

The Financial Comparison of The Turkish Defence Industry with The United States Defence Industry

Türk Savunma Sanayii ile ABD Savunma Sanayii'nin Finansal Olarak Karşılaştırması

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DOI: 10.30711/utead.1779969

MAKALE BİLGİSİ

Makale Geçmişi:

Başvuru Tarihi: 8 Eylül 2025

Düzeltilme Tarihi: 5 Ekim 2025

Kabul Tarihi: 12 Ekim 2025

Anahtar Kelimeler:

Savunma Endüstrileri, Finansal Oranlar,
Mann-Whitney U testi

ÖZ

Dünya, büyük savaşlar, gerginlikler ve devletlerarası çatışmalar nedeniyle büyük dönüşümlere tanık olmaya başlamıştır. Doğal olarak bu gerileme hükümetleri endüstriyel bağlamda yeni düzenlemeler yapmaya yöneltmiştir. Türk Savunma Sanayii (TDI) gelişimi, diğer yükselen devletlerle birlikte bu dönemin bir meyvesidir. Bu makale, Türk Savunma Sanayii'nin (TDI) Amerika Birleşik Devletleri Savunma Sanayi (USDİ) ile karşılaştırıldığında finansal gücüne ışık tutmayı amaçlamaktadır. Bu amacı gerçekleştirmek için 2023 ve 2024 yılları için finansal tablo oranları ve Mann-Whitney U testleri kullanılmıştır. Analiz sonuçlarına göre TDI'nin likidite yönetimi ve karlılık konusunda zaafı bulunmaktadır. Öte yandan, ciro süreleri yüksektir ve varlık yönetim seviyesi USD'ye göre nispeten düşüktür. Borç yönetiminde sorunlar vardır. Ayrıca, Mann-Whitney U testlerine göre USDİ ve TDI arasında homojenlik farklılıkları vardır. Sıradan bir yatırımcı USDİ ve TDI'yi aynı şekilde gözlemlese de, bu ileri teknoloji ve savunma şirketlerinin ve endüstrilerinin küresel konumlanmaları farklıdır. Bu durumun temel nedenleri ve analiz sonuçları sonuç bölümünde tartışılmaktadır.

JEL Sınıflandırması: C18; D40; M21.

ARTICLE INFO

Article History:

Received September, 8, 2025

Received in revised form October, 5, 2025

Accepted October, 12, 2025

Keywords:

Defence Industries, Financial Ratios,
Mann-Whitney U test.

ABSTRACT

The world has begun to witness big transformations due to the great wars, tensions, and conflicts between states. Naturally, this downturn led the governments to make new arrangements in the industrial context. The Turkish Defence Industry (TDI) development is a fruit of this era, along with other emerging states. This paper aims to shed light on the financial power of the Turkish Defence Industry (TDI) in comparison with the United States Defence Industry (USDİ). Financial statement ratios and Mann-Whitney U tests are used for 2023 and 2024 to realise this purpose. According to the analysis results, TDI has vulnerabilities regarding liquidity management and profitability. On the other hand, the durations of turnovers are high, and the asset management level is relatively lower than that of USD. There are problems with debt management. Moreover, there are homogeneity differences between USDİ and TDI regarding Mann-Whitney U tests. Although an ordinary investor observes USDİ and TDI in the same way, the global positioning of these high-tech and defence companies and their industries is different. The main causes of this situation and the analysis results are discussed in the conclusion section.

JEL Classifications: C18; D40; M21.

1. INTRODUCTION

Financial tables offer stakeholders different kinds of standardised information and knowledge, such as to managers and investors, and more widely, to the public regarding a company's assets, liabilities, cash, income, and tax structures. On the other hand, managing these items needs orientation and positioning of financial tables in governance. This paper aims to realise a comparison between the financial information of the distinguished defence companies of the United States and Türkiye for the years 2023 and 2024 by utilising financial tables regarding liquidity, financial leverage, asset utilisation and profitability by answering the questions about i) the managerial and governance structures of defence industry in both of the United States and Türkiye, ii) the financial

development and dynamics of defence industries, iii) possible lectures for future development of Turkish defence industry.

Most Governments allocate 2% of Gross Domestic Product (GDP) annually to the defence sector (Ivan, 2020). Nevertheless, the world is beginning to redefine itself under great pressures because of the wars and conflicts, such as the strategic economic tensions and the partition of the world's resources between the United States and China, and the Russia-Ukraine War. For this reason, the share of the defence sector in the annual country budgets follows an augmenting trend. On the other side, Türkiye has an idiosyncratic geographical character that causes great tensions in or out of the country. For this reason, Türkiye always tries to sustain a healthy defence industry,

politics and economy since its foundation. With the supplementary impacts of fuel, various commodities like steel or aluminium, a qualified workforce, and infrastructural support, and considerable financial investment are specific requirements of the defence industry. Because of the industrial dynamics, the policy makers and companies should be aware of some financial and accounting-based realities and effective and efficient and productive managerial reflexes such as financial asset management, liabilities management, risks and crisis management. Similarly, Varga (2024) forms a framework for Hungary, emphasising the importance of production capability, technological know-how, management expertise, and the number of skilled workers, such as technicians and engineers. On the other hand, Hellberg and Lundmark (2025) underline the situation of the European Union (EU) and its supply chains after the Ukraine War by stating the importance of good coordination and governance between public and private partners of defence industries. Therefore, the defence industries and their supply chain are nourished by wars and conflicts. Ensuring national security is a rational aim for states under pressure, and stable development of the defence industry paves the way for it, as in the case of Ukraine (Hymria et al, 2024). Similarly, the financial balance of the defence industry suffers greatly from the implementation of Research and Development (R&D) and Research and Technology (R&T) activities. For La Brosse (2017), these conditions depend on the development of the absence in a collaboration across Europe in defence policies and politics.

The main features of defence industries or markets can be counted as follows (Ziylan, 1998; Uysalkan, 2020; Önaçan, 2022): i) The only customer in the domestic market is the government, ii) The foreign markets are highly dependent on foreign political influence. iii) Production is regulated by political demand and desire according to need. iv) High performance and quality have primary and cost has secondary importance. v) The high technologies have to be used extensively. vi) They require large investments spread over many years and therefore very good financial management. vii) The defence industry is operated under the auspices and protection of the government, and organisations operating in this sector are excluded from the scope of international free trade agreements. viii) They are conducted as joint military production programs with the effect of multinational defence agreements or international bilateral agreements. ix) They are necessary that the production process should not be interrupted by maintaining the technological sufficiency for the development and management of critical defence systems. x) High-volume manufacturing should be able to be achieved during the crisis and war periods. xi) They require a highly qualified workforce in fields such as Research and Development (R&D), production, quality control, project management and customer relations because of the use of advanced technologies. For this motivation, it can be said that the defence industry needs to exert extra effort in terms of financial management and

organisation. There is a huge financial management gap in the Turkish Defence Industry (TDI). This paper is one of the examples of this dimension. There are 6 Turkish defence companies and 5 American defence companies in the sample of this research. The Mann-Whitney U test is utilised to compare financial ratios in the subjects of liquidity, financial leverage, asset utilisation, and profitability.

2. LITERATURE REVIEW

Asset management is an important element in a company. Especially, it should be defined well in high-technology and engineering companies that this definition also includes the Turkish defence companies. According to Amadi-Echendu (2010), the asset management items require redefinition in these kinds of industries. Fixed assets, or current assets, need extra care and wisdom for the design and implementation in the balance sheet. The depreciation and amortisation, inventories are special subjects and an effective and efficient asset management is a need for (a) alignment of strategy and operations with stakeholder values and objectives; (b) balancing of reliability, safety, and financial considerations; (c) benefiting from performance-based rates; and (d) living with the output-based penalty regime (Schneider, 2005). The correct positioning the asset management is critical because the increasing competition, deregulation, external pressures, and technological advancement urge asset-intensive businesses to design new strategies allowing for their long-term survival (Gavrikova et al., 2020). On the other hand, industrial changes have dramatic and crucial impacts on assets and asset management strategies as well as liabilities and liability management, according to the industrial segment (Paul and Jiasmin, 2021) and state politics, such as inflation accounting, depreciation and amortisation regimes, and tax policies (Kevorkova et al., 2019).

Another important dimension for companies is liquidity management. Liquidity management ensures debt balance. For this reason, it is a complex process, especially in crisis and risky times. For Almeida (2020), liquidity management requires extra financial management capabilities and abilities by considering all of the items and options in financial statements. For Almeida et al. (2014), liquidity management aims to face financial constraints and ensure efficient investment in the future. The liquidity management requires a deep and comprehensive industrial analysis, as in the case of the Asset Management (Bhunia and Khan, 2011).

Besides these, wisdom, which manages a company, should always learn to benefit from debt and debt-related items such as various taxes, tax rates, and interest rates (Bei and Wijewardana, 2012). According to Papadimitri et al. (2021), financial leverage is crucial for new technology companies that suffer from different pressures, such as insurance and credit transactions. For this cause, it should be managed well. Accordingly, a well-managed financial leverage means higher company market values against

bankruptcy risk (Gill and Obradovich, 2012) and financial discipline regarding debts (Evgeny, 2015).

Profitability can be defined as to sustain to produce financial profits with company resources under different pressures of the business world. On the other hand, it can include complex and sophisticated processes in high technology and innovative companies (Geroski, 1993). Accordingly, for defence companies, past profitability, debt policies, company size, defence specialisation, and positioning in civil society and relations with the public are important elements in defence companies' profitability (Belin and Fawaz, 2024). Shortly, a company should arrange its resources and its items in the balance sheet according to profitability (Ball et al., 2015). So, even the most unrelated resources, such as amortisation and depreciation, should be utilised for profitability for a company and defence companies.

A defence industry can contribute to the national economic development through job creation, technology transfer, exports, and expansion and modernization of other industries, for example, steel, machine tools and shipbuilding (Abdullah and Zahari, 2023). In the Turkish case, the qualitative and quantitative technological development of the country is arranged around the defence industry in that there are sectors of unmanned military vehicles, ground, air and maritime war vehicles and machines, supplements of other wartime vehicles and machines, besides these, there are great public-private partnerships as a governance structure. For Cutic (2020), the success of the financial management of a defence industry or companies depends on the law, legal and regulatory force of a country. It can be observed that there is an innovative legal structure and state support for the defence industry, and this development has a triggering impact on the industry. On the other hand, disruptive and radical technologies, which require financial management and R&D personnel, are important elements in defence industry management for public support. Türkiye seems to have overcome the critical threshold about these technologies. For this reason, it can be said that financial management is successful. According to Kurç and Neuman (2017), the United States has a powerful role in the global defence industry due to its technological advantage and market forces. For this reason, it is a benchmark. Nevertheless, the contribution of the state budget to defence industries is an undeniable reality. For instance, a comparative analysis of Gryschenko et al. (2024) shows that there is a positive correlation between defence expenditures from the budget and the development of defence industries of the United States, France, China and Ukraine. This budget arrangement can live with financial fluctuations because of a financial crisis (Mölling and Brune, 2011). The production activities, collaboration among project stakeholders foster value creation in a large context in the defence industry

(Göksidan and Solakoğlu, 2025). With these realities, it should be another important reality that the tax regimes of states toward the defence industry, and corporate governance practices another important catalyst for defence industries (Ajdacic et al., 2021). For Türkiye, it can be said that the development and structure of the defence industry is in a development phase. On the other hand, Türkiye has been confronted with conflicts and wars since its foundation. Accordingly, the Turkish army and defence industry seem to turn these conflicts, a sustainable advantage in the global defence industry climate and the production, development and innovation of regular and irregular defence systems.

3. DATA METHODOLOGY AND RESULTS

The research sample has two samples to realise a comparison. In the first sample, there are six Turkish defence companies, such as Altınay, Aselsan, Katmerciler, Onur High Technology, Papillon and SDT Space and Aerospace, that are popular and selected defence companies by investors on 09.05.2025. On the other hand, Boeing, General Dynamics, Lockheed Martin, Northrop Grumman, and Raytheon are selected 5 United States companies according to various public defence magazines such as *defencenews*¹. The financial information of Turkish companies is taken from the companies' public disclosures, formed by auditing companies in the first sample, and the second sample is formed with 10 K reports of companies; in this way, the reliability and validity of the data were ensured. Their 2023 and 2024 financial items are subject to this research. There are inflationary pressures in Türkiye in these years; for this reason, the inflationary accounting was utilized on the financial values by auditing companies. The financial ratios of research and their features can be given in Table 1.

¹ people.defensenews.com/top-100/, Access Time, 13.06.2025.

Table 1. Research Ratios

The Group of the ratio	The name of the ratio	Calculation Method	The purpose of the ratio
Liquidity (The management of Liquid assets)	Current Ratio	Current Assets/Current Liabilities	The power of debt payment.
	Quick Ratio	(Current Asset- Inventories)/Current Liabilities	The power of debt payment without sales.
	Cash Ratio	Cash and cash equivalents/ Current Liabilities	The power of debt payment with cash.
Financial Leverage (The quality of Debt management)	Total Debt Ratio	(Total Assets-Total equity) / Total Assets	The quality of the company's assets regarding debt.
	Debt-Equity Ratio	Total Debt/Total Equity	The quality of the company's equity regarding debt.
	Equity Multiplier	Total assets/ Total equity	The quality of the company's equity regarding assets.
Assets-Payables Utilization	Inventory turnover	Cost of goods and services sold/ Inventory	The expression of inventories sold, used and replaced
	Days' sales in inventory	365 days/Inventory turnover	The transformation duration of inventories to sales.
	Receivables turnover	Sales/Accounts receivables	The expression of the transformation of sales to receivables.
	Payables turnover	Cost of goods and services sold/Accounts payable.	The expression of the transformation of production-related costs to payables.
	Days sales in receivables	365 days/Receivables turnover	The duration of sales transformation to receivables.
	Days' costs in payables	365 days/Payables turnover	The duration of transformation of production costs to payables.
	Total asset turnover	Sales/Total assets	The efficiency of the company in total asset management.
	Capital intensity	Total assets/Sales	The asset utilization per sale.
Profitability	Profit Margin	Net income/Sales	The income per sale
	Return on Assets	Net income/ Total assets	The income per asset
	Return on Equity	Net income/Total Equity	The income per equity.

The average of 6 Turkish companies and 5 United States companies is calculated using the following equations for each ratio.

$R_t = (\sum r_n) / n$, where r = ratio of n th company, n = the count of company and R_t = the ratio of created market

with 6 companies for Türkiye and 5 companies for the United States. On the other hand, there are two data groups for 2023 and 2024. Table 1 indicates the values of these periods.

Table 2. Ratio Analysis Results

The Group of the ratio	The name of the ratio	2023 United States	2023 Türkiye	2024 United States	2024 Türkiye
Liquidity	Current Ratio	1.194441378	5.897128846	1.162993292	6.116914686
	Quick Ratio	0.617517711	4.837422786	0.564235195	4.386561155
	Cash Ratio	0.151363326	0.797611955	0.17024738	1.168078912
Financial Leverage	Total Debt Ratio	0.781918408	3.931586129	0.765268804	3.062119037
	Debt-Equity Ratio	8.724730883	0.587214845	10.59731539	0.54344785
	Equity Multiplier	3.491570069	1.56243635	9.693832031	1.465159335
Assets-Payables Utilization	Inventory turnover	11.64856629	6.170424938	10.19163319	5.297589872
	Days' sales in inventory	122.1347451	321.8512948	132.3561054	505.7172327
	Receivables turnover	21.70280849	14.00897876	22.22859171	11.71167733
	Payables turnover	13.48275726	241.7339104	13.54080242	275.0939415
	Days sales in receivables	24.15779618	197.3138157	22.04466738	251.0552685
	Days' costs in payables	39.75500187	49.55061683	40.66069751	60.26906328
	Total asset turnover	0.876341246	1.621800824	0.86991848	1.621594321
	Capital intensity	1.405385183	2.801954066	1.430630733	2.902115063
Profitability	Profit Margin	0.337397042	0.54147279	0.442080251	0.457706822
	Return on Assets	0.237693461	0.635617978	0.278546541	0.718576685
	Return on Equity	1.132663769	1.100767629	4.263137441	1.235738261

To make a comparison between the average of the financial table items, an average comparison model should be selected. There are two alternative test groups for this purpose: Parametric and Non-parametric hypothesis tests. The parametric hypothesis tests are used under the normality assumptions; conversely, non-parametric tests are utilised in non-normality conditions and relatively small samples (Karadeniz and Beyazgül, 2021). The comparison of the United States and Turkey's

financial ratios is given in Table 3 and Table 4 for the years of 2023 and 2024, sequently, and the Mann-Whitney U Test (A non-parametric test) is utilised to detect mean differences. The Mann-Whitney U test is one of the most powerful nonparametric tests, and it has approximately 95% of the student's t test statistical power (Landers, 1981 and Nachar, 2008). Besides these, the Mann-Whitney U test has less risk than Student's t test (Siegel and Castellan, 1988 and Nachar, 2008).

Table 3. The Statistical Results for 2023

Group	The name of the ratio	Average of Türkiye Defence Companies	Average of The United States Defence Companies	The Differences between Averages (Absolute value)	Mann-Whitney U test Results	Z	p
Liquidity	Current Ratio	5.897128846	1.194441378	4.702687468	0	-2.739	0.004*
	Quick Ratio	4.837422786	0.617517711	4.219905075	12	-0.548	0.662
	Cash Ratio	0.797611955	0.151363326	0.646248629	14	-0.183	0.931
Financial Leverage	Total Debt Ratio	3.931586129	0.781918408	3.149667721	7	-1.461	0.177
	Debt-Equity Ratio	0.587214845	8.724730883	8.137516038	1	-2.556	0.009*
	Equity Multiplier	1.56243635	3.491570069	1.929133719	5	-1.826	0.082
Assets-Payables Utilization	Inventory turnover	6.170424938	11.64856629	5.478141351	10	-0.913	0.429
	Days' sales in inventory	321.8512948	122.1347451	199.7165496	10	-0.913	0.429
	Receivables turnover	14.00897876	21.70280849	7.693829733	7	-1.461	0.177
	Payables turnover	241.7339104	13.48275726	228.2511531	15	0.000	1.000
	Days sales in receivables	197.3138157	24.15779618	173.1560195	7	-1.461	0.177
	Days' costs in payables	49.55061683	39.75500187	9.795614958	15	0.000	1.000
	Total asset turnover	1.621800824	0.876341246	0.745459579	7	-1.461	0.177
	Capital intensity	2.801954066	1.405385183	1.396568882	8	-1.278	0.247
Profitability	Profit Margin	0.54147279	0.337397042	0.204075748	12	-0.549	0.662
	Return on Assets	0.635617978	0.237693461	0.397924517	15	0.000	1.000
	Return on Equity	1.100767629	1.132663769	-0.03189614	9	-1.095	0.329

Table 4. The Statistical Results for 2024

Group	The name of the ratio	Average of Türkiye Defence Companies	Average of The United States Defence Companies	The Differences Between Averages (Absolute Value)	Mann-Whitney U Test Results	Z	P
Liquidity	Current Ratio	6.116914686	1.162993292	4.953921394	0	-2.739	0.004*
	Quick Ratio	4.386561155	0.564235195	3.82232596	10	-0.913	0.429
	Cash Ratio	1.168078912	0.17024738	0.997831532	5	-1.826	0.082
Financial Leverage	Total Debt Ratio	3.062119037	0.765268804	2.296850232	7	-1.461	0.177
	Debt-Equity Ratio	0.54344785	10.59731539	10.05386754	3	-2.191	0.030*
	Equity Multiplier	1.465159335	9.693832031	8.228672697	6	-1.643	0.126
Assets-Payables Utilization	Inventory turnover	5.297589872	10.19163319	4.894043313	10	-0.913	0.429
	Days' sales in inventory	505.7172327	132.3561054	373.3611273	10	-0.913	0.429
	Receivables turnover	11.71167733	22.22859171	10.51691438	5	-1.826	0.082
	Payables turnover	275.0939415	13.54080242	261.5531391	12	-0.548	0.662
	Days sales in receivables	251.0552685	22.04466738	229.0106011	5	-1.826	0.082
	Days' costs in payables	60.26906328	40.66069751	19.60836577	12	-0.548	0.662
	Total asset turnover	1.621594321	0.86991848	0.751675841	10	-0.913	0.429
	Capital intensity	2.902115063	1.430630733	1.47148433	15	0.000	1.000
Profitability	Profit Margin	0.457706822	0.442080251	0.015626571	11	-0.732	0.537
	Return on Assets	0.718576685	0.278546541	0.440030144	12	-0.548	0.662
	Return on Equity	1.235738261	4.263137441	3.02739918	5	-1.826	0.082

According to the results in Table 2, there are no larger differences between the two samples regarding 2023 and 2024. The Turkish Defence Industry (TDI) has higher liquidity ratios than the United States Defence Industry (USDI). In Debt Management (Total Debt Ratio), TDI has a larger debt than its assets; conversely, the USDI has larger assets than its debts. For this cause, TDI redefine its asset-debt balance. On the other side, the financial leverage of USDI is larger than TDI regarding equities. The assets and payables structure of TDI is relatively worse than the same structures of USDI. The Turkish firms work with a relatively higher profit margin than their American counterparts. TDI's Asset utilisation for income has a higher ratio than that of USDI. Return on Equity is lower than USDI.

For the findings of Tables 3 and 4, it can be said that the current ratio and debt-equity ratio show statistically significant differences between the two samples.

4. DISCUSSIONS AND CONCLUSION

The research findings suggest that the Turkish defence companies (TDI) have larger liquidity ratios than their American defence companies (USDI). This can be a precaution against a liquidity risk or a condition regarding risks. On the other side, the liquidity should be arranged well against future-oriented actions such as investments (Almeida et al., 2014). For financial leverage ratios, it can be said that TDI has larger debt values than USDI debt values. This can be a problem for the future and financial sustainability, and can lead to bankruptcy and credit problems in the middle and long term (Papadimitri et al., 2021). The Turkish companies should be rigour in the management of liabilities and assets management according to the assets and payables utilisation ratios. Especially, there are great differences in durations. The TDI companies should be aware of the realities that they

work in high profitability ratios than USDI, especially, the ROA and ROE ratios show that the companies were able to manage their assets and equities despite the poor results in asset management and financial leverage.

On the other hand, for Mann-Whitney U tests, it can be observed that the great majority of the values are insignificant out of the current ratio and debt-equity ratios. The main causes of this situation can be sourced from the homogeneity of the samples. Even though both of the samples are grouped as a defence industry, there can be problems regarding the Mann-Whitney U test logic that depends on the ranks in the samples (McKnight and Najab, 2010; Wall Emerson, 2023). Besides these, TDI and USDI have real differences, although they are defence and high-technology companies regarding dimensions and production qualitatively and quantitatively. Moreover, the degrees of state interventions, globalisation and the relationships between civil industries are so different for both of the samples. For these causes, the assumptions of homogeneity may not be ensured. Nevertheless, an ordinary investor will observe the TDI and USDI as in our analysis, according to the virtual research engines on the internet.

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