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How Evergrande Defaulted: Positive Feedback Mechanism Subject to the Debt-Fueled Model in Chinese Real Estate Market

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ABSTRACT
Evergrande is selected as the research object to analyze the rationale of the default of Chinese real estate enterprises in 2021. This paper fills the research gap of the mechanism triggering default of real estate enterprises by interpreting the drawback of their debt-fueled business model and positive feedback phenomenon in the real estate market. The positive feedback is a self-reinforcing process of increasing returns which amplifies the effect of certain factors in the same direction and yields the accumulative causation. The business model under different market circumstances will engender virtuous or vicious positive feedback. When the housing market booms, there is the virtuous cumulative causation of high leverage ratio and high profit. In contrast, the vicious cycle of deleveraging and liquidity crisis will become self-reinforcing when the sales revenue is depressed or the credit is contracted, for the indebted firm had to sell the asset. The paper argues that due to the debt-fueled business model, Evergrande was fallen into the vicious positive feedback of deleveraging and liquidity crisis to repay the debt under the macro-control policy.

Keywords: *positive feedback mechanism, debt default in real-estate market, debt-fueled business model*

1. INTRODUCTION

With the boom of urbanization in the past few decades, the Chinese real estate industry had developed at an exaggerating high rate and served as a pillar of Chinese economic growth. Despite the engine of prosperity, the incredible expansion of the real estate industry also aroused a sequence of social issues. Thus, the Chinese government inaugurated the macro policy control on the real estate industry in 2021. Confronted with the sanction, however, numerous real estate giants had announced to default. This paper has selected Evergrande, the most indebted real estate enterprise in the world, as the research object to analyze the rationale of default (Leonard, 2021) [5]. Fifteen years from 2006 to 2021 had witnessed the marvelous rise of Evergrande, whose aggregate asset expanded from 7.8 billion to 2.3 trillion (Zhang, 2018) [16]. However, it severely relies on the liability to expand with asset-liability ratio maintaining over 80% from 2015 to 2021. Meanwhile, if the asset value was undervalued, the situation could be worse. The total liability including the current and non-current liability soared from 362,084 million to 1,966,534 million, quintupling from 2014 to 2021 as shown by the balance sheet. Over 70 percent of liability during these years has consisted of the current liability, the short-term financial obligation susceptible to the liquidity risk. Consequently, the firm suffered from a sequence of defaults since the policy control was enforced. However, although Evergrande announced to default, its aggregate asset of 2.3 trillion still outnumbered the liability of 1.97 trillion in 2021 reflected in table 1. Thus, it can be inferred that the company suffered from a liquidity crisis when selling the asset.

This paper fills the research gap of the mechanism triggering default of real estate enterprises by interpreting the positive feedback phenomenon catalyzed by their debt-fueled business model in the real estate market. The positive feedback is an incessant process of increasing returns with the self-reinforcing and cyclical causation in response to the previous trend (Young, 1928) [13]. The business model under different market circumstances will beget virtuous or vicious positive feedback. This paper argues that due to the debt-fueled business model, Evergrande was fallen into the vicious positive feedback of deleveraging and liquidity crisis under the macro-control policy. The vicious cycle of deleveraging and liquidity crisis became self-strengthening and instigated the default.

The article is organized as follows: The second section is the literature review regarding real estate default research and positive feedback in economics. The next two parts present the analytical framework. Evaluation of debt-fueled business model is in the third part, which is followed by the elaboration of virtuous and vicious positive feedback in the model. The fifth section applies the rationale to analyze the default of Evergrande. The final part is a conclusion and reflection on the research.

Table 1. Balance sheet of Evergrande

	2015	2016	2017	2018	2019	2020	2021
Total asset (million)	757,035	1,350,868	1,761,752	1,880,028	2,206,577	2,301,159	2,377,575
Equity (million)	142,142	192,532	242,208	308,626	358,537	350,431	411,041
Non-current liability (million)	158,212	424,942	434,689	411,946	498,005	443,475	393,775
Current liability (million)	456,681	733,394	1,084,855	1,159,456	1,350,035	1,507,253	1,572,759
Total liability (million)	614,893	1,158,336	1,519,544	1,571,402	1,848,040	1,950,728	1,966,534
Current liability/total liability	74%	63%	71%	74%	73%	77%	80%
Asset-liability ratio	81%	86%	86%	84%	84%	85%	83%

2. LITERATURE REVIEW

2.1. Default of real estate industries

Numerous literatures have analyzed the debt issue of real estate enterprises. Bai (2012) [3] perceived the impact of collective sentiments on the boom and bust of the housing market. Song (2013) [9] illustrates the negative spiral of liquidity risk in sub-prime crisis in USA. Sun (2021) [10] points out the vulnerability of the capital chain of Evergrande to the high leverage ratio. Zhang (2015) [15], He (2016) [5] and Xie (2016) [12] describe that the excessive dependence on banking credit will engender the potential risk of paying off the debt. Rherrad (2021) [8] detects the contagious effect of default by analyzing the debt dilemma of Canadian companies.

2.2 Positive feedbacks in economics

Author (1990) [2] defines positive feedback as a self-reinforcing system amplifying the effect of certain factors in the same direction and yielding the accumulative causation. Unlike the negative feedback, the magnified impact cannot be offset by the opposite adjustment of market to reach the equilibrium. Young (1928) [13] firstly unravels the phenomena by detecting the increasing returns in roundabout production that the division of labor could extend the market scope incessantly by introducing new production factors and further boosting vibrant industries which in turn facilitate the specialization. Minsky (1977) [6] explores how financial stability is exasperated by reflecting the positive feedback between speculative investment strategies and irrational expectations. Zhang (2009) [15] points out that positive feedback occurs due to the increasing return and has the feature of path dependence and multiple-equilibria. Anufriev (2013) [1] stresses the positive feedback loop in the market driven by people's expectations. Moar (2013) [7] makes a major step and revealed the policy bubble resulted from overreaction because of people's conformity.

Nevertheless, despite the proposal of numerous reasons for the default of real estate firms, the transmission mechanism of the default is still not illustrated clearly. Meanwhile, the positive feedback mechanism is widely applied to analyze financial crises while few pertinent researches concern the real estate market. This paper contributes to filling the research gap of the mechanism triggering default of real estate enterprises by interpreting how the debt-fueled business model under different market circumstances engenders virtuous or vicious positive feedback.

3. DEBT-FUELED BUSINESS MODEL

Before elaborating the debt-fueled profit model, this paragraph illustrates the necessary production factors and industry chain of Chinese real estate industry. The fundamental production factors are mainly typed into three categories: capital, land and other factors involving the construction. Figure 1 demonstrates the industry chain of the real estate industry. Equity or debt financing are two major sources of capital of the real estate company, which are mainly spent to expend land fees and construction costs. As the essential components of construction, the urban built-up areas are state-owned and the real estate firms can acquire the right of usage of land from the local government by charging the land transaction fees. Under the circumstance, the local government can accumulate land financing and promote the urban construction while the real estate company obtains the right to construct. Another part of funds is paid the construction cost to upstream suppliers who provide raw material and workers. Ultimately, the firms gain the sales revenue by selling the completed commodity houses to homebuyers.

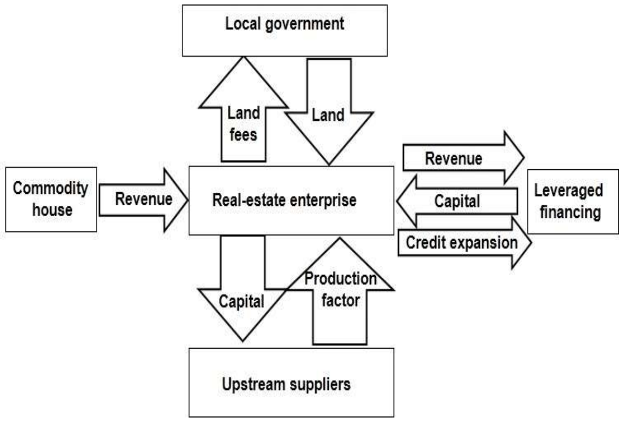

Figure1. Debt-fueled business model

The industry has the salient features of a huge demand for capital and a long investment cycle (Zhang, 2015) [14]. In order to maximize the profit, land developers are prone to leverage their limited equity through short-term financing to expand the market share as much as possible. For one project, the land agents arbitrage from the gap between land price and housing price, which can be divided into the land premium and added value of construction. The land developers hence strive to finance more capital in credit and exploit more housing projects simultaneously so that they can enlarge the profit. The fraction of financing funds is spent to increase the land stock when the land price is low and generate benefits from its premium when exploiting subsequently. Another part of capital is utilized to establish more buildings. The firm depends on the sales revenue or the credit expansion to pay off the debt eventually. The below evinces the two most significant financing modes of Evergrande.

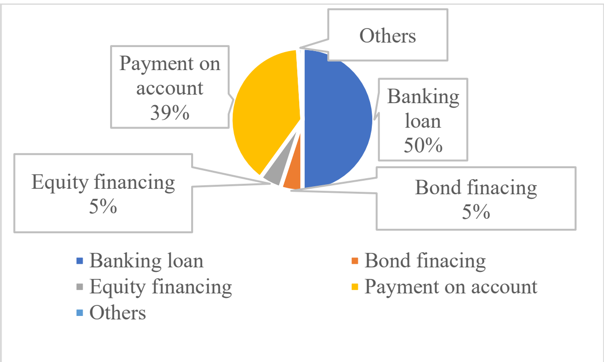

Figure2. Proportion of different financing modes in 2021

1)|Banking loan

Due to the low interest rate and financing risk, the bank loan has been the most essential financing mode and accounted for 50 percent among all financing channels for Evergrande in the past few years (Sun, 2021) [10]. Despite enduring huge risks, banks still prefer to make loans to real estate companies. Firstly, they have sufficient collateral such as land and houses. Secondly, due to the unique trait of the industry, real estate enterprises are prone to create more credit than others. The firm has numerous means of acquiring the credit: (1) Project loan: The project loan can be applied at the outset of a new project and repaid by the future revenue. (2) Mortgage loan: the company can acquire the mortgage loan by pledging the land or houses under the bank. The firm could leverage by mortgaging repeatedly. (3) Credit loan is also based on the goodwill of the firm (Zhang, 2015) [14]. Additionally, pertinent upstream and downstream companies and most homebuyers will apply for mortgage loans.

2)Payment on account

a)Presale of house

The real estate enterprise could sell the unfinished house and sign the future contract with consumers who charge the prepayment and acquire the house in the future. However, if the house is not completed and submitted to the buyers in time, the firm will default. Moreover, since the homebuyers who did not obtain the apartment they paid for in time would be unsatisfied, the protestation and political issue tended to be incited.

b)Trust Financing

Trust financing is the short-term and swift financing mode that the fund supplier can buttress Evergrande's financing via trust company as the warrantors. The investors and trust institutions have to endure the risk if the company default.

c)Commercial paper

Compared with the bonds, the real estate agents are accustomed to finance via commercial paper, which is unsecured debt without convoluted procedures and payouts to issue and thus is more prevalent.

Nonetheless, although the leveraged financing mode can extend the scale and accumulate the capital efficiently, it inevitably leads to the flexible capital chain susceptible to macro-control policy. The limited equity is unable to sustain the high leveraged capital stably, since the firm relies heavily on the revenue from sales or roll-overs to repay the short-maturity current liability. Once the housing price slumps or the government tighten the credit, the capital chain will be broken and the firm tend to default.

4. VIRTUOUS AND VICIOUS POSITIVE FEEDBACK IN THE REAL ESTATE MARKET

The leveraged business model under different market circumstances will catalyze virtuous or vicious positive feedback, which refers to a self-reinforcing system amplifying the effect of certain factors (Author, 1990) [2]. Unlike the negative feedback, the effect cannot be offset by the opposite adjustment of market to reach the equilibrium. The positive feedback loop can magnify the adverse or positive impact on action of buyers and lenders and exert the self-reinforcing impact on the enterprise. Because of sentiments of conformity and information asymmetry, the market information especially the policy change can give rise to the convergence of people's expectations and behavioral overreaction, which is also the generator of performance of enterprises (Maor, 2013) [7]. When the housing market booms, there is the cumulative causation of high leverage ratio and high profit. In contrast, the vicious cycle of deleveraging and liquidity crisis to repay the debt will become self-reinforcing when the market is depressed or the credit is contracted by the policy control. Furthermore, the pervasive impact of default would spread over relevant firms if they have a mutual debt relationship.

When the housing market flourishes, the most leveraged real estate firm is the most profitable one under virtuous positive feedback. From the perspective of investors, the increase in property price is prone to incentivize them to purchase more houses, since the real estates are regarded as the investment goods by Chinese investors to preserve or increase the value. The positive feedback loop led by the optimistic expectation and upsurging demand for houses will push up the housing price constantly. Correspondingly, the lenders of enterprises allow them to finance more capital based on better credit and collaterals to exploit the new projects incessantly and gain more sales revenue. Thus, the cumulative causation of high income and high leverage ratio is formed in the self-intensifying feedback Overall, positive feedback loop from buyers and lenders reinforced the favorable impact on the firm.

Nevertheless, more leverage will engender more risks once the property price decreases or the debt financing is restricted under the policy control. Since the repayment relies heavily on the two channels, the leveraged real estate enterprises would be fallen into a vicious circle to deleverage and confront liquidity risk to pay off the debt. Firstly, the enforced policy or housing market depression releases the negative signal for homebuyers whose demand will shrink to lower the property price. As a result, the accumulated causation of pessimistic expectation and plummeting housing prices is intensified circularly. The lenders also constrict credit after observing its financial dilemma. Furthermore, confronted with the obstruction of two major financing traits and the shrinkage of income, the enterprises have to deleverage by selling the asset to pay off the debt. However, the more assets they sell, the lower value they are. Because the sale indicates the financial plight for investors who are thus loath to take over, the increase in supply will depress the asset price and exacerbate the issue. The positive feedback of deleveraging and liquidity crisis will accelerate the default of the company. Additionally, due to the complex business relationship, the default of a firm will have a pervasive effect on relative firms and precipitated more debt crises.

5. HOW EVERGRANDE DEFAULTED

This section elaborates how the vicious positive feedback instigated the liquidity crisis of highly indebted Evergrande under the policy management. Aiming to prevent the financial risk in real estates and adjust the unreasonable property price, the Chinese central government had enforced a sequence of macro policies including three red lines, two red lines, and restrictions on land acquisition since 2020. Due to the high leverage ratio and violation of the limitation, the banking loan as the most significant financing straits is restricted. With the break of capital chain, the firm failed to repay 0.2 trillion of commercial paper in August, 2021 and had to deleverage by selling the assets. Nevertheless, despite more assets than the liability, the sales revenue was merely 16600 million and failed to alleviate the liquidity crisis. Subsequently, it announced to default in 2600 million American bonds in December, 2021 and suspended numerous construction items until the bailout of government.

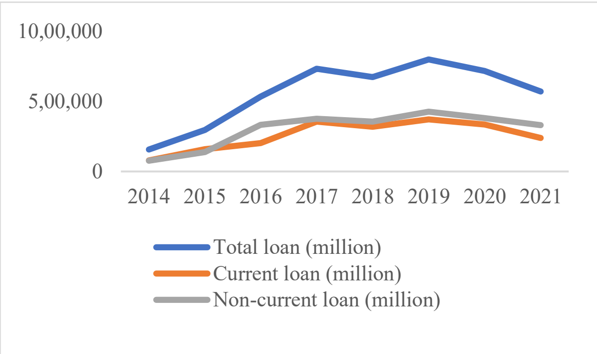

Figure 3. Loan of Evergrande

Because of the excessive dependence on leveraged financing, the policy restriction coerced Evergrande to deleverage to repay the debt. Nevertheless, both the financial issue of Evergrande and signal of policy exasperated the pessimistic expectation of investors and lenders. The lenders degraded reputation of Evergrande and contracted its credit. Figure 3 demonstrates that the total loan of Evergrande, as the most essential financing channel of Evergrande plunged by over 25 percent from 2019 to 2021. Consequently, Evergrande was imposed a tight rein to roll over debt. Additionally, investors lowered the demand for houses and loathed to take over the asset of Evergrande. Hence, the sale of asset by Evergrande merely depreciated its value and further worsened the market confidence. Because of the demand deduction, Figure 4 reflects that the property price rose slowly after the control policy was promulgated in 2020. Subsequently, the housing price began to decline continuously after September, 2021 when Evergrande just declared the default of Commercial paper and strived to deleverage. As a result, the sales revenue of Evergrande dived by 20% with profit shrinking by around 100 percent as shown in Figure 5. The vicious cycle of deleveraging and liquidity crisis was reinforced because of the pervasive market apprehension. Therefore, though Evergrande had adequate assets, it still failed to repay the debt.

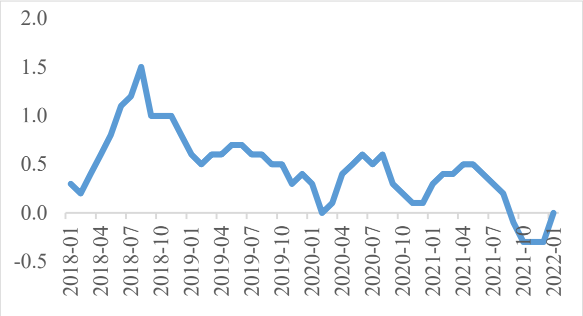

Figure 4. Growth rate of the property price index of 70 Chinese medium and large cities (%)

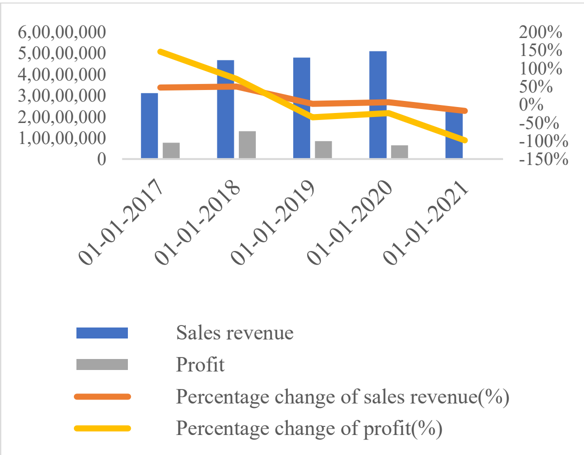

Figure 5. Sales revenue, profit and their percentage change of Evergrande

6. CONCLUSION

Evergrande is selected as the research object to analyze the rationale of Chinese real estate default in 2021. This paper has explored the demerit of its debt-fuel business model, which combines with virtuous and vicious positive feedback in the real estate market. virtuous or vicious positive feedback will be generated by the business mode in different market conditions. The research shows that due to the debt-fueled business model, Evergrande was fallen into the vicious positive feedback of deleveraging and liquidity crisis under the macro-control policy in real estate market. Although the profit is enlarged dramatically under the model, the highly indebted firm relies heavily on the sales revenue or credit expansion to repay the liability. When the housing market booms, there is the virtuous cumulative causation of high leverage ratio and high profit, the model, therefore, can succeed. In contrast, the vicious cycle of deleveraging and liquidity crisis will become self-reinforcing when the sales revenue is depressed or the credit is contracted. However, this research does not illustrate the complex debt relationship between Evergrande and other firms due to the lack of data. The study also does not emphasize the pervasive impact of the default on relevant entities such as suppliers, trust institutions and homebuyers to arouse the debt crisis in lockstep (Leonard, 2021) [5]. Additionally, the valuation of asset is also an issue. If the asset is overvalued or the liability is underestimated, the situation would be worse once the firm defaulted. These weaknesses would be eliminated in the further research.

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