing, and financing cash flow and represent each cash flow as positive or negative sign. This method is empirically demonstrated within theories, cross-sectional and time-series.

4. Contribution

I'm sill working on the project and haven't got the result yet so the contribution part in this paper may not contain detailed information.

This paper differs from existing literature in two major ways. First, it is the first research on the relationship between asset liquidity and capital structure in the aspect of firm business life cycle stages. Many studies only extend the theory on firm-size, industry and country levels (Harc, (2015), Koralun-Breznicka (2013), Campello and Giambona (2013), Frank and Goyal (2003), Ortiz-Molina and Phillips (2014), Sibilkov (2009)). This research will add empirical results to the existing results in different view. Second, this research steps forward to use more discrete life cycle stages in research. Past studies regarding firm life cycle stages only divide into two or three stages. This research is

different from other research since not many of studies provide their life cycle index in details. Some studies only describe the life stage as IPO company and old company or just interpreted the time-series graph of one company.

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