

Financial and Development Analysis of Y Architectural Design Company

Dingxia Cai *

School of Architecture, Tianjin University, Tianjin, China

* Corresponding Author Email: cdx2018_@tju.edu.cn

Abstract. On 22 September 2022, UA Design, a privately listed design institute, announced that it intended to restructure its debt in the form of housing against debt with some real estate companies. Based on this event, this study collected and analyzed UA Design's financial data in an attempt to find out the reasons for the growth of its accounts receivable and to get a glimpse of the industry's development dilemma. The case study of UA Design and its associated real estate company, Greenland Holding Group Co., Ltd. reveals that the increase in accounts receivable is closely related to the liquidity risk of the real estate industry, which has been exposed to policy factors such as the three red lines. Various real estate companies are using deferred payment methods such as commercial paper to minimise the blockage of financing due to the touching of the "three red lines", which manifests itself at the design institute level in the form of defaulted design fees. In response to this situation, this study has accordingly made recommendations from the perspectives of human resources and technical management, and has proposed that policies such as the three red lines are beneficial to the long-term development of design institutes.

Keywords: Financial analysis; Liquidity crisis; Industrial chain; Three red lines policy.

1. Introduction

1.1. Background

The real estate industry has continued to experience multiple tests under the influence of factors such as the macroeconomic downturn and the multi-point distribution of the national epidemic. According to relevant data from the National Bureau of Statistics, from January to August 2022, national real estate development investment fell by 7.4% year-on-year, the lowest level in the past 29 months. In addition, by the end of August 2022, the national real estate new construction area, completed area, sales area of commercial properties and sales were all down around 25% year-on-year, even well below the level of development in the first half of 2020 when the epidemic was at its most severe. Meanwhile, the two core figures of land acquisition area and land transaction price, which are highly correlated with the development of the architectural design industry, fell by 49.7% and 42.5% year-on-year respectively.

Meanwhile, on 22 September 2022, to reduce the risk of bad debt losses on accounts receivable and prevent credit risk on accounts receivable arising from the liquidity crisis of downstream customers arising from the real estate market adjustment, UA Design, a private listed design institute, proposed to restructure its debt with debt restructurers, including a number of central enterprises.

Based on these two pieces of information, this study will attempt to explore the correlation between the two and thus uncover the current situation and dilemma of the architectural design industry.

1.2. Related research

At the level of human resource management in design institutes, many scholars have conducted corresponding studies. Salvatierra et al. used a study of a sample of several Chilean architectural firms to create a set of performance indicators to better judge the performance of architects. The study culminated in the definition of four management dimensions - client management, external coordination, internal organization and human resources - and three key performance indicators - process, financial and quality indicators [1]. Oluwatayo used questionnaires and hierarchical regression analysis to examine the direct and indirect effects of the workforce on its performance.

The study shows that workforce characteristics are more important than workforce management in determining the performance of construction companies, and therefore construction companies should consider human resources as a resource, an asset, and invest in them by allowing employees the freedom to participate in decision-making and integrate them into the development of their strategies [2]. Besides, Oyedele compiled a list of 43 demotivating factors and applied them to the questionnaire, and analyzed the results in several ways to identify the factors that demotivate architects in design firms. The conclusion was to arrive at seven basic factors, while finding that these demotivating factors are on the same pole as the motivating factors, depending mainly on the individual employee's frame of reference [3].

As for reducing waste in the design process, based on his own experience in design management, Rounce defines the numerous causes of design management problems and the potential adverse effects of a lack of quality in the architectural design management process, ultimately suggesting means of controlling potential waste in the design process and pointing out that increased profitability is directly linked to reduced waste, increased efficiency and quality, and accordingly the need for better application of quality management principles [4].

In terms of the financial plight of design institutes, several academics have also offered their insights. Yang examined the utility of accounts receivable asset securitization in addressing the dilemma of accounts receivable distress and pressure on funding needs of construction companies through case studies and literature combing, ultimately concluding that accounts receivable asset-backed notes are an effective way to address the current dilemma of the construction industry, but still need to be improved and returned to their roots [5]. Gerasimova considers the mechanisms for accounting and analyzing accounts receivable in the construction industry. The authors highlight the accounting tools used by construction companies, depending on the geographical and technical characteristics of the industry. The issue of determining the size of a construction company's funds is considered, taking into account the different types of receivables. A methodology for the analysis of receivables in the construction industry is proposed to optimize the size of the receivables of construction companies [6]. In addition, Huang analyses the characteristics of real estate enterprises and the impact of the "three red lines" policy on real estate enterprises and their financial risks, and accordingly proposes strategies to cope with them, such as widening corporate financing channels, improving financial management and strengthening the fine management of costs [7].

Moreover, several scholars have also studied the real estate industry in the context of national policies and the general economic environment. By analyzing the business situation of listed architectural design companies and the development situation of the real estate industry, Guo examines how Chinese design institutes can cope with the impact of the real estate thunderstorm and COVID-19, and gives recommendations for repositioning, strengthening marketing, cultivating the future and optimizing organizations [8]. By analyzing and summarising the current situation of the engineering industry and the development dilemmas of small and medium-sized design institutes, Lu explores the opportunities for design institutes to break through the dilemma and argues that the development of the design industry (market) requires the leadership of large design institutes and the participation of small and medium-sized design institutes, as well as innovation and change [9]. And Uchegara uses analysis of economic recovery scenarios V, U, W and L shapes and the legal context to determine the impact of COVID-19, including the mitigation for tenants and the impact on the supply chain of the UK property sector. Several recovery scenarios for the real estate supply chain were identified [10].

1.3. Objective

Based on relevant research findings and financial data, this study will conduct a financial analysis of UA Design and its largest client, Greenland Holdings, to explore the correlation between the two in terms of financial data, and in conjunction with policy factors, attempt to draw from them the reasons for the rapid growth of the design institute's accounts receivable, make corresponding

recommendations based on this, and provide an outlook on the future development of the architectural design institute.

2. Industry chain analysis

As the upstream of the construction industry chain, the main business of architectural design institutes is to provide design consultancy services to downstream industries, including government and real estate enterprises. Therefore, its development and financial position are closely related to the needs of the downstream. However, the recent national policy of “the three red lines” has caused a major impact on the downstream demand.

The "three red lines" are the regulatory policies of the national regulators for the indebtedness of real estate enterprises and other indicators. The main objective is to stabilize land prices, house prices and expectations, de-leverage and reduce indebtedness, create a good order for the development of the real estate industry and promote the development of China's overall economy.

The three red lines are the following three criteria:

- (1) the asset-liability ratio excluding pre-receivables must not be greater than 70%;
- (2) the net debt ratio must not be greater than 100%;
- (3) the cash to short-term debt ratio must not be less than 1 time.

Table 1 shows the indicators related to the three red lines for several real estate companies (Mainly real estate companies involved in the restructuring of UA Design's debt).

Table 1. The indicators related to the three red lines for several real estate companies

Real estate companies	Asset-liability ratio excluding pre-receipts	Net assets debts ratio	Cash to short-term debt ratio	Bracket
Greenland Holding Group Co., Ltd.	81.32%	94.16%	0.63	Orange
Grandjoy Holdings Group Co., Ltd.	71.23%	89.90%	1.37	Orange
Sunac China Holdings Ltd.	78.69%	115.13%	1.08	Orange
Poly Property Group Co., Ltd.	74.53%	110.42%	1.75	Orange
Poly Development Holding Ltd.	67.76%	64.13%	1.41	Green
China Jinmao Holdings Group Ltd.	68.02%	64.50%	1.51	Green
Baoneng Group Co., Ltd.	Undisclosed	Undisclosed	Undisclosed	/

It can be found that the associated real estate companies in this debt restructuring are mostly in the orange bracket. In addition, according to agency statistics [11], the number of listed real estate companies in the green bracket is decreasing compared to last year among the 90 listed real estate companies, while the number of real estate companies in the red bracket has increased significantly. To some extent, this reflects the current difficult state of the industry, with a large number of companies that were once in the top three brackets eventually dropping into the red bracket. (Specific statistics are shown in Table 2)

Table 2. Number of real estate companies in each bracket

Bracket	2022	2021	Change
Red	22	9	+13
Orange	17	7	+10
Yellow	22	16	+6
Green	29	58	-29

At the same time, each bracket has a corresponding financial restriction policy. The control rules corresponding to the three red lines are shown in Table 3.

Table 3. The "three red lines" control rule

Bracket	The number of red lines touched	Control rule
Red	3	No increase in interest-bearing liabilities
Orange	2	The annual growth rate of interest-bearing liabilities must be less than 5%
Yellow	1	The annual growth rate of interest-bearing liabilities may be relaxed to 10%
Green	0	The annual growth rate of interest-bearing liabilities may be relaxed to 15%

Under the influence of “the three red lines” policy, housing enterprises downstream of the construction industry chain began to adjust their previously aggressive development model to meet the challenge of high debt ratios, while the debt problems of some local governments restricted their investment in urban renewal and renovation. The decline in demand brought about by the reduction in downstream investment has led to a reduction in design institute projects and the problem of vicious competition at low prices has become more prominent, which in turn has led to a decline in efficiency and a vicious cycle.

3. Case study

To further quantify the financial and development impact of the reduced demand from downstream real estate companies under the three red lines policy on architectural design institutes, this research has analyzed their financial data (Table 4).

Table 4. UA Design's financial data sheet (Year-on-year figures in brackets)

Item	2022/09/30	2022/06/30	2021/12/31	2020/12/31
Total operating revenue	3.13 billion (-52.62%)	2.23billions (-51.76%)	9.55billions (3.22%)	9.26billions (8.34%)
Total operating cost	3.53billions (-21.59%)	2.46billions (-21.05%)	6.28billions (+4.48%)	6.01billions (+7.14%)
Operating costs	2.48billions (-26.28%)	1.74billions (-24.98%)	4.86billions (+4.52%)	4.65billions (+6.28%)
Management costs	47.35millions (+3.94%)	27.12millions (-13.51%)	62.10millions (+16.05%)	53.51millions (-3.42%)
R&D costs	27.04millions (-16.36%)	19.03millions (-10.55%)	47.00millions (+3.17%)	45.55millions (+1.04%)
Credit impairment losses	64.01millions (+24.96%)	50.01millions (+59.77%)	59.97millions (+184.59%)	21.07millions (+426.83%)
Gain on asset disposal	2.09millions (+590.59%)	0.03millions (-89.58%)	0.30millions (+51054.35%)	0.01millions (-99.84%)
Net profit	-	-7.85millions	3.03billions	2.93billions

	16.88millions (-108.50%)	(-105.43%)	(+3.48%)	(+10.22%)
Current assets				
Notes and accounts receivable	6.69billions (-15.80%)	7.49billions (-5.29%)	7.93billions (+33.92%)	5.92billions (+30.60%)
Current liability				
	1.75billions (-38.65%)	1.83billions (-35.27%)	3.37billions (-4.46%)	3.53billions (-4.14%)
Employee remuneration payable	29.95millions (-67.68%)	34.36millions (-60.97%)	1.09billions (-22.60%)	1.41billions (+11.75%)
Cash and cash equivalents balance at end of the period	20.95billions (-9.01%)	21.02billions (-14.52%)	23.51billions (+531.18%)	3.72billions (+32.71%)
Profitability				
Return on personnel expense	-25.60%	-20.62%	68.03%	80.40%
Financial risk				
Asset-liability ratio	6.68%	7.31%	11.20%	33.58%
Quick ratio	15.81 (+45.49%)	15.64 (+35.58%)	9.33 (+240.83%)	2.74 (+36.71%)
Operational capacity				
Receivable turnover date	614.61days (+124.47%)	606.26 days (+136.24%)	251.66 days (+30.76%)	192.46 days (+15.49%)
Receivables turnover ratio	0.44 (-55.45%)	0.30 (-57.67%)	1.43 (-23.52%)	1.87 (-13.41%)

After analyzing the financial data, the following conclusions can be drawn:

On the revenue side, the Company's revenue showed a significant year-on-year decline going into 2022. On the cost side, despite a rapid rebound in overhead costs after a mid-year reduction and a very large credit impairment loss due to a spike in the number of accounts receivable, costs were ultimately lower due to a reduction in operating costs and a simultaneous reduction in R&D and payroll expenses. However, as revenue fell more than costs, the company's profit eventually fell off a cliff, shifting from profit to loss.

Although the asset-liability ratio continues to decrease and the quick ratio remains at a high level, this value is not a good measure of the company's solvency as the majority of its quick assets are accounts receivable, the collection of which is highly uncertain. At the same time, while accounts receivable and accounts receivable turnover days are tellingly increasing, accounts payable are also increasing rapidly, resulting in tight cash flow.

As of 31 August 2022, credit impairment losses totaling RMB 51,964,335.87 had been recorded on the Company's debts involved in this debt restructuring, and the net value of such debts in the Company's books was RMB 242,991,455.73. A large part of the reason why UA Design had to choose to restructure its debt, given a large number of receivables, was that the downstream real estate companies were also facing significant challenges in their operations. In October, the property market saw a further decline in investment and financing sales. From January to October, national real estate development investment fell 8.8% year-on-year (down 0.8 percentage points from January to September), with residential investment down 8.3%.

Table 5. Partial UA Design restructuring involving claims

Real estate companies	Number of firms owing design fees for projects	Reorganization claims Amount	Corresponding design Number of contracts
Greenland Holding Group Co., Ltd.	111	260,742,416	237
Grandjoy Holdings Group Co., Ltd.	1	961,770	1
Sunac China Holdings Ltd.	2	4,477,580	2
Poly Development Holding Ltd.	5	2,996,504	7
China Jinmao Holdings Group Ltd.	1	1,276,614	1
Baoneng Group Co., Ltd.	1	3,797,365	2

Table 5 shows that the most important related party in this debt restructuring is Greenland Holding Group Co., Ltd. which is substantially higher than several other companies in all three debt figures. Therefore, to understand the correlation between the operating conditions of the downstream real estate companies and the financial data of the Design Institute, a corresponding financial analysis of Greenland would be representative (Table 6).

Table 6. Greenland Holding Group Co., Ltd.'s financial data sheet (Year-on-year figures in brackets)

Item	2022/09/30	2022/06/30	2021/12/31	2020/12/31
Total operating revenue	3060.53billions (-28.34%)	2047.36billions (-27.64%)	5447.56billions (+19.45%)	4560.62billions (+6.54%)
Net profit	69.48billions (-37.77%)	42.01billions (-48.98%)	61.79billions (-58.80%)	149.98billions (+1.73%)
Current liability	10600billions (+5.23%)	10600billions (+5.25%)	11500billions (+12.88%)	10200billions (+23.29%)
Asset-liability ratio	87.39% (-0.36%)	87.54% (-0.69%)	88.84% (-0.05%)	88.89% (+0.40%)
Days payable outstanding	353.87days (+70.96%)	349.92 days (+61.06%)	257.25 days (+10.98%)	231.81 days (+27.55%)
Accounts payable turnover ratio	0.76 (-41.51%)	0.51 (-37.91%)	1.40 (-9.89%)	1.55 (-21.60%)
Receivables turnover ratio	2.53 -40.68%	1.69 -38.23%	5.00 +4.55%	4.78 -15.46%
Current ratio	1.11 (-8.78%)	1.12 (-8.29%)	1.12 (-6.78%)	1.20 (-1.83%)

As seen in Greenland's financials, the company has seen a significant year-on-year decline in revenue this year, while net profit has been significantly lower since 2021. At the same time, the company's current liabilities and debt ratios, although recently brought under some control, remain high overall and are still relatively close to the red line. In addition, the Current ratio continues to show a slight downward trend, reflecting the company's reduced solvency. At the same time, the current low inventory turnover rate means to a certain extent that sales returns are slowing down, and once the growth rate of interest-bearing liabilities and the growth rate of sales returns fall at the same

time, when sales returns cannot compensate for the decline in the growth rate of interest-bearing liabilities, it may face the risk of capital breakage.

It is noticeable that its Days Payable Outstanding and Accounts Payable Turnover Ratio, on the other hand, is in line with UA Design's Receivable turnover date and Receivables turnover ratio, both of which show a high growth rate, which demonstrates the correlation between the financial data of real estate companies and design institutes. Based on relevant industry data, it is clear that the financial problems faced by Greenland Group and its correlation with UA Design in terms of financial data are widespread in the real estate industry.

4. Discussion

From the above case study, it is clear that the growth of accounts payable of real estate companies and accounts receivable of design institutes are highly correlated. It is therefore essential to sort out the logic involved, especially the reasons for the rapid growth of accounts payable of real estate companies.

4.1. The logic behind relevance

The Asset-liability ratio and Current liability of real estate companies have been somewhat controlled since 2021, which is closely related to the "three red lines" policy of banks to restrict developer financing, which was introduced on 1 January 2021, as mentioned above.

To avoid hitting the red line and affecting their financing, and thus causing a liquidity crisis, real estate enterprises are forced to adjust their debt structure, one of the means is to move their interest-bearing liabilities to interest-free liabilities, thus reducing their interest-bearing liabilities on the balance sheet. As bill payments are included in the accounts payable and notes payable accounts in the balance sheet and are reflected as interest-free liabilities of the enterprise, real estate enterprises have been adjusting their debt structure by increasing their accounts payable and notes payable, i.e. by squeezing funds from upstream suppliers and relieving the pressure on the enterprise's liquidity, which is a disguised form of financing. According to data from the Shanghai Bills Exchange, nearly 60% of real estate enterprises are currently using commercial papers for material procurement and payment for construction work, etc. In 2020, the accounts payable of real estate enterprises will exceed RMB3.5 trillion, and the overall balance of commercial papers accepted by head real estate enterprises will reach RMB335.574 billion, an increase of 36.59% over 2019, which shows how commonly this means is used.

In the specific case of design institutes, deferred payment by real estate enterprises is reflected in defaulted design fees, which in turn leads to a significant increase in the receivables of architectural design institutes. In addition, when real estate companies have a tight capital chain, the priority of commercial paper payment will be much lower than that of financial institutions, i.e. the rights of creditors are not fully protected. UA Design's relevant real estate companies in this debt restructuring are mostly central enterprises, which can still afford to offset their debts with fixed assets, despite having a greater say in deferred payments. For some design institutes or firms whose clients are developers facing huge liquidity crises and weak risk-taking capacity, they will face even more severe cash flow pressures with the accumulation of accounts receivable, and a more urgent need to look inwards to reduce costs and increase efficiency.

However, the financial difficulties faced by design institutes may have improved with the recent favorable policies in the real estate market. To alleviate the difficulties faced by the fundamentals of the real estate market, the Central Bank and the CBRC issued "the Notice on the Current Work on Financial Support for the Stable and Healthy Development of the Real Estate Market" on 11 November, in which many measures provided strong support for financing, debt rolling and liquidity relief for real estate companies. As a result, Greenland Holdings' share price rose sharply on the same day and has generally trended upwards in the recent past (Figure 1). While national policies may in the short term alleviate the financial pressures faced by real estate companies, which in turn will be

transmitted upstream in the industry chain, alleviating the current operating difficulties and cash flow pressures on design institutes, it is clear that until the overall ecology of the industry undergoes a qualitative change, the development and financial position of design institutes relying solely on policy factors is highly uncertain, making internal reform and innovation equally imperative.



Fig 1. Greenland Holding Group Co., Ltd.'s Share Price Trend

4.2. Recommendation 1 - Diversified clientele

The case study of UA Design shows that one of the reasons for the large number of accounts receivable is the concentration of customers; UA Design's number one customer, Greenland Holdings, has been in debt in recent years and this company alone accounts for more than 50% of the accounts receivable, which has had a significant impact on UA Design's financial position. As a result, design institutes should not only develop their core client base, but also avoid being overly concentrated on a few companies in the development process.

4.3. Recommendation 2 - Improve attractiveness to talent

As a knowledge-intensive industry, the core competency of architectural design firms lies in creativity. However, design firms often see labor costs as a drag on their profitability targets rather than an asset, and choose to lay off staff and squeeze them further to achieve their goal of reducing operating costs when faced with declining revenues. UA Design's Employee remuneration payable, for example, has fallen by 60% year-on-year this year, and the turnover rate of general designers, who make up more than half of the company's workforce, has increased year-on-year between 2018 and 2020, reaching 28.44% by the end of 2020, with the average person staying on the job for less than two years, making staff turnover extremely high.

Under such circumstances, the company's Return on personnel expense still shows a significant downward trend, which indicates that layoffs and increasing the workload of employees alone cannot solve the problem well, but may instead lead to a decline in the company's competitiveness due to the loss of talent, further leading to winning projects and reduced revenue, and falling into a vicious cycle. At the same time, this vicious circle may also be further transmitted to the higher education of architecture, in the form of cold applications for architecture majors, declining score lines, conservative and solidified training methods and lack of innovation, etc., affecting the architectural education system and leading to a lower quality of reserve talents.

Therefore, when facing difficulties, design institutes should try their best to maintain their talent pool and strengthen the establishment of a mature talent training and promotion system to enhance staff motivation. At the same time, management systems should be optimized and efforts should be made to reduce management costs.

4.4. Recommendation 3 - Optimise technical management

Current technology management in design institutes is still at a fairly low level. From UA Design's case study, in addition to drastic cuts in labor costs, it has likewise drastically reduced its R&D expenditure in its quest to reduce costs.

The lack of emphasis on R&D is very common in the construction industry. To address the issues and promote innovation, design institutes can adopt the establishment of research centers to carry out the monitoring of progress and confirmation of results throughout the research process. In particular, listed design institutes should invest more of their financing proceeds into research, and implement an industry-wide standards framework to promote orderly and efficient iteration of technological innovation, using innovation to form areas of specialization and thus enhance their competitiveness. At the same time, the industry bidding system could also be optimized to encourage innovation through institutional means.

5. Conclusion

From the case studies and discussions of UA Design and Greenland Holdings mentioned above, it can be seen that the introduction of the three red lines and other regulatory policies on the real estate industry has caused real estate companies to face huge adjustments in their development models and pressure for survival, and this liquidity crisis has been transmitted upstream, resulting in the risk of bad debt losses and credit risk for design institutes due to the long-term default of design fees. This liquidity crisis was transmitted upstream, resulting in the risk of bad debt losses and credit risk for design firms due to the long-term default of design fees. To cope with this risk, UA Design had to make concessions and accept a restructuring in the form of a credit facility for properties that were not readily realizable and liquid. At the same time, this study also suggests that design institutes should seek various means to improve their competitiveness and differentiate themselves in the face of declining revenues, to ultimately reduce costs and increase efficiency, improve their resilience to risks and reduce the impact of policy and macro environment changes on their development and financial position.

In addition, the "three red lines" may have a strong impact on the entire construction industry and design institutes in the short term, but in the long term, the three red lines and other policies complement the long-term real estate mechanism from the supply side, limit the rapid development of real estate enterprises as a whole, and promote the elimination of winners and losers in the industry, with the overall goal of promoting the sustainable development of the real estate industry, and the overall objective is to promote the sustainable development of the real estate industry, and the continuous optimization and benign development of the industry ecology is undoubtedly beneficial to the long-term development of design institutes. Therefore, in addition to taking various measures to overcome the current difficulties, such as human resources, technical management and enrichment of client base, design institutes should take a longer-term view and plan for the future.

There are certain limitations and opportunities for future research in this study. Firstly, this study is only a case study of UA Design and Greenland Holdings, which is not comprehensive enough and may have some deviations from the industry reality. In addition, the recommendations made are more based on the issues identified in the case studies, which are not rich and diverse enough to be explored in depth, and have not been empirically tested to confirm their applicability. Therefore, in the future, there may be scope for a more in-depth discussion of specific measures to reduce costs at the management level, including the evaluation of their effectiveness.

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