

Policy-induced deleveraging and corporate financial resilience: a DuPont analysis of China Vanke, 2019-2025

Yuhan Yao

Xihua University, Chengdu, China

yunayao@126.com

Abstract. The regulatory structure of the Three Red Lines in China has been implemented to curb the level of leverage of the property sector; however, regulatory leverage reduction does not always entail increased corporate financial resilience. It is a study of China Vanke Co., Ltd. between 2019 and 2025 based on a modified DuPont model, chain-substitution decomposition, cash flow measures, and comparison with peers such as Poly Developments, China Merchants Shekou, and Gemdale. The interest-bearing/non-interest bearing liabilities are distinguished by the analysis and contract liabilities are eliminated in the interpretation of effective leverage. Return on equity at Vanke dropped to -31.94 percent in 2025 compared to 21.78 percent in 2019. The decomposition demonstrates that the main cause of deterioration in the net profit margin was the main contributor: compared to the 2019 baseline, its share in the change in the ROE was negative by 76.74 percentage points, whereas total asset turnover and the equity multiplier were positive by 3.54 percentage points and 19.48 percentage points respectively. Conventional leverage decreased over much of the period, but the cash-to-short-term-debt ratio dropped under the regulatory threshold in 2024 and net gearing was over 100% in 2025 due to loss depreciation of equity. The results indicate that compliance with leverage may go hand in hand with a decrease in resilience as profitability and cash conversion decline, which makes it necessary to assess the quality of earnings, liquidity, turnover and liability structure as a single unit.

Keywords: DuPont analysis, China Vanke, Three Red Lines, corporate financial resilience, real estate regulation

1. Introduction

The real estate market is closely tied to household wealth, city building, local government spending, exposure of the banking sector, and macroeconomic stability. In China, the long-term growth of the sector has been characterized by a significant leverage, huge inventories, a long development cycle, and high levels of pre-sale financing. These characteristics shifted financial structure to a predominant control problem as opposed to an entirely company-related accounting concern. Starting in 2020, the regulatory landscape has seen an increased focus on balance-sheet discipline. The framework of the Three Red Lines was aimed at three measures, namely, the ratio of liabilities to assets without taking into account advance payments, the net gearing and the ratio of cash to short term debts so as to limit the growth of debt-funded development and lower the systemic risk. The new policy environment altered the incentives presented to developers: it was harder to develop the

business by increasing the size of the balance sheet and ability to produce earnings and cash based on its existing assets was given greater priority.

China Vanke is a good case in regard to this transition. It was considered as one of the most financially responsible of its size in the sector for several years. As of 2022, the company met all three regulatory parameters with an adjusted liability ratio of 68.4 percent, a net gearing of 43.7 percent and a cash-to-short-term-debt ratio of 1.6. However, the further deterioration of the property market finally revealed a significant difference between deleveraging and resilience. Since 2024, Vanke had faced a sharp decline in profitability and an increasing liquidity squeeze. Its Return On Equity (ROE) eventually went negative despite the traditional equity multiplier being smaller than its peer average. This ostensible contradiction drives the current research.

The main research problem is as follows: how has the post-2020 regulatory and market environment affected Vanke profitability, operational efficiency, and financial leverage during the period of 2019-2025 and which factor can be attributed to the drop in shareholder returns? This question will be answered by using the study, which includes the combination of three-factor DuPont model with chain-substitution analysis, cash flow analysis, special adjustments to contract liabilities in real estate, and cross-company benchmarking. The analysis is based on consolidated financial statements instead of parent-attributed numbers because variations in subsidiary ownership would not affect comparability.

The paper has made three contributions. Firstly, it expands the observation period by including the year 2025 to include both the early regulatory-deleveraging stage and later the stage of serious industry adjustment. Secondly, it is not limited to describing DuPont ratios but measures how net profit margin, total asset turnover and the equity multiplier contribute to the changes in ROE. Thirdly, it separates interest-bearing and non-interest-bearing liabilities and computes an adjusted equity multiplier which eliminates contract liabilities, a balance-sheet item caused by the presale system which has no comparable financing costs or strict repayment obligations of interest-bearing debt. This change explains why a high conventional leverage ratio can be associated with increasing liquidity and solvency risks.

2. Literature review and analytical framework

2.1. DuPont analysis and real-estate financial performance

DuPont system is among the well-known methods of breaking down shareholder returns. It does not see ROE as just another output but divides the ratio into profitability, operating efficiency, and financial leverage. Such organization enables tracing changes in shareholder returns to income generation, the use of assets, or the capital structure. The model has been used in previous research on real-estate companies, project-level evaluation, and enterprise operating decisions, indicating that it can be used as a diagnostic tool [1-4]. In particular, DuPont analysis is very relevant to understanding how much shareholder returns are driven by operating performance or leverage in property development, which is capital-intensive and has lengthy cash-conversion cycles.

The current Vanke-related research has produced different findings depending on market conditions. Previous studies reported increased profitability, decreasing asset turnover, and inventory-management concerns [5, 6]. Another study indicated that Vanke's earlier ROE growth was highly dependent on a higher equity multiplier, pointing to a leverage-based model [7]. More recent reports showed reduced net margins and recommended stronger cost control, sales development, and risk management [8, 9]. Enhanced DuPont models have also been integrated with trend analysis, factor analysis, sustainable-growth indicators, and industry-specific indicators [10, 11]. These works confirm the importance of DuPont decomposition but mostly fall into

the pre-regulatory era of 2020 or do not measure the magnitude of each component of the subsequent decline in ROE.

The model has however some shortcomings when it comes to real estate. The model is backward-looking, it relies on accounting policies, it does not give much weight to cash flows, and it may mask industry-specific balance-sheet arrangements. Presales generate liability contracts which are considered as liabilities despite their nature of being customer advances that typically become revenue once delivered and do not have stated interest. Capital may be immobilized by land reserves and development inventories for extended periods and settlement schedules of projects could cause a mismatch between revenue recognition and cash collection. Hence, under the traditional definition of equity multiplier, the actual level of financial leverage will be exaggerated in case all liabilities are viewed as being equal in an economic sense.

2.2. Financial risk, regulation, and the research gap

The literature on Chinese developers increasingly focuses on bankruptcy risk, liquidity, debt maturity, and profitability-leverage interactions. Studies of financial distress and the Three Red Lines show that weak financial indicators, short-term debt concentration, and poor inventory turnover can constrain solvency [12, 13]. Distress among developers is also associated with financing risk, volatile sales collections, weak funding chains, and the transmission of risk between banks and real-estate companies [14-16]. Cooperative development studies indicate that asset-light and agency-construction structures can reduce capital use [17]. Research on financial technology and digital finance also shows that improved information processing, financing mechanisms, and resource allocation can enhance financing performance and risk mitigation [18-20].

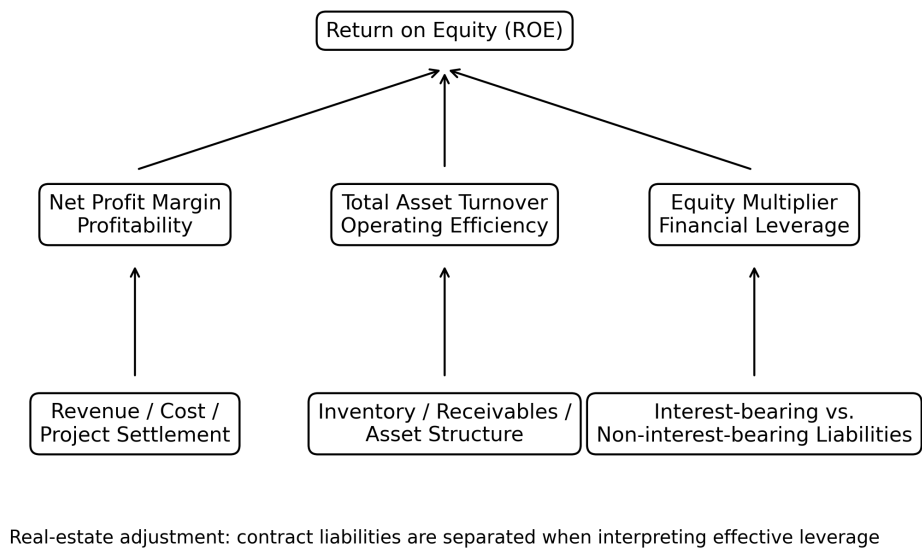


Figure 1. Adjusted DuPont framework for real-estate financial resilience

Note: Source: Author design based on the DuPont identity and the real-estate-specific liability adjustment used in this study.

There are two gaps. Firstly, most of the previous Vanke literature depends on information that is not yet impacted by both market and regulatory adjustments after 2020. Secondly, profitability, turnover and leverage

are frequently treated as separate issues such that it is hard to tell when the deterioration was due to higher leverage or when it was due to losses eating into equity and liquidity. These gaps are filled in this paper by integrating a seven year panel of firm level ratios, chain substitution and modified measure of leverage. The conceptual prediction is that regulatory de-leverage may lead to better headline leverage statistics whereas financial strength remains weak because falling margins and cash conversion diminish the ability of the firm to weather shocks. The analytical relationships used in this study are summarized in Figure 1.

3. Data and method

3.1. Case selection, data, and peer group

The paper takes China Vanke as the only case due to the fact that it has been in the list of the top residential developers in China with the longest time, access to similar public financial documents, and relation to the Three Red Lines policy. The history of Vanke is also what makes the case analytically useful: the company was a major player in the residential development market as well as in property services, commercial real estate, rental housing and logistics and was considered to be relatively prudent in the use of leverage prior to the downturn.

The observation period is 2019-2025. Financial information for China Vanke is prepared from its annual reports and consolidated statements [21]. Three large listed developers, Poly Developments, China Merchants Shekou, and Gemdale, are used as industry benchmarks because they have broadly comparable operating histories; their annual reports provide the peer data used in the study [22-24]. The peer average in the tables is the arithmetic mean of the four companies, including Vanke. All monetary amounts are expressed in RMB billion unless stated otherwise.

3.2. Variables and measurement

The conventional three-factor DuPont identity decomposes ROE as follows (Equations (1)-(4)):

$$ROE = Net\ Profit\ Margin \times Total\ Asset\ Turnover \times Equity\ Multiplier \quad (1)$$

$$Net\ Profit\ Margin = Net\ Profit / Revenue \quad (2)$$

$$Total\ Asset\ Turnover = Revenue / Average\ Total\ Assets \quad (3)$$

$$Equity\ Multiplier = Average\ Total\ Assets / Average\ Owners'\ Equity \quad (4)$$

The calculation of average total assets and average owners' equity is done based on the arithmetic average of beginning- and end-of-year balances. The net profit margin is a measure of the net profit earned per unit of sales. Total asset turnover is an indicator of how efficiently assets are used to create revenues. Equity multiplier measures the level of financial leverage. To determine the ROE directly, it is evaluated as net profit over average owners' equity.

Since contract liabilities due to presales have a different economic character than interest-bearing debt, the research also calculates a modified leverage indicator (Equation (5)):

$$Adjusted\ Equity\ Multiplier = (Total\ Assets - Contract\ Liabilities) / Owners'\ Equity \quad (5)$$

The given measure does not presuppose that contract liabilities are riskless; project-delivery contracts still have an economic value. On the contrary, it ensures that advanced payments made by customers are not perceived as though they were the same as credit extensions by a bank or bonds. The analysis is thus reporting

on traditional forms of leverage and also the structure of debt. The definitions and analytical interpretations of the variables are summarized in Table 1.

Table 1. Indicators and analytical interpretation

Indicator	Definition	Interpretation
ROE	Net profit / average equity	Shareholder return and overall financial outcome
Net profit margin	Net profit / revenue	Profitability and cost/settlement pressure
Total asset turnover	Revenue / average assets	Operating efficiency and asset utilization
Equity multiplier	Average assets / average equity	Conventional accounting leverage
Adjusted equity multiplier	(Assets - contract liabilities) / equity	Leverage after removing customer advances
Inventory turnover	Cost of sales / average inventory	Speed of inventory conversion
Cash-to-short-term-debt	Cash / short-term debt	Short-term liquidity under the Three Red Lines
Net gearing	Net interest-bearing debt / equity	Debt burden relative to equity

3.3. Chain-substitution decomposition

In order to measure the factors behind changes in ROE, 2019 is taken as the base year and all subsequent years are taken as the reporting years. The substitution order is set to be the net Profit margin (P), the total asset Turnover (T) and the Equity Multiplier (EM). The method starts with the 2019 identity $P_0 \times T_0 \times EM_0$ in each reporting year t . It does so by replacing P_0 with P_t , then T_0 with T_t , and finally EM_0 with EM_t . The change in the results after each replacement is allocated to the factor that was modified. The three contributions add up to the real change in ROE during the period between 2019 and year t . In the computations, unrounded underlying ratios are employed, whereas the published tables contain rounded figures. The full details of these calculations are given in the Appendix A.

4. Results

4.1. Overall financial evolution

The balance sheet of Vanke grew until 2021 and then shrank quickly. The highest level of total assets was recorded in 2021 at RMB 1,938.6 billion and reached RMB 1,020.6 billion in 2025. The reported liability-to-asset ratio followed the same trend with liabilities and the ratio decreased by 84.4% in 2019 and 73.2% in 2023 only to increase to 76.9% in 2025. The inventory also dropped significantly to RMB 897.0 billion in 2019 to RMB 373.7 billion in 2025, and its percentage of total assets decreased to 51.9 and 36.6 respectively. Such shifts can be seen as part of a larger process of balance sheet shrinking and inventory depletion instead of further growth.

The income statement is deteriorating even more severely. The revenue reached a maximum of RMB 503.83 billion in 2022, and then decreased to RMB 233.43 billion in 2025. Net profit declined by RMB 55.13 billion in 2019 to a deficit of RMB 91.80 billion in 2025. The cost of sales took up an ever-expanding portion

of revenue, which led to the compression of the gross margin. There is also a downward trend in cash-flows data: operating cash flow stayed positive until 2024 and became negative in 2025, whereas financing cash flow was negative in most years as expected to service net debt repayment and limited financing. The core financial and DuPont indicators are summarized in Table 2.

Table 2. China Vanke: core financial and DuPont indicators, 2019-2025

Indicator	2019	2020	2021	2022	2023	2024	2025
Revenue (RMB bn)	367.89	419.11	452.80	503.83	465.74	343.18	233.43
Net profit (RMB bn)	55.13	59.30	38.07	37.61	20.46	-48.70	-91.80
Net profit margin	14.98%	14.15%	8.41%	7.46%	4.39%	-14.19%	-39.33%
Total asset turnover	0.22	0.23	0.24	0.27	0.29	0.25	0.20
Equity multiplier	6.44	5.80	5.13	4.63	4.04	3.76	4.01
ROE	21.78%	19.12%	10.25%	9.43%	5.06%	-13.13%	-31.94%
Operating cash flow (RMB bn)	45.69	53.19	4.11	2.75	3.91	3.80	-0.99

Note: Source: Author calculations from China Vanke annual reports, 2019-2025. Monetary data converted from RMB 100 million in the source tables to RMB billion.

4.2. Profitability: the dominant deterioration

The profitability has been weakening over the course of study. The net profit margin reduced by 14.98 percent in 2019 to 8.41 percent in 2021, dropped to 4.39 percent in 2023, -14.19 percent in 2024 and -39.33 percent in 2025. There was a decrease in gross margin of 26.78 percentage points as it went down to 9.46 from 36.24. Revenue grew by about 37 percent between 2019 and 2022, however, operating cost grew much higher, which put continued negative pressure on gross profit. Starting in 2023, both revenue and cost declined, but revenue decreased at a rate that was faster than the decline in cost, resulting in a further squeeze on margins.

The ratio of expenses acted as a temporary cushion. The sum of selling, administrative and financial expenses was 7.01% of revenue in 2019 and reduced to 4.67% in 2023. Nevertheless, the ratio recovered to 9.10% by 2025 due to the shrinkage of the revenue base and an increase in financial costs. Cost control would thus not be enough to alleviate margin squeeze at the project level. As can be seen, the pattern suggests that the fundamental issue underlying the finances was not an overhead shock but rather a decline in gross profitability coupled with a lower revenue base. The detailed profitability and cost structure is reported in Table 3.

Table 3. Profitability and cost structure, 2019-2025

Indicator	2019	2020	2021	2022	2023	2024	2025
Revenue (RMB bn)	367.89	419.11	452.80	503.83	465.74	343.18	233.43
Cost of sales (RMB bn)	234.55	296.54	354.00	405.32	394.78	308.26	211.35
Gross margin	36.24%	29.25%	21.82%	19.55%	15.24%	10.18%	9.46%
Period-expense ratio	7.01%	6.22%	6.06%	4.88%	4.67%	6.62%	9.10%
Net profit margin	14.98%	14.15%	8.41%	7.46%	4.39%	-14.19%	-39.33%

Note: Source: Author calculations from China Vanke annual reports, 2019-2025.

4.3. Operating efficiency: improvement followed by reversal

The total asset turnover of Vanke has been two staged. The ratio increased in 2023 to 0.29 (from 0.22 in 2019) as revenue was growing but the asset base started shrinking during the period after 2021. It is a significant improvement in efficiency that helped to some extent counterbalance the margin decrease. In 2024-2025 the trend went into reverse: turnover decreased to 0.25 and then 0.20 due to the fact that revenue shrunk at a higher rate than average total assets.

The sub-components were in opposite directions. Inventory turnover increased by 0.27 to 0.52 and inventory days decreased by 1,352 to 702 which indicates that the disposal or completion was faster than the previous period. Conversely, accounts-receivable turnover dropped to 33.17 compared to 59.82, which is an indication of the slowness in collection. The better inventory turnover was thus not able to be translated into long term improvement in total asset turnover. An aggressive liquidation of inventories in a declining market may also be accompanied by a margin trade-off: the sale of goods more quickly lowers the amount of money invested in projects, yet it might necessitate price reductions that lower profitability. These operating-efficiency indicators are summarized in Table 4.

Table 4. Operating-efficiency indicators, 2019-2025

Indicator	2019	2020	2021	2022	2023	2024	2025
Total asset turnover	0.22	0.23	0.24	0.27	0.29	0.25	0.20
Inventory turnover	0.27	0.31	0.34	0.42	0.50	0.55	0.52
Inventory days	1,352	1,177	1,074	869	730	664	702
Receivables turnover	59.82	62.15	58.43	54.21	50.40	42.33	33.17
Inventory / total assets	51.9%	53.6%	55.5%	51.6%	46.6%	40.3%	36.6%

Note: Source: Author calculations from China Vanke annual reports, 2019-2025.

4.4. Leverage, liability composition, and the Three Red Lines

The traditional equity multiplier declined from 6.44 in 2019 to 3.76 in 2024 and then rose slightly to 4.01 in 2025. Based on this measure, Vanke appears to have significantly reduced its leverage over most of the period. However, the liability structure shifted in a less favorable direction. Interest-bearing debt increased from RMB 257.9 billion in 2019 to RMB 358.5 billion in 2025, while non-interest-bearing liabilities and contract liabilities declined significantly. Consequently, interest-bearing debt as a percentage of total liabilities increased to 45.68% in 2025 from 17.67% in 2019. The balance sheet shrank, but a greater proportion of the remaining liabilities carried financing costs or fixed repayment commitments.

Eliminating contract liabilities leads to the adjusted equity multiplier of 4.26 in 2019, 2.97 in 2023 and 3.93 in 2025. The difference between the conventional and adjusted measures was high in older years as the presale-related contract liabilities were significant. By 2025, the amount of contract liabilities has decreased to RMB 93.06 billion, thus the adjusted multiplier approaches the conventional multiplier. It is meaningful in economic terms: lower presale buffer means higher dependence on other liabilities and lower future revenue protection by customer advances.

The Three Red Lines indicators demonstrate that the equity multiplier cannot be used as the sole indicator of deleveraging. In 2021, the liability ratio not including advance receipts declined to less than the 70 percent mark and in all subsequent years up to 2025 it stayed below this level. But net gearing increased to 123.5 percent in 2025, which is higher than the 100 percent ceiling. The ratio of cash to short term debt has

decreased by 1.6 in 2023 and 0.56 in 2024 and 0.40 in 2025, below the necessary minimum of 1.0. Therefore, Vanke shifted out of complete compliance in 2021-2023 to a situation where liquidity and net-gearing indicators were once again indicating serious stress. The liability structure and regulatory indicators are summarized in Table 5. The overall trajectory of Vanke's ROE over 2019-2025 is shown in Figure 2.

Table 5. Liability structure and regulatory indicators

Indicator	2019	2020	2021	2022	2023	2024	2025
Interest-bearing debt (RMB bn)	257.9	258.5	266.0	278.0	320.0	361.3	358.5
Contract liabilities (RMB bn)	577.05	630.75	636.86	465.58	308.64	192.36	93.06
Interest-bearing debt / liabilities	17.67%	16.68%	17.21%	20.56%	29.04%	38.13%	45.68%
Conventional equity multiplier	6.44	5.80	5.13	4.63	4.04	3.76	4.01
Adjusted equity multiplier	4.26	3.54	3.31	3.19	2.97	3.23	3.93
Adj. liability ratio (threshold $\leq 70\%$)	76.5%	71.7%	69.7%	67.6%	65.5%	68.5%	69.6%
Net gearing (threshold $\leq 100\%$)	33.9%	18.95%	29.7%	43.7%	54.7%	80.6%	123.5%
Cash / short-term debt (threshold $\geq 1x$)	1.80	2.30	1.67	2.10	1.60	0.56	0.40

Note: Source: Author calculations from China Vanke annual reports, 2019-2025. The adjusted equity multiplier removes contract liabilities from total assets before division by owners' equity.



Figure 2. China Vanke ROE, 2019-2025

Note: Source: Author calculations from annual reports.

4.5. ROE decomposition: profitability overwhelms efficiency and leverage

The path of ROE is consistent with the degradation that has been discussed above. In 2019 ROE stood at 21.78% and reduced to 19.12 percent in 2020, 10.25 percent in 2021, 5.06 percent in 2023, -13.13 percent in 2024 and -31.94 percent in 2025. The total decrease in 2019-2025 was 53.72 percentage points. The effects of chain-substitution demonstrate that the reduction in net profit margin became the main factor in each reporting year.

The net profit margin change has impacted the change in ROE by -15.69 percentage points as compared to 2019 as of 2023. Increased asset turnover was +1.93 points and the decrease in leverage was -2.96 points. Margin deterioration had -41.45 points in 2024 and the reduction in asset turnover had another -2.69 points; the decreased equity multiplier increased mechanically by +9.23 points since the lower leverage in case of negative margins results in a smaller magnitude of losses on equity. In 2025, the margin contribution was -76.74 points, the asset turnover added +3.54 points above the 2019 baseline and the equity multiplier added +19.48 points. These last positive contributions must not be seen as indicators of sound leverage impact; if profitability is negative, a lower multiplier can be mathematically able to lower the negative ROE produced by every unit of equity. The main economic implication is that the profitability collapse overpowered every other effect. The full chain-substitution results are reported in Table 6.

Table 6. Chain-substitution decomposition of ROE change relative to 2019 (percentage points)

Factor	2020	2021	2022	2023	2024	2025
Net profit margin	-2.09	-10.11	-11.43	-15.69	-41.45	-76.74
Total asset turnover	+1.50	+1.15	+2.71	+1.93	-2.69	+3.54
Equity multiplier	-2.07	-2.57	-3.63	-2.96	+9.23	+19.48
Total decomposed change	-2.66	-11.53	-12.35	-16.72	-34.91	-53.72
Actual ROE change	-2.66	-11.53	-12.35	-16.72	-34.91	-53.72

Note: Source: Author calculations using the chain-substitution procedure described in Section 3.3. Detailed calculations are shown in Appendix A.

4.6. Peer comparison

The comparison with peers shows that the sector-wide recession did affect all companies, but the scale and nature of the decline varied significantly. The industry-average net profit margin decreased by 17.02 percent in 2019 to -18.82 percent in 2025. Vanke briefly came together with the peer average in 2022-2023, after which its margin dropped significantly more to -39.33 percent in 2025. Poly Developments and China Merchants Shekou made minimal profits in 2025 whereas Gemdale also reported a substantial negative margin. The comparative evidence thus confirms the inference that Vanke experienced an abnormally high level of earnings deterioration in its later period compared to the chosen peer group. The net profit margin comparison is reported in Table 7.

Table 7. Net profit margin comparison

Company	2019	2020	2021	2022	2023	2024	2025
China Vanke	14.98%	14.15%	8.41%	7.46%	4.39%	-14.19%	-39.33%
Poly Developments	15.85%	16.49%	13.05%	9.49%	6.57%	4.77%	1.63%
China Merchants Shekou	19.59%	13.56%	9.47%	4.02%	3.62%	2.24%	0.66%
Gemdale	17.65%	15.29%	12.76%	6.35%	3.25%	-8.13%	-37.04%
Four-firm average	17.02%	14.87%	10.92%	6.83%	4.46%	-3.83%	-18.82%

Vanke was more efficient in its operations compared to the peer average in 2019-2024 and achieved 0.29 turns in 2023. Its asset turnover by 2025 had decreased to 0.20 which is just slightly above the four-firm average of 0.19 and lower than Poly Developments at 0.23. The decrease is thus not an indicator of a

prolonged state of weakness but a loss of competitive advantage that was previously held. The total asset turnover comparison is shown in Table 8.

Table 8. Total asset turnover comparison

Company	2019	2020	2021	2022	2023	2024	2025
China Vanke	0.22	0.23	0.24	0.27	0.29	0.25	0.20
Poly Developments	0.25	0.21	0.21	0.20	0.23	0.21	0.23
China Merchants Shekou	0.19	0.19	0.20	0.21	0.20	0.21	0.19
Gemdale	0.21	0.23	0.23	0.27	0.27	0.23	0.14
Four-firm average	0.22	0.22	0.22	0.24	0.25	0.23	0.19

The conventional equity multiplier at Vanke has been under the mean of its peers since 2019. It is particularly noticeable when it is compared with Poly Developments and China Merchants Shekou, which had their multipliers stay close to 7-8 in later years. It confirms the idea that Vanke could be criticized on something other than too much headline leverage. It is better to see the slight increase in Vanke multiplier to 3.76 in 2024 and 4.01 in 2025 as a result of equity erosion due to large losses rather than as a deliberate choice to raise leverage. The equity multiplier comparison is reported in Table 9.

Table 9. Equity multiplier comparison

Company	2019	2020	2021	2022	2023	2024	2025
China Vanke	6.44	5.80	5.13	4.63	4.04	3.76	4.01
Poly Developments	6.80	6.92	7.20	7.39	7.39	7.40	6.78
China Merchants Shekou	5.48	6.45	7.04	7.60	7.94	8.14	8.14
Gemdale	5.27	5.36	5.37	5.06	4.70	4.35	4.49
Four-firm average	6.00	6.13	6.19	6.17	6.02	5.91	5.86

Note: Source for Tables 7-9: Author calculations from the 2019-2025 annual reports of the four listed developers.

5. Discussion

5.1. Deleveraging is not equivalent to financial resilience

This key finding is a contradiction between leverage discipline and financial resiliency. Conventional equity multiplier of Vanke significantly decreased, and adjusted liability ratio came within the regulatory threshold. In case financial health was measured based on these balance-sheet ratios alone, it would seem that the company had become safer. However, ROE, liquidity, and net gearing sharply declined. The cause is the change in the denominator and generating capacity of cash of the balance sheet. Equity decreased due to large losses and cash available to service debts dropped because of weak sales and collections. Resilience of the company consequently decreased despite the absence of significant increase in the conventional multiplier.

The given difference is important when evaluating policies. A leverage rule may limit debt-financed growth, but it cannot ensure the profitability of projects, liquidity of inventories, or rapidity in the cash conversion. Gross margins may drop so low that previous deleveraging profits are wiped out through eating into equity. Net gearing increases even with constant or reducing nominal debt. The mechanism is shown in the 2025 data where the net-gearing ratio was over 100% in large part due to the erosion of equity by a build-

up of losses, whereas the cash-to-short-term-debt ratio indicated imminent liquidity pressure. Financial regulation should not be considered separately but along with earnings and cash-flow indicators as the indicators of resilience.

The adjusted equity multiplier supports this finding. The significant difference between traditional and adjusted leverage is explained by the significance of contract liabilities brought about by the presale system in earlier years. Considering all liabilities as being the same would also exaggerate the extent to which Vanke was dependent on interest-bearing financing. Nonetheless, the difference reduced as contract liabilities decreased. During the same period, the interest-bearing debt portion of the total liabilities grew. A less-balanced balance sheet did not necessarily mean a more balanced one; the composition of the funds was changing in the direction that enhanced sensitivity to financing costs.

5.2. A negative feedback loop among margins, turnover, and capital structure

The three DuPont factors are not mutually exclusive. The initial transmission channel leads to the capital structure via profitability. Shrinking margins lead to losses, losses result in a reduction of the owners' equity, and reduced equity leads to an increase in net gearing automatically and an equity multiplier can increase without an increase in total debt. That is the reason why the end-period rise in Vanke multiplier ought not to be interpreted as a voluntary re-leveraging.

The second channel starts at the level of operating efficiency and ends at liquidity and financing costs. When receivable collection is slow, cash inflow is delayed regardless of sales recognition. There are still construction payments and debt maturities to be paid by developers; therefore, a longer cash-conversion cycle may lead to increased reliance on interest-bearing funding. Financial expenditures subsequently increase and reduce net profit margin even further. The mechanism that connects the decrease in receivables turnover with the worsening of profitability and solvency.

The third channel produces a trade off between inventory reduction and margins. Increased speed of inventory turnover is preferred when projects involve huge sums of capital, however, discounting to sell faster can lower gross margin. In case the price concession necessary to eliminate the inventory is significant, turnover improvement could go along with the decline in the ROE. Vanke data proves this very possibility: inventory turnover was significantly higher during seven years, but both gross and net margins fell. The conclusion is that efficiency indicators should be considered jointly with prices and profitability of turnover that they produce.

5.3. Comparative and governance implications

Peer comparison also alters interpretation of Vanke financial position. Historically, Vanke had smaller leverage compared to the four-firm average and enjoyed relatively high asset turnover. These strengths were not enough to stop the worst late-period decrease in profitability of the chosen companies. However, companies with higher equity multipliers did not always have poorer 2025 margins. There is a cross-sectional implication that indicates that leverage effect is dependent on the level of earnings, access to funds and nature of the liabilities but not on the multiplier alone.

In terms of corporate-governance, the results can be used to justify moving away to ratio compliance to integrated resiliency monitoring. Project-level margins, collections, and inventory ageing, as well as debt maturity, and equity buffers are all factors that boards, creditors, and regulators need to consider in terms of their interactions. DuPont identity is helpful since it offers a universal terminology that is related to these dimensions; however, it is necessary to add liquidity and composition of liabilities. The most important question of governance to large developers with strict macroprudential limits is not just the size of leverage

that a company takes on but whether its assets and business model earn enough income and cash to support this level of leverage during a downturn.

6. Managerial and governance implications

6.1. Restore profitability before pursuing balance-sheet expansion

The breakdown demonstrates that margin restoration must be prioritized most. In order to decrease the amount of capital occupied at the outset, it should be increasingly dependent on the arrangements such as agency construction, minority participation, urban-renewal partnerships, joint development, and transit-oriented development where economically viable. The aim of both is to reduce the costs of land and finance and still ensure access to projects and focusing the resources of Vanke on product design, development capability and brand output.

The product strategy must also focus on areas where price elasticity and balance sheets of customers are less vulnerable instead of going after volume with indiscriminate discounts. Sales of completed homes and greater visibility of deliveries can decrease uncertainty in buyers and speed up the process of collecting, but decisions of prices need to be looked at in terms of contribution margins per project. Lastly, property services, rental housing, logistics, and commercial properties should be managed like separate profit and cash generators. The growth should be founded on proven returns on investment capital and cash flows performance, not just on the diversity of the strategies.

6.2. Improve asset turnover without destroying margins

Inventory control ought to be able to differentiate between projects that should be sold using a standard marketing program, projects that need repositioning, and assets that must be disposed of or transferred. Regional managers must be evaluated based not just on sell-through rates but also on achieved gross margins and cash collections. New land-investment authorization tied to inventory aging and collection performance would alleviate the threat that new projects would consume capital when old stock still has pending issues.

Receivables and sales collections both need to be given the same amount of consideration. Customer qualification, mortgage processing, and cooperation with banks and partner-payment arrangements must be treated as one cash-conversion process. Good-quality receivables can be monetized by way of factoring when the financing expense of the factoring is less than the opportunity cost of the delayed cash. Joint-development projects can have their risks minimized by specific cash-management plans and explicit payment prioritization that will minimize the risk that partner weakness will bring about unexpected funding demands on Vanke.

The rules on land reserves and diversified operating assets should be based on the explicit holding-period and return thresholds. Unpromising land with no viable development plan in the near term may be sold, developed as a joint venture, or re-structured. Income-producing assets that are mature could have the potential of being securitized or exited through REITs, and capital would then be freed to be used in other investments with better returns. The goal here is not merely to reduce assets but to add more revenue and cash per unit of capital and safeguard margins.

6.3. Rebuild the equity buffer and redesign financing risk controls

The net-gearing breach in 2025 will not be able to be resolved in a sustainable manner with debt reduction only unless losses keep eating away at equity. Projects that make loss must thus be remedied on a project-by-project basis, such as repricing, renegotiating costs, disposing, or introducing partners. The internal

performance systems must also include project and regional ROE, margin, and cash return targets to ensure that capital allocation is based on the quality of earnings and not just their volume of sales.

The joint-development counterparties must be included in the tiered credit assessment and continuous financial tracking of the company as well as contingency measures to transfer the equity, restructure the project or replace the partner. The financing policy must extend repayment terms on debt where possible and provide a variety of sources of funding such as long term bank loans, supply chain finance with clear risk control mechanisms, green financing of eligible assets and securitization or REIT exit of mature properties. It is important to lower the refinancing focus and financing costs but not revive the leverage-driven growth model that regulation aimed to limit.

6.4. Integrate financial analysis, budgeting, and digital risk monitoring

DuPont analysis must be taken down to the level of management at the regional and project levels instead of the group level retrospective reporting. Any project may be broken down into three parts, namely margin, turnover, and capital-use components, and management can determine if poor returns are due to the cost of the land, the cost of the construction, a slow sale, or delay in collections, or structure of the financing. The possibility of comparing projects and regions based on common definitions would also be facilitated by a common data architecture.

The process of budgeting should also connect to the same drivers. The assumptions of revenue, gross margin, inventory reduction, collections, and financing cost ought to be used to feed rolling forecasts of ROE, liquidity, and net gearing. Thresholds can be automated to indicate anomalies including excessively slow collections, overspending, increasing age of inventory, or concentrations of debt maturity. Financial personnel can now become less of reactive bookkeepers and more proactive business partners who foresee financial implications of running a business prior to the investment of capital. Digitisation is useful, not in that it substitutes financial judgment, but in that it reduces the interval between the decline in operations and managerial action.

7. Limitations and future research

There are four limitations to the study. Firstly, the selected time frame of the study (2019-2025) is relatively small compared to the complete Chinese real estate sector cycle. Secondly, DuPont analysis continues to be historical and based on accounting despite the inclusion of both cash flows and liabilities. Thirdly, contract liabilities are more understandable but still do not cover all the project-delivery responsibilities, project-level financing, quality of a land reserve, or variations in revenue recognition. Lastly, Vanke is a unique case, and it is not clear to what degree the results can be extrapolated to other state-owned, privately held, smaller or geographically specific developers and needs further testing.

The future study can be extended to ten years or even longer, incorporate cash-flow analysis, economic value added, sustainable growth, project internal rates of return, and land-to-sales ratios, and come up with a more systematic approach to creating a real estate-focused DuPont model. The multi-case designs may examine whether the association between regulatory deleveraging and financial resiliency is different depending on the ownership structure, access to funding, location of the projects, or the level of presale dependency. Another way to go would be to model directly the impact of macroprudential regulation on the transmission mechanism between sales and margins and liquidity, equity erosion and debt capacity.

8. Conclusion

The research paper analyzes the financial results of China Vanke within 2019-2025 based on a modified DuPont model. Five results were found. Firstly, ROE decreased by 53.72 percentage points, i.e., it reduced to -31.94% compared to 21.78%. Secondly, the decrease in the net profit margin became the determining factor: the margin contribution of the net profit margin to the ROE change as compared to 2019 was -76.74 points. Thirdly, total asset turnover increased up to 2023 and thereafter dropped sharply due to a higher rate of revenue contraction than the asset base; increased inventory turnover was compensated by a slower receivables collection and poor sales market. Fourth, the traditional equity multiplier decreased and was less than the peer average, but the Three Red Lines indicators subsequently worsened: the cash-to-short-term-debt ratio dropped below 1.0 in 2024 and net gearing rose above 100 percent in 2025. Fifth, peer benchmarking demonstrates that China Vanke could have experienced a more severe late-cycle earnings deterioration than other similar developers despite the fact that it had previously enjoyed better turnover and lower leverage.

There is also a larger implication which is that policy-driven deleveraging and corporate financial resilience are interrelated but not necessarily identical. The restrictions on leverage may restrict the growth of debt but cannot replace profitability, cash conversion, or sufficient equity buffer. In the event that margins fail, losses could quickly reverse previous balance-sheet gains by reducing equity and liquidity. It is thus more informative to have an integrating dashboard of DuPont drivers, cash flows, liability compositions, and regulatory ratios rather than any individual leverage measure to all stakeholders: firms, creditors, and regulators.

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Appendix

Appendix A. Chain-substitution calculations

The calculations below reproduce the factor-decomposition logic using the unrounded turnover values reported in the source analysis. P denotes net profit margin, T total asset turnover, and EM the equity multiplier. The 2019 base is $P_0 = 14.98\%$, $T_0 \approx 0.217$, $EM_0 = 6.44$, yielding $ROE_0 \approx 21.78\%$.

2020

Replace P : $14.15\% \times 0.217 \times 6.44 \approx 19.69\%$; margin contribution = $19.69 - 21.78 = -2.09$ pp.

Replace T : $14.15\% \times 0.233 \times 6.44 \approx 21.19\%$; turnover contribution = $21.19 - 19.69 = +1.50$ pp.

Replace EM : $14.15\% \times 0.233 \times 5.80 \approx 19.12\%$; leverage contribution = $19.12 - 21.19 = -2.07$ pp.

Check: $-2.09 + 1.50 - 2.07 = -2.66$ pp = $19.12 - 21.78$.

2021

Replace P : $8.41\% \times 0.217 \times 6.44 \approx 11.67\%$; margin contribution = -10.11 pp.

Replace T : $8.41\% \times 0.238 \times 6.44 \approx 12.82\%$; turnover contribution = $+1.15$ pp.

Replace EM : $8.41\% \times 0.238 \times 5.13 \approx 10.25\%$; leverage contribution = -2.57 pp.

Check: $-10.11 + 1.15 - 2.57 = -11.53$ pp.

2022

Replace P : $7.46\% \times 0.217 \times 6.44 \approx 10.35\%$; margin contribution = -11.43 pp.

Replace T : $7.46\% \times 0.273 \times 6.44 \approx 13.06\%$; turnover contribution = $+2.71$ pp.

Replace EM : $7.46\% \times 0.273 \times 4.63 \approx 9.43\%$; leverage contribution = -3.63 pp.

Check: $-11.43 + 2.71 - 3.63 = -12.35$ pp.

2023

Replace P : $4.39\% \times 0.217 \times 6.44 \approx 6.09\%$; margin contribution = -15.69 pp.

Replace T : $4.39\% \times 0.286 \times 6.44 \approx 8.02\%$; turnover contribution = $+1.93$ pp.

Replace EM : $4.39\% \times 0.286 \times 4.04 \approx 5.06\%$; leverage contribution = -2.96 pp.

Check: $-15.69 + 1.93 - 2.96 = -16.72$ pp.

2024

Replace P : $-14.19\% \times 0.217 \times 6.44 \approx -19.67\%$; margin contribution = -41.45 pp.

Replace T : $-14.19\% \times 0.246 \times 6.44 \approx -22.36\%$; turnover contribution = -2.69 pp.

Replace EM : $-14.19\% \times 0.246 \times 3.76 \approx -13.13\%$; leverage contribution = $+9.23$ pp.

Check: $-41.45 - 2.69 + 9.23 = -34.91$ pp.

2025

Replace P : $-39.33\% \times 0.217 \times 6.44 \approx -54.96\%$; margin contribution = -76.74 pp.

Replace T : $-39.33\% \times 0.203 \times 6.44 \approx -51.42\%$; turnover contribution = $+3.54$ pp.

Replace EM : $-39.33\% \times 0.203 \times 4.01 \approx -31.94\%$; leverage contribution = $+19.48$ pp.

Check: $-76.74 + 3.54 + 19.48 = -53.72$ pp.

Appendix B. Consolidated financial statement data

The following tables preserve the principal source-data series used in the original study. Monetary values are RMB billion after conversion from RMB 100 million. The balance-sheet, income-statement, and cash-flow series are reported in Tables B1-B3.

Table B1. Balance-sheet data

Indicator	2019	2020	2021	2022	2023	2024	2025
Total assets	1,729.9	1,869.1	1,938.6	1,757.1	1,504.9	1,286.3	1,020.6
Total liabilities	1,459.3	1,519.3	1,545.9	1,352.1	1,101.9	947.4	784.8
Owners' equity	270.6	349.8	392.8	405.0	402.9	338.9	235.9
Liability / asset ratio	84.4%	81.3%	79.7%	77.0%	73.2%	73.7%	76.9%
Inventory	897.0	1,002.0	1,075.6	907.1	701.7	519.0	373.7
Inventory / assets	51.9%	53.6%	55.5%	51.6%	46.6%	40.3%	36.6%

Table B2. Income-statement data

Indicator	2019	2020	2021	2022	2023	2024	2025
Revenue	367.89	419.11	452.80	503.83	465.74	343.18	233.43
Cost of sales	234.55	296.54	354.00	405.32	394.78	308.26	211.35
Selling expenses	9.04	10.64	12.81	12.41	12.27	10.38	7.41
Administrative expenses	11.02	10.29	10.24	9.58	5.76	6.39	6.26
Financial expenses	5.74	5.15	4.38	2.62	3.71	5.94	7.58
Net profit	55.13	59.30	38.07	37.61	20.46	-48.70	-91.80

Table B3. Cash-flow data

Indicator	2019	2020	2021	2022	2023	2024	2025
Operating cash inflow	469.8	508.3	484.2	365.67	321.1	219.6	140.2
Operating cash outflow	424.1	455.1	480.1	362.9	317.2	215.8	141.1
Net operating cash flow	45.69	53.19	4.11	2.75	3.91	3.80	-0.99
Net investing cash flow	-28.63	5.80	-26.28	-13.03	-4.61	10.89	3.69
Net financing cash flow	-33.32	-32.50	-23.10	-36.81	-27.67	-36.81	-24.92
Net increase in cash equivalents	-15.93	25.92	-44.95	-62.84	-37.48	-12.93	-22.49

Note: Source for Appendix B: China Vanke annual reports, 2019-2025, as compiled in the source manuscript.