The Sustainability of the Hospitality Industry through the Management of Tourist Flows: The Case of Turkestan

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Abstract

Today, business valuation is a key tool for making managerial and investment decisions, especially in restructuring, strategic planning, and capital raising. One of the most common approaches to valuation is the discounted cash flow method (hereinafter referred to as DDP), which allows you to bring future cash flows to their current value. The purpose of this study is to identify the potential risks of using the DDP model to assess the market value of a business, using the example of the Toyota Motor Corporation, and to propose approaches to minimise them. The work used Toyota Motor Corporation's open financial reports, including revenue, cost, EBITDA, net profit, and macroeconomic indicators of the Japanese economy. The research methodology combines theoretical literature analysis and practical modelling: a DDP model was built based on data from a public manufacturing company, using elements of risk management (sensitivity analysis, scenario analysis, and modelling of the post-forecast period). The results of the study showed that Toyota Motor Corporation's net profit increased (+103.4%), and the forecast of free cash flows increased from 426,564 to 513,563 million yen in the period 2025-2030. With a discount rate of 10.59% and a fixed growth rate of 1.06%, the high sensitivity of the final cost to changes in key parameters, especially the discount rate and macroeconomic assumptions, was revealed. The results of the study show the high sensitivity of the final assessment to changes in key parameters, particularly the discount rate and growth rates, as well as the model's vulnerability to macroeconomic volatility and production risks.

Keywords: Business, Business Valuation, Cost of Capital, Risk, Forecast Risk, Investment, Social Impact, Toyota Motor Corporation

Компанияның құнын бағалаудағы дисконтталған ақша қаражаттарының қозғалысы моделінің тәуекелдері мен шектеулері

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Түйін

Бүгінгі таңда бизнесті бағалау қайта құрылымдау, стратегиялық жоспарлау және капитал тарту сияқты басқарушылық және инвестициялық шешімдерді қабылдаудағы негізгі құралдардың бірі болып табылады. Бағалаудың ең кең таралған тәсілдерінің бірі – дисконтталған ақша ағындары әдісі (бұдан әрі – DDP), ол болашақ ақша ағындарын олардың ағымдағы құнына келтіруге мүмкіндік береді. Бұл зерттеудің мақсаты – Toyota Motor Corporation компаниясының мысалында бизнестің нарықтық құнын бағалау үшін DDP моделін пайдаланудың әлеуетті тәуекелдерін анықтау және оларды азайту тәсілдерін ұсыну. Жұмыста Toyota Motor Corporation компаниясының ашық қаржылық есептері (табыс, шығындар, EBITDA, таза пайда) және Жапония экономикасының макроэкономикалық көрсеткіштері пайдаланылды. Зерттеу әдістемесі теориялық әдебиеттерді талдау мен практикалық модельдеуді біріктіреді: ашық өндірістік компания деректері негізінде DDP моделі құрылды және тәуекелдерді басқару элементтері (сезімталдық талдауы, сценарийлік талдау және болжамнан кейінгі кезеңді модельдеу) қолданылды. Зерттеу нәтижелері Toyota Motor Corporation компаниясының таза пайдасы 103,4 %-ға артқанын, ал еркін ақша ағындарының болжамы 2025–2030 жылдар аралығында 426 564 млн иеннен 513 563 млн иенге дейін өскенін көрсетті. 10,59 % дисконт мөлшерлемесі және 1,06 % тұрақты өсу қарқыны жағдайында соңғы құнның негізгі параметрлердің өзгеруіне, әсіресе дисконт мөлшерлемесі мен макроэкономикалық болжамдарға жоғары сезімталдығы анықталды. Зерттеу нәтижелері соңғы бағалау көрсеткіштерінің дисконт мөлшерлемесі мен өсу қарқынына, сондай-ақ макроэкономикалық құбылмалылық пен өндірістік тәуекелдерге айтарлықтай тәуелді екенін дәлелдейді.

Түйін сөздер: бизнес, бизнес құнын бағалау, капитал құны, тәуекел, болжам тәуекелі, инвестиция, әлеуметтік әсер, Toyota Motor Corporation

Риски и ограничения модели дисконтирования денежных потоков при оценке стоимости компании

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Аннотация

Сегодня оценка стоимости бизнеса является ключевым инструментом принятия управленческих и инвестиционных решений, особенно в реструктуризации, стратегического планирования и привлечения капитала. Одним из наиболее распространённых подходов к оценке является метод дисконтированных денежных потоков (далее - ДДП), который позволяет привести будущие денежные потоки к их текущей стоимости. Цель данного исследования направлена на выявление потенциальных рисков применения модели ДДП при оценке рыночной стоимости бизнеса на примере производственной компании Toyota Motor Corporation, а также предложить подходы к их минимизации. В работе были использованы открытые финансовые отчёты Toyota Motor Corporation, включая показатели выручки, себестоимости, EBITDA, чистой прибыли, а также макроэкономические показатели японской экономики. Методология исследования сочетает теоретический анализ литературы и практическое моделирование: проведено построение модели ДДП на основе данных публичной производственной компании, с использованием элементов риск-менеджмента (анализ чувствительности, сценарный анализ, моделирование постпрогнозного периода). Результаты анализа показали, что чистая прибыль Toyota Motor Corporation выросла (+103,4), а прогноз свободных денежных потоков увеличился с 426 564 до 513 563 млн иен в период 2025–2030 гг. При ставке дисконтирования 10,59 % и фиксированном темпе роста 1,06 % выявлена высокая чувствительность итоговой стоимости к изменениям ключевых параметров, особенно ставки дисконтирования и макроэкономических допущений. Результаты исследования показывают высокую чувствительность итоговой оценки к изменениям ключевых параметров, в частности, ставки дисконтирования и темпов роста, а также уязвимость модели к макроэкономической волатильности и производственным рискам.

Ключевые слова: бизнес, оценка стоимости бизнеса, стоимость капитала, риск, риск прогноза, инвестиция, социальный эффект, Toyota Motor Corporation

Introduction

Business valuation is an essential component of financial decision-making, remaining one of the foundations of transactions such as mergers and acquisitions, corporate restructuring, investment analysis and strategic planning. In addition to other business valuation approaches, the DCF model is one of the most widely used methods due to the fact that this method allows you to bring future cash flows to the present value. By discounting future cash flows to their present value using a well-calculated discount rate, the DCF model offers a very positive prospect for attracting investors and managers who are looking for long-term cooperation. Despite all the advantages, the DCF method is very sensitive to assumptions and changes in the discount rate, which creates some risks when using it.

The recent financial crises and the complexities in the global economic sphere provide increasing reasons to use risk management methods when assessing the market value of a business. The COVID-19 pandemic in 2019, sharp fluctuations in the dollar exchange rate, and political tensions - all these factors indicate that most assumptions in the course of forecasting cash flows when evaluating a business are complicated to build due to the uncertainty of the economic and political environment in which the business operates. Thus, risk management methods enable analysts to understand and calculate specific actions and changes in the model's input data. The company's use of sensitivity analysis significantly influences the development of a universal and full-scale model analysis, which allows it to rely not only on fixed data, but also on various scenarios (positive, negative and neutral scenarios).

In addition, one of the important reasons for investors' concern about the assessment of the market value of the business is the more efficient allocation of capital. In order to allocate capital, as well as the debt burden of the company, it is necessary to understand and manage the risks included in the financial model, which was built on the basis of various assumptions. Effective risk management methods help minimise adverse consequences for businesses, such as avoiding crises and losing money due to exchange rate differences. A sudden increase in the exchange rate may affect further revaluation or underestimation of the financial model. Thus, when evaluating a business, it is crucial to evaluate the quality of the assumptions made in the calculations of the financial model. In such cases, appraisers often communicate directly with business representatives to fully understand how the business operates and what threats it faces.

The correctness of the model construction strongly depends on the quality of the forecast values related to revenue, cost, administrative expenses of the company, etc., as well as on the correct choice of the discount rate. Even minor deviations in the input parameters can significantly affect the final market value of the company, which can negatively affect the opinion of investors. In addition, the final cost calculation entails certain assumptions that depend on the professionalism and experience of the appraiser building the model. In the case of manufacturing companies, the use of the DCF model becomes more difficult, since it is also necessary to take into account production risks. Volatility in material prices, technological breakthroughs, and higher credit rates all increase the number of risks and assumptions, which also creates specific difficulties. Additional macroeconomic factors, such as inflation and currency fluctuations, strongly

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influence the forecast indicators in the model. The purpose of this study is to analyse the potential risks associated with using the DCF model to assess the market value of a business, illustrated by the example of a manufacturing company. It also aims to discuss possible risk prevention strategies using risk management methods.

Literature review

The DCF model remains a fundamental tool for assessing the market value of a business, as the model clearly links the value of a business with the company's expected future free cash flows and discount rate, reflecting a theoretical perspective in decision-making by investors and managers (Damodaran). Despite this, many practitioners warn about the theoretical aspect of using the DCF model, particularly regarding its vulnerability. The model is very sensitive to the input data and the choice of modelling methods, so any minor adjustment to the input data and discount rates changes the forecast data about the company's future cash flows.

One of the most critical aspects of the literature is risk forecasting. The company's projected cash flows for an indefinite period depend on professional assumptions made by the Appraiser, such as changes in revenue, profitability growth, capital expenditures, and working capital. These assumptions are especially important for manufacturing companies, which are highly volatile. Empirical and methodological studies explain that inaccurate operational forecasts lead to an incorrect assessment of the entire market value of a business.

The risks associated with choosing a discount rate are the next critical topic. Most often, when considering the discount rate, the weighted average cost of capital of a company (WACC) is implied, which includes the beta version, the premium for market risk, the capital structure, and other relevant factors. These inputs are very sensitive and must be chosen carefully, as an incorrect calculation of the discount rate can lead to underestimation or overestimation of the business value. Professional explanations and research (CFA Institute, 2021; CFA Institute & Kroll, 2023) analyze practical methods and show how different cost of capital and its choice can affect valuation.

One of the studies, "Inflation Risk and Equity Valuation: a Critical Review" (2025), explains the impact of inflation and its fluctuations on the calculation of the WACC discount rate, which directly affects the calculation of a company's discounted cash flows. The study distinguishes between the different effects of real and nominal inflation rates and shows how this affects the calculation of discount rates, as well as CAPM models (Wesselbaum, 2025). In this study, inflation is considered as one of the important aspects that should be considered as a possible risk when calculating the discount rate and building a financial model as a whole.

The next aspect to consider is the appraiser's behaviour during the complex and incomprehensible construction of the financial model. Huang, Tan, Wang, and Yu, in their work "Uncertainty of assessment and use of DCF models by analysts" (Huang, 2022), approach the study from the point of view of taking into account human qualities and calculating risks. According to the study, appraisers most often resort to the DCF method when information and details regarding cash flows and discount rates pose a high risk to the company. In other words, the market itself will work provided that appraisers provide

and disclose more information about the assumptions and assumptions used in calculating the market value of a business. This study explains that when calculations are unclear (for example, there are operational risks in a company), simply using the DCF model is not enough. The appraiser needs to understand how high these risks are.

Bankruptcy risks is the next study presented by Skogsvik, Skogsvik and Andersson (Skogsvik, 2023) in the book "Bankruptcy Risk in Assessing Equity with Discounted Cash Flows" (2023). Thus, the study suggests taking into account the company's bankruptcy risks within the framework of traditional DCF modeling. Using this approach, appraisers can calculate specific sectors of the country's economy, considering industries where bankruptcy is a significant problem. Using the example of the crisis in recent years, one such sector is banking, where the bankruptcy of a large bank triggers a chain of crisis phenomena affecting all other sectors of the economy.

In addition, special attention should be paid to risks in the manufacturing sector. Many scientific studies show the impact of assumptions about a company's working capital, in which the company's future capital expenditures, as well as margin and profitability volatility, are often not presented clearly enough. A WallStreetPrep article on common mistakes in building the DCF financial model explains errors in calculations when the growth rate of certain resources turns out to be too optimistic (Wall Street Prep, 2023). Thus, the appraiser should also be conservative enough when calculating the DCF model to avoid overestimating or underestimating the market value of the business.

The next problem is the terminal value of the company. In most cases, when evaluating a business, the final value of the company is also predicted. The terminal cost of a company is calculated based on long-term growth rates, which are often critical and contradictory (Wall Street Prep, n.d.). Some articles suggest that the final cost causes some discrepancies in the possible evaluation results (Ernst, 2022; Thormann, 2019; ResearchGate, 2020). To eliminate these risks, the literature describes discussions of risks when using standard DCF models: such as sensitivity analysis and scenario analysis to display ranges of values, Monte Carlo analysis to consider the distribution of results, etc (SSRN, 2013; Ernst, 2022).

Also, leading research and practice guides write about the importance of completeness of information disclosure by a company (Koller, 2020; Damodaran, n.d.-a), since in order to assess the market value of a business, an appraiser must clearly understand and take into account many factors that may affect the value in one way or another.

Research methodology

This study involves qualitative and analytical methods to identify and assess the main risks associated with using the DCF model, specifically how fluctuations in certain input data, such as the discount rate and other key factors, affect the assessment of a business's market value. This study combines a theoretical analysis of the existing literature, as well as a practical construction and consideration of changes in the free cash flows of a manufacturing company, to illustrate and emphasise the possibility of risks using a real example. Also, the study incorporates elements of risk management theory

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to assess the market value of a business. For example, the discount rate explains the associated risks, and its calculations are based on market data and open resources.

For the reliability of calculations, various market data were used in calculating the model, as well as open resources for completeness and reliability of calculations. Also, during the analysis, cross-checks of academic theory and practical data were carried out to analyze and prevent discrepancies in the data correctly. The literature confirms the reliability of the data calculation used and the international assessment standards applicable to the industry. Despite this, there will be certain limitations when conducting analysis and calculations (Damodaran, n.d.-b). Namely, when building a financial model of a public company, it is impossible to get acquainted with the company's internal financial statements and account transcripts, nor can one communicate directly with company representatives. Therefore, when calculating the company's financial model, only publicly available data and assumptions for calculations will be used. Since all calculations will be based on open sources, the real market value of the company may be distorted or significantly differ from the truth.

The research approach is more descriptive and analytical, with an emphasis on understanding how error forecasting, discount rates, final cost assumptions, and macroeconomic factors affect the accuracy of building a financial model. This research is based on secondary sources of information, including scientific articles, assessment reports, international assessment standards, Kazakhstani assessment standards, financial reports and practical reference books from reputable sources such as the CFA Institute (CFA Institute, 2021; CFA Institute & Kroll, 2023) etc. This literature will become the basis for identifying and distributing potential risks within the framework of the financial model. The empirical component of this study includes a hypothetical case of a large manufacturing company, which will help to understand the risks of forecasting certain aspects of its activities. The projected financial data, including revenue, costs, capital expenditures, and working capital, will be linked to the industry average for the company's operations and based on macroeconomic trends. Using this information, a DCF model will be assembled to determine the company's market value using certain assumptions. In order to check the sensitivity of the impact of certain raw data on the company's market value, a sensitivity analysis of the company will be used.

The sensitivity analysis of a company shows how certain inputs, such as revenue, costs, discount rate, etc., and their changes affect the overall outcome of the company's valuation. Ultimately, the results of the analysis are compared with the theoretical expectations that were originally described in the literature review to assess whether the theoretical expectations match the practical ones. The methodology provides a balance between conceptual, theoretical understanding and empirical research, providing both a theoretical and practical framework. Ultimately, the mixed methodological approach of the study aims to analyse complex risk factors in the DCF assessment and suggest ways to avoid certain risks by planning and calculating them. These methods can subsequently be applied in practical cases of assessing the market value of a business (Zülch & Wolff, 2023).

Toyota Motor Corporation, an international automobile corporation, was chosen as the manufacturing company to assess the impact of risks using the DCF model as an example (Toyota Motor Corporation, 2024). Toyota Motor Corporation is one of the

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largest publicly traded automotive companies in the world. The use of this company is explained by the open financial statements, as well as the specifics of the company's industry, where it will be possible to evaluate the company according to the above methodology.

The company's income statement is presented in Table 1, along with the horizontal analysis.

Table 1. Key financial indicators of Toyota Motor Corporation for fiscal years 2023-2024

Indicator	March, 2023	March, 2024	2023-2024	Percentage
Total sales revenues	37 154 298	45 095 325	7 941 027	21,4
Cost of products sold	29 128 561	33 600 612	4 472 051	15,4
Gross Profit	8 025 737	11 494 713	3 468 976	43,2
Gross Profit Margin	21,6	30,9	-	-
Cost of financial services	913 565	1 342 382	428 817	46,9
Selling, general and administrative	2 347 241	2 712 330	365 089	15,6
EBITDA	4 764 931	7 440 001	2 675 070	56,1
EBITDA Margin	12,8	16,5	-	-
Depreciation and Amortisation	2 039 905	2 087 066	47 161	2,3
Automotive	1 205 687	1 268 479	62 792	5,2
Financial Services	799 156	784 013	-15 143	-1,9
All other	35 062	34 574	-488	-1,4
EBIT	2 725 026	5 352 935	2 627 909	96,4
EBIT Margin	7,33	11,9	-	-
Share of profit (loss) of investments accounted for using the equity method	643 063	763 137	120 074	18,7
Other finance income	379 350	747 236	367 886	97,0
Other finance costs	125 113	103 709	- 21 404	-17,1
Foreign exchange gain (loss), net	124 516	187 568	63 052	50,6
Other income (loss), net	78 109	17 918	-60 191	-77,1
EBT	3 668 733	6 965 085	3 296 352	89,8
EBT Margin	9,87	15,4	-	-
Income tax expense	1 175 765	1 893 665	717 900	61,1
Net Income	2 492 968	5 071 420	2 578 452	103,4
Net Income Margin	6,71	11,2	-	-

Note: compiled by the authors

During the analysis of the company's net profit, it can be noted that by the end of fiscal year 2024, net profit amounted to 5,071,420 million JPY, which is 103.4 more than in the previous fiscal year. Table 2 describes the input data for calculating a company's weighted average cost of capital.

Table 2. Inputs for WACC

Cost of Capital (%)	Cost of Equity (%)	E/(D+E) (%)	After-tax Cost of Debt (%)	D/(D+E) (%)
10.59	13.31	66.84	5.10	33.16

Note: compiled by the authors

The data was taken from open sources, including data from the Auto & Truck industry. Thus, these inputs will be used during the analysis of calculations. Additionally, to conduct an analysis of the company's sensitivity, where the discount rate will change in the scenarios. In the course of calculating the market value of a business, NOPAT (table 3) - Net operational profit after taxes (in our case, the company's net revenue), Depreciation, Working Capital, and capital expenditures of the company are used to calculate the company's free cash flows.

Table 3. NOPAT and other calculations for fiscal years 2023-2024

Name	Unit of Measure	Percentage	31.03.2023	31.03.2024
NOPAT	mln JPY	-	2 492 968	5 071 420
Depreciation and amortization	mln JPY	-	2 039 904	2 087 066
Working Capital	mln JPY	51,41	2 500 066	5 536 370
CapEx	mln JPY	-	3 496 219	4 848 042

Note: compiled by the authors

NOPAT is net operating profit after taxes. NOPAT determines the basic operating income of a company, independent of the company's capital structure, and is calculated using the formula (1):

$$NOPAT = EBIT \times (1 - Tax\ Rate)\ (1)$$

where:

$NOPAT$ – net operating profit after taxes;

$EBIT$ – earnings begore interest and taxes.

Depreciation and amortisation - Depreciation is a company's non-cash expense caused by the wear and tear of the company's fixed assets. In the automotive industry, depreciation and capital expenditures play a crucial role in valuation, as they occupy a large share of the company's financial statements. The net working capital of a company determines the amount of cash turnover for short-term operating activities. If net working capital is calculated, it indicates that the company invests more in operating activities, leading to a decrease in its free cash flows.

Conversely, with a reduction in net working capital, the company increases its cash turnover, thereby boosting its free cash flows. NWC is calculated using the formula (2):

$$Net\ working\ capital = Current\ Assets - Current\ Liabilities \quad (2)$$

where:

Net working capital – a company's net working capital is a financial indicator showing the difference between a company's short-term assets and short-term liabilities;

Current Assets – the company's short-term assets are assets with a turnover of up to a year;

Current liabilities – the company's short-term obligations are obligations with a turnover of up to a year.

Capital expenditures (CAPEX) are the company's investments in long-term assets that will generate profit in the future. Such asset items as: the company's fixed assets, which hold investments and are called capital expenditures. Capital expenditures show the real flow of funds that is needed when building up an operation and investing in assets.

Fixed growth rate

A fixed growth rate was also calculated by calculating the arithmetic mean of the projected CPI data from 2030-2054. The main reason for calculating a fixed growth rate is its continued use in the course of discounting cash flows in the post-forecast period, where it is assumed that the business will grow indefinitely, without a specific date for its closure/bankruptcy

Calculation of the discount rate in the post-forecast period by formula (3):

$$r_{TV} = r - g \quad\quad (3)$$

where:

r_{TV} – the discount rate in the post-forecast formula;

r – the discount rate;

g – fixed growth rate.

Calculation of the weighted average cost of capital (WACC) by formula (4):

$$r = C_e * \frac{E}{D+E} + (C_d * (1 - T)) * \frac{D}{D+E} \quad\quad (4)$$

where:

r – the discount rate;

C_e – cost of Equity;

$\frac{E}{D+E}$ – share of Equity;

$(C_d * (1 - T))$ – cost of debt after taxes;

$\frac{D}{D+E}$ – share of debt.

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<h1 style="text-align:center">Results</h1>

To identify potential risks when using the DCF model in assessing the market value of a business, an extensive analysis of the chosen company, Toyota Motor Corporation, was conducted. This company operates in the automotive industry, so the input data was selected with consideration for the industry and geographical features. Table 4 describes the input data that will be used when building predictive models in the DCF.

Table 4. Macro indicators for DCF model calculations

Name	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP Growth (%)	0.94	1.91	0.65	1.10	0.98	0.86	0.81	0.75
Consumer Price Inflation (%)	2.51	3.25	2.32	1.90	1.62	1.59	1.57	1.44
Producer Price Inflation (%)	9.81	4.18	1.04	-0.02	0.26	0.20	0.59	0.85

Note: compiled by the authors

The macroeconomic indicators were collected under the condition that the head office operates in Japan; the data were derived from the Macro-analysis of the Japanese economy. One of the main parameters on the basis of which the company's revenue forecast is based is the consumer price index (CPI), expressed as a percentage, which in 2024 amounted to 3.25. In subsequent years, forecast CPI data was used.

Futhermore, Table 5 describes the discount rates used in the calculations, where the discount rates were described and calculated according to the scenarios: positive, negative, base.

Table 5. Discount rate and fixed growth rate calculations, %

Name	Percentage
Discount rate (base scenario)	10.59
Discount rate (positive scenario)	9.53
Discount rate (negative scenario)	11.65
Fixed growth rate	1.06
Discount rate at TV (base scenario)	9.53
Discount rate at TV (positive scenario)	8.47
Discount rate at TV (negative scenario)	10.59

Note: compiled by the authors

Under the base scenario, the discount rate of 10.59 is quite adequate for the automotive market. The discount rate in the post-forecast period under the base scenario was 9.53. Then there is a positive scenario, where the discount rate was 9.53 and decreased by 1.06, thereby increasing the company's discounted cash flows and, consequently, the market value of the business. In the negative scenario, the discount rate is 11.65, which is 1.06 more than in the base scenario. With such a discount rate, the company's discounted cash flows decrease, which reduces the value of the business and worsens the expectations of investors. Table 6 shows the Free Cash flows of the company,

as well as the discounted cash flows of the company, calculated taking into account the discount rate.

Table 6 describes three scenarios, covering a positive scenario, a base scenario, and a negative scenario.

Table 6. Free cash flow and Discounted cash flow calculations, in mln JPY

Name	31.03.2025	31.03.2026	31.03.2027	31.03.2028	31.03.2029	TV
FCFF	426,564	425,645	437,599	446,818	474,070	513,563
DCFF (base scenario)	405,631	366,031	340,291	314,198	301,439	-
DCFF (positive)	407,590	371,355	348,582	324,968	314,790	-
DCFF (negative)	403,701	360,832	332,273	303,882	288,773	-

Note: compiled by the authors

The company's projected free cash flows ranged from 4,265,564 million JPY to 4,740.70 million JPY in the period from 2025 to 2029. During the terminal year, the company's free cash flow amounted to 513563 million JPY. The discounted cash flows of the company are also presented in three scenarios (basic, positive, negative). The baseline scenarios were calculated for a more accurate comparison and analysis of the company's sensitivity to changes in the discount rate (in this case, WACC), which was described in Table 5. In the negative scenario, discounted cash flows for the forecast period from fiscal years 2025 to 2029 decreased compared to the flows of the baseline scenario from 1,930 million JPY to 12,666 million JPY, which significantly affects the final market value of the business. In a positive scenario, the discount rate decreases, respectively, the discounted cash flows of the company increase and in the period from 2025 to 2029 financial years increase compared to the cash flows of the base scenario from 1,958 million JPY to 13,351 million JPY, increasing the market value of the business well in the end.

Figure 1 shows a graph clearly describing the movements of discounted cash flows under the baseline scenario in the period from 2025 to 2029 fiscal years.
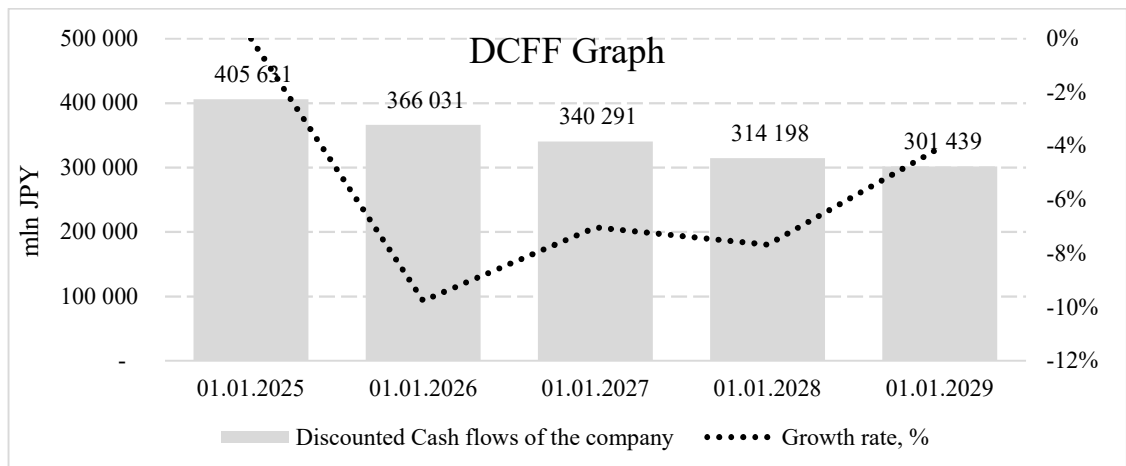

Figure 1. Discounted cash flows of the company, in mln JPY

For the company's fiscal year 2026, the discounted cash flows of the company amounted to 366,031 million JPY, a decrease of 9.8 compared to last year. In the last fiscal year under review, 2029, the company's discounted cash flows amounted to about 301,439 million JPY, which is 4.06 less than in 2028. The decrease in the dynamics of the company's cash flows is due to high depreciation and capital expenditures, which are common in the automotive industry because of fixed assets like cars and various spare parts. Thus, in the course of the analysis above, Table 7 shows the estimated market value of Toyota Motor Corporation.

Table 7. Market value of the company under scenarios

Type of scenario	Unit of Measure	Market value of the company
Base scenario	mln JPY	4,811,860
Positive scenario	mln JPY	5,346,554
Negative scenario	mln JPY	4,644,140

Note: compiled by the authors

The market value of the business under the base scenario was 4811,860 million JPY, which indicates a high capitalization of the business, despite significant capital expenditures and high depreciation. Under the positive scenario, reflected by changes in the discount rate in the forecast and post-forecast periods, the market value of the business amounted to about 5,346,554 million JPY, which is 11.1 more than the base scenario or 5,346,694 million JPY. In the negative scenario, due to an upward change in the discount rate in the forecast and post-forecast period, the company's business market value amounted to 4,644,140 million JPY, which is 3.49 or 167,720 million JPY less than in the base scenario. As part of the analysis of potential risks in using the DCF model in business assessment, a theoretical and practical analysis of the company's free cash flows was performed. It turned out to consider the impact of the input data on the change in the market value of a manufacturing company, namely, Toyota Motor Corporation. The results obtained can be used for further research on assessing the market value of a business by building financial models, as well as for risk assessment using scenario and sensitivity analyses of changes in input data.

Conclusions

The use of the DCF financial model remains one of the most common methods for assessing the market value of businesses and intangible assets. According to the theoretical part of using the financial model, the relationship between the company's free cash flows, the discount rate and, as a result, the assessment of the business's market value gives investors and managers a clearer idea of the company's operating activities and the company's work as a whole. This study examined potential risks and their impact on the financial model of the company's value using a practical example. It was possible to consider several scenarios and determine the impact of changes in the discount rate.

Firstly, this study examined several main sources of risks in building a financial model: forecasting risks, risks associated with changes in the discount rate, and risks related to changes in rates in the post-forecast period. Risks in forecasting are mostly

related to changes in inflation and the reliance on these changes. Post-forecast rate risks refer to the importance of correct and generally accepted assumptions. All these risks can change the market value of a company in one way or another, which proves the importance of making the right decisions and assumptions during the construction of a financial model. Secondly, this study should not be perceived as a mathematically accurate calculated result, but, on the contrary, it should be perceived as a tool that can help when deciding whether to invest in a given company or considering it from the point of view of an example calculation of another company in a similar industry. For companies in the automotive industry, operational indicators play an important role in the final assessment and are very sensitive to any changes. Companies such as Toyota Motor Company with large capitalization invest considerable amounts in capital expenditures, which increases the depreciation of the company, which also affects the final result. All these factors must be taken into account in order to achieve the fairest and transparent assessment of the company's market value. In conclusion, the construction of the DCF model remains one of the most relevant methods for calculating a company's market value, aiding in important management and investment decisions. By considering the potential risks when building such models in practice, it is possible to modify and transform traditional financial modelling to a newer and more accurate level.

Author Contributions

Conceptualisation and theoretical framework: BA and AB; research design and methodology: BA; data collection and processing: BA and AB; bibliometric analysis and interpretation: BA; case study analysis and visualisation: BA; draft writing and manuscript structure: BA and AB; editing and critical revision: BA and AB; final review and approval: BA. All authors have read and approved the final version of the manuscript and agreed to its publication.

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