A Hybrid Sum-of-the-Parts Valuation of Multi-Business Automobile Manufacturers: Evidence from SAIC Motor

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Abstract. The transition from internal-combustion vehicles to new-energy vehicles has turned many automobile manufacturers into multi-business enterprises whose units differ in life cycle, growth and risk. A single valuation method may therefore conceal economically important differences. This paper develops a hybrid sum-of-the-parts framework and applies it to SAIC Motor at 31 December 2022. The group is decomposed into traditional-vehicle, new-energy-vehicle and financial-service units. The mature traditional-vehicle unit is valued with a free-cash-flow-to-the-firm model, while the growing new-energy unit and the financial unit are valued with price-to-sales and price-to-earnings multiples, respectively. The estimated equity values are RMB 110.173 billion, RMB 93.863 billion and RMB 18.599 billion, giving a combined value of RMB 222.635 billion. This is 35.34% above the contemporaneous market capitalisation of RMB 164.497 billion. The case supports matching valuation methods to business-unit characteristics, while also showing that growth, comparable-company and data-reconciliation assumptions materially affect the result.

Keywords: Multi-business enterprise, Sum-of-the-parts valuation, FCFF, Market multiples, SAIC Motor

1 Introduction

Automobile manufacturing is being reshaped by electrification. Internal-combustion-engine (ICE) production remains a large and comparatively mature activity, while new-energy-vehicle (NEV) operations require continuing investment and face faster technological and competitive change. Financial services add a third source of earnings with a different capital structure and risk profile. The global expansion of electric mobility confirms that these activities no longer sit at the same point in the industry life cycle [1].

This transition creates a valuation problem. Conventional enterprise valuation often treats the company as one homogeneous cash-generating unit and applies one income, market or cost approach. That treatment is convenient, but it can be misleading when established vehicle production, emerging NEV operations and financial services have different growth paths, forecast reliability and comparable firms. A group-wide discount rate may suppress the growth value of the emerging unit, whereas one market multiple may ignore the relatively stable cash flow of the mature unit.

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The research question is therefore whether a business-unit decomposition, followed by method selection based on unit economics, yields a more informative estimate of equity value than a single-method valuation. The study addresses this question through a case analysis of SAIC Motor at 31 December 2022. SAIC provides an appropriate setting because its mature vehicle operations coexist with a rapidly developing NEV business and automobile-related financial services. The analysis combines free-cash-flow-to-the-firm (FCFF) valuation with revenue and earnings multiples within a sum-of-the-parts (SOTP) framework.

The study contributes to the valuation literature in three respects. First, it establishes a method-selection rule based on business life cycle, cash-flow predictability and the availability of comparable firms. Second, it provides a transparent bridge between income and market approaches by expressing all unit estimates on a common equity-value basis. Third, it demonstrates how unit-level assumptions affect the distribution of value across a diversified automobile group. The remainder of the paper reviews the relevant literature, develops the hybrid model, presents the SAIC application, discusses its implications and limitations, and concludes with directions for further research.

2 Literature Review and Method Selection

2.1 Enterprise and Multi-Business Valuation

Enterprise value is the present value of expected future economic benefits. Income approaches express this principle through discounted cash flow, while market approaches infer value from comparable transactions or listed firms [2, 3]. DCF is particularly useful when operating cash flow can be forecast with reasonable stability, but its output is sensitive to the discount rate, terminal growth and reinvestment assumptions. Recent work further shows that earnings growth, return on invested capital and reinvestment timing must be internally consistent to avoid valuation errors [4].

Methodological consistency is essential when enterprise value is converted into equity value. FCFF is discounted at WACC because it is available to debt and equity providers; interest-bearing debt is therefore deducted after discounting. By contrast, P/S and P/E multiples based on market capitalisation produce equity values directly. All unit estimates must consequently be standardised to the same valuation object before aggregation.

For a diversified company, SOTP analysis first constructs divisional financial information, estimates an appropriate cost of capital or market multiple for each unit, values the units separately and then aggregates them [2]. This addresses heterogeneity directly. It is especially relevant to automobile groups because ICE, NEV and finance operations differ not only in product but also in maturity, capital intensity and exposure to policy and technology.

The principal advantage of SOTP is that it makes cross-unit heterogeneity observable. Segment assumptions can be adjusted without imposing one growth rate or risk premium on the group. Its main difficulty is data availability because consolidated statements seldom disclose complete divisional cash flows, capital structures and inter-

segment transactions. Business boundaries and allocation rules must therefore be defined consistently.

2.2 Evidence from the NEV Valuation Literature

Recent NEV valuation research generally rejects an uncritical one-model solution. Studies apply modified FCFF, market, EVA, real-option and hybrid models to BYD, CATL and other emerging-energy firms [5-9]. The common rationale is that young technology businesses exhibit high growth and uncertainty, making long-horizon cash-flow forecasts fragile. Market evidence can better capture current growth expectations when credible peers exist, although comparability and market sentiment remain important limitations. More recent evidence also shows that innovation investment and enterprise value need not have a simple linear relationship [10].

The preferred valuation basis changes as a firm develops. Volatile early-stage earnings weaken earnings multiples and steady-state DCF assumptions, while revenue multiples may remain informative when credible peers exist. As profitability stabilises, cash-flow and earnings approaches become more defensible. Method quality is therefore conditional on whether its assumptions correspond to the economic state of the business.

Accordingly, method selection in this study follows the business life cycle. A mature unit with relatively stable revenue and cash flow is assigned FCFF. A growing NEV unit with volatile profitability but observable peer revenue is assigned a price-to-sales (P/S) multiple. The finance unit is assigned a price-to-earnings (P/E) multiple, consistent with the importance of earnings and leverage in financial businesses. The cost approach is not used because separately restating assets and liabilities does not fully capture operating synergies or going-concern value.

3 Hybrid SOTP Valuation Model

3.1 Business-unit Decomposition

The model separates a multi-business automobile manufacturer into three units: traditional vehicles, NEVs and financial services. Each unit is assigned a valuation basis that reflects its life cycle and the availability of forecast or peer data. Table 1 summarises the decision rule. The unit values are then added to obtain group equity value. This preserves the enterprise as one economic entity while avoiding the assumption that all activities share one growth-risk profile.

Three criteria govern method assignment: life-cycle position, cash-flow predictability and market comparability. The mature traditional-vehicle unit supports explicit forecasts, whereas the NEV and finance units are more appropriately linked to listed peers. Valuation-method selection is thus treated as a modelling decision grounded in unit economics.

Table 1. Business-unit characteristics and valuation-method selection

Business unit	Life-cycle and risk	Selected method	Reason for selection
Traditional vehicles	Mature; stable cash flow	FCFF discounted at WACC	Forecastable operations and finite risk inputs
New-energy vehicles	Growth stage; high uncertainty	Adjusted P/S multiple	Revenue and listed peers are observable; profit is volatile
Financial services	Market-sensitive; leveraged	Adjusted P/E multiple	Earnings multiple follows financial-sector practice
Group	Mixed business portfolio	SOTP aggregation	Preserves unit heterogeneity and makes assumptions visible

3.2 FCFF and Market-Multiple Specifications

For the traditional-vehicle unit, enterprise value equals the present value of forecast FCFF plus terminal value:

$$V_0 = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{\mathrm{FCFF_{n+1}}}{(\mathrm{WACC}-\mathrm{g})(1+\mathrm{WACC})^{\mathrm{n}}}$$

FCFF is estimated as after-tax operating profit plus depreciation and amortisation, less capital expenditure and the increase in working capital. WACC combines the costs of equity and debt, with the capital asset pricing model used for the cost of equity. Interest-bearing debt allocated to the unit is deducted from enterprise value to obtain equity value.

The explicit forecast horizon covers five years. Revenue provides the base for estimating costs, taxes, depreciation, capital expenditure and working capital. Terminal value assumes a stable state after the forecast period; its growth rate must remain below WACC and be consistent with industry maturity. Allocated debt is then deducted to ensure comparability with market-based equity values.

For the NEV unit, equity value is operating revenue multiplied by an adjusted peer P/S ratio. For the financial unit, equity value is after-tax profit multiplied by an adjusted peer P/E ratio. Peer selection considers operating focus, development stage, business scale and risk exposure. The selected multiple is positioned within the observed peer range rather than derived from an unrestricted market average. The aggregate expression is: Group equity value = ICE equity value + NEV equity value + financial-unit equity value.

4 Case Study: SAIC Motor

4.1 Case Setting and Assumptions

SAIC Motor is a representative multi-business automobile manufacturer. Its activities include conventional vehicle and component production, NEV development and automobile-related finance. The case uses information available for the 2018-2022 period and the company's 2022 annual report [11]. The valuation date is 31 December 2022, and all monetary amounts are stated in RMB 100 million unless otherwise indicated.

The unit boundaries follow the group's economic functions. Conventional vehicles comprise mature fuel-vehicle activities with relatively stable cash flow; NEVs comprise emerging electric and hybrid activities whose principal drivers are revenue growth and market expectations; and financial services comprise automobile-finance activities valued on after-tax earnings. All units retain a common valuation date and currency basis.

The traditional-vehicle forecast begins with 2022 unit revenue of 6600.38 and applies a 1.56% annual growth rate for 2023-2027. Forecast FCFF increases from 92.32 in 2023 to 98.22 in 2027. The reported WACC is 6.99%, comprising a 7.08% cost of equity, 3.33% after-tax cost of debt and capital weights of 98.68% equity and 1.32% debt. A zero terminal growth rate is used to reflect maturity. The present value of forecast-period cash flow is 369.69 and the reported continuing enterprise value is 3772.63. After deducting allocated interest-bearing debt of 2670.90, the unit's equity value is 1101.73.

The NEV peer set comprises BYD, Seres, BAIC BluePark and Li Auto. Their disclosed P/S ratios range from 1.54 to 2.95. Because SAIC's NEV unit was judged closer to BYD in risk and growth, the lower 1.54 multiple is applied to revenue of 609.50, producing 938.63. The finance peer set comprises CNPC Capital, Minmetals Capital, SDIC Capital, COFCO Capital and AVIC Industry-Finance. Their P/E ratios range from 4.33 to 13.05. The selected 4.33 multiple, applied to operative after-tax profit of 42.95, produces 185.99.

4.2 Valuation Results

Table 2 reports the combined result. Traditional vehicles contribute 49.49% of estimated equity value, NEVs 42.16% and finance 8.35%. The SOTP estimate is 2226.35, compared with contemporaneous market capitalisation of 1644.97. The implied premium is 581.38, or 35.34%. This result does not by itself prove that the market mispriced SAIC; it shows how the hybrid model reallocates value when the NEV operation is separated from the mature core.

Table 2. SAIC Motor SOTP valuation at 31 December 2022 (RMB 100 million)

Business unit	Operative driver and assumption	Equity value	Share
Traditional vehicles	FCFF; WACC 6.99%; g 0%; debt 2670.90	1101.73	49.49%
New-energy vehicles	Revenue 609.50 x P/S 1.54	938.63	42.16%
Financial services	After-tax profit 42.95 x P/E 4.33	185.99	8.35%
Total SOTP	Market capitalisation: 1644.97; premium: 35.34%	2226.35	100.00%

Although conventional vehicles remain the largest unit, NEVs account for more than two-fifths of estimated equity value, reflecting the market-based valuation attached to growth-oriented revenue. Separate treatment of financial services prevents leverage and sector-specific earnings from being absorbed into manufacturing value. The 35.34% premium is therefore attributable to unit separation and method-specific assumptions rather than direct evidence of market inefficiency.

5 Discussion

5.1 Interpretation of the Valuation Result

The case supports three observations. First, valuation method should follow the economics of the unit rather than the legal boundary of the group. Stable ICE cash flows can support FCFF, whereas the high growth and forecast uncertainty of an NEV unit make a revenue multiple a practical benchmark. Second, decomposition improves interpretability. The analysis shows that a substantial proportion of value is associated with NEV operations even though the mature vehicle unit generates most historical revenue. Third, the approach makes assumptions contestable: the NEV multiple, WACC, terminal growth and debt allocation can be varied independently without reconstructing the entire company model.

The valuation gap may reflect a conglomerate discount arising from limited unit-level information or constraints on the independent realisation of segment values. It may also indicate that peer multiples embed growth expectations not yet reflected in SAIC's profitability. The SOTP result is therefore conditional on the selected boundaries and parameters: it identifies the distribution of value but does not imply that the share price must converge to the estimate.

5.2 Theoretical and Practical Implications

The theoretical implication is that business life cycle should be incorporated directly into valuation-model design. Diversification is not merely a portfolio characteristic; it changes the reliability of forecasts and the relevance of valuation bases. The hybrid framework extends standard SOTP analysis by linking method selection to observable

unit attributes: maturity, cash-flow predictability and peer availability. This link provides a replicable rationale for combining methods and reduces the risk that analysts select a model solely because it produces a preferred result.

For practitioners, the framework provides a structured sequence for valuing automobile groups undergoing technological transition. Analysts should first define economically coherent units, then identify the claimant group represented by each valuation output, apply unit-specific assumptions and finally reconcile all values to equity. The separate presentation also assists sensitivity analysis and investment communication. Management can identify which unit assumptions have the greatest effect on group value, while investors can distinguish operational performance from changes in sector multiples or financing conditions.

5.3 Limitations and Future Research

The result remains sensitive to judgement. The 1.54 NEV P/S multiple is selected qualitatively rather than through a formal similarity score. Comparable firms differ in product mix, technology, profitability and capital-market expectations. The 1.56% ICE revenue growth rate relies on a short period affected by internal restructuring and the COVID-19 pandemic. The zero terminal growth rate is conservative, but terminal value remains sensitive to WACC and long-run reinvestment assumptions. Recent DCF research reinforces the need for internal consistency among growth, returns and reinvestment [4].

A further limitation concerns segment separation. Public group accounts do not provide fully independent cash-flow statements and capital structures for all three units. Revenue shares and selected accounting inputs therefore proxy for divisional information. Synergies, shared platforms, central costs and intra-group financing are not explicitly valued. Future research should construct segment-level financial statements, introduce quantitative peer-selection criteria, and report scenario ranges for WACC, terminal growth and valuation multiples. Cross-company applications would also clarify whether the method improves explanatory accuracy relative to a single group-wide model.

6 Conclusion

This paper develops a hybrid SOTP framework for SAIC Motor by valuing traditional vehicles, NEVs and financial services with FCFF, P/S and P/E methods, respectively. At 31 December 2022, estimated equity value is RMB 222.635 billion, 35.34% above contemporaneous market capitalisation. Traditional vehicles account for 49.49% of estimated value, NEVs for 42.16% and financial services for 8.35%.

The central conclusion is methodological rather than predictive. One valuation method is poorly suited to units with different life cycles, growth and risk. Decomposition improves transparency by revealing unit-level assumptions and is particularly relevant to manufacturers undergoing electrification. Further research should construct

audited segment cash flows, formalise peer selection, test alternative WACC and terminal-growth scenarios, and apply the framework across diversified automobile groups.

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