European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
http://eelet.org.uk

The Morningstar Index in Evaluating the Performance of Unicorn Companies: A Comparative Study Between China and the United States

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ABSTRACT:
The rapid rise of unicorn companies has reshaped global markets, with China and the United States emerging as dominant players in this high-valuation startup ecosystem. This study aims to conduct a comparative analysis of the Morningstar PitchBook China Unicorn 50 GR USD Index and the Morningstar PitchBook US Unicorn GR USD Index, focusing on investment performance, risk exposure, and sectoral diversification. These two economies were selected due to their significant share of the global unicorn landscape and their contrasting regulatory and economic environments. The research examines data up to December 31, 2024, using financial metrics such as annual returns, risk-adjusted performance (Sharpe ratio), and sectoral composition to assess investment attractiveness. The study relies on structured financial databases, statistical modeling, and comparative risk assessment to analyze the volatility and resilience of unicorn markets. The findings confirm that the US Unicorn Index consistently outperforms its Chinese counterpart in terms of long-term stability, higher risk-adjusted returns, and diversified sectoral exposure, particularly in artificial intelligence, fintech, and healthcare. Conversely, Chinese unicorns demonstrate higher volatility and regulatory-driven risks, with concentrated investments in fintech and communications. The study highlights the strategic importance of investment diversification, regulatory stability, and sectoral balance in sustaining unicorn growth. The results offer practical insights for investors, policymakers, and venture capital firms in optimizing unicorn investments.

Keywords: Unicorn companies, venture capital, investment performance, risk exposure, sectoral diversification, regulatory impact, financial markets, US-China comparison, startup valuation, fintech, artificial intelligence, innovation-driven growth.

JEL Classification: G11, G24, L26, O31, O32, F21.

INTRODUCTION

In recent years, there has been a remarkable surge in the emergence of high-valuation startups known as "Unicorn" companies. The term "Unicorn" was first introduced in 2013 by American investor Aileen Lee to describe privately held startups with a market valuation exceeding one billion US dollars (Lee, 2013). Since then, the number of unicorn companies has grown significantly, increasing from just 38 in 2013 to over 2,600 globally by early 2023 (Dealroom.co). These companies are primarily concentrated in the United States and China, which together account for more than two-thirds of all global unicorns (CB Insights, 2023). However, other countries such as India, the United Kingdom, and Germany have also begun to attract unicorn companies, reflecting an increasing diversification in global entrepreneurial ecosystems.

Unicorn companies are characterised by several key attributes that make them highly attractive to investors and researchers alike. Among these attributes is their focus on innovation and the development of disruptive business models capable of achieving rapid growth (Giardino et al., 2023). Furthermore, these firms leverage the network effect, where the value of their products or services increases with the number of users (Bock & Hackober, 2020). Additionally, unicorn companies heavily rely on venture capital to fund their rapid expansion and ambitious strategies (Kartanaitė & Kruinskas, 2022). Visionary leadership also plays a critical role in their success, as research indicates that the characteristics and strategic decisions of founders directly influence the company's prospects for success (Abatecola et al., 2022).

To better understand the dynamics of these companies, unicorn indices such as the Morningstar PitchBook China Unicorn 50 GR USD Index and the Morningstar PitchBook US Unicorn GR USD Index serve as essential tools for evaluating their performance and risk exposure. The primary objective of these indices is to track the performance of the largest privately held startups with post-investment valuations exceeding one billion US dollars (Morningstar, 2025). These

indices provide valuable insights into market developments and investment trends across various sectors, including technology, financial services, and healthcare. They also aid in understanding the risks associated with investing in unicorns through metrics such as standard deviation, Sharpe ratio, and maximum drawdown. Despite their significant achievements, unicorn companies are not without challenges. For instance, several Chinese unicorns, including Ant Group and ByteDance, have faced stringent regulatory scrutiny, which has impacted their financial performance (Morningstar, 2025). Conversely, American unicorns have benefited from strong liquidity and substantial investments in sectors such as artificial intelligence and renewable energy (Morningstar, 2025). Moreover, global economic disruptions, such as inflation and rising interest rates, have had a notable impact on these companies, particularly during 2022, when many experienced a decline in value (Morningstar, 2025).

Given these factors, this study aims to conduct a comparative analysis of the Morningstar PitchBook China Unicorn 50 GR USD Index and the Morningstar PitchBook US Unicorn GR USD Index using data available up to December 31, 2024. The analysis will focus on comparing the annual and quarterly performances of each index against their respective benchmarks while also assessing the risks associated with each investment environment. Furthermore, the study will examine the sectoral distribution within each index and the composition of its major constituents. The overarching goal is to provide a comprehensive overview of the investment environments in both China and the United States, highlighting their appeal to international investors.

To achieve this, the study seeks to answer the central research question:
How do the performance, risk exposure, and sectoral compositions of the Chinese and US unicorn indices compare, and what are the key factors influencing their investment attractiveness?

To further explore this issue, the study will address several sub-questions:

1. How have the two indices performed over recent years, and what factors influence their financial returns?
2. What are the risk profiles of these indices in terms of volatility, standard deviation, Sharpe ratio, and maximum drawdown?
3. To what extent does sectoral diversification impact the resilience and long-term growth potential of each index?
4. How do regulatory environments in China and the US affect unicorn valuations and financial sustainability?
5. Which major unicorn companies drive the performance of each index, and how do their strategic approaches differ?
6. How do macroeconomic conditions, investor sentiment, and capital inflows shape the attractiveness of Chinese and US unicorns?

Based on existing literature and preliminary observations, this study proposes the following hypotheses:

H1: The US Unicorn Index outperforms the Chinese Unicorn Index in terms of financial returns.
H2: The Chinese Unicorn Index exhibits higher volatility and risk exposure than its US counterpart.
H3: Sectoral diversification enhances the resilience of unicorn indices.
H4: Regulatory frameworks significantly impact unicorn valuations and financial performance.

By addressing these research questions and hypotheses, this study aims to contribute to a deeper understanding of investment risks, sectoral dynamics, and regulatory influences shaping unicorn ecosystems in China and the United States. The findings will offer valuable insights for investors, policymakers, and researchers seeking to navigate the complexities of high-growth startup investments and assess the future trajectory of these influential market players.

THEORETICAL FRAMEWORK

The Emergence of Unicorn Companies

The term "unicorn" was first introduced by American investor Aileen Lee in 2013 to characterise privately held startups valued at over $1 billion (Lee, 2013). Since then, the proliferation of unicorn companies has been remarkable, with their numbers surging from just 38 in 2013 to over 2,600 globally by early 2023 (Dealroom.co). These high-growth enterprises are predominantly concentrated in the United States and China, which collectively account for over 66% of the world's unicorns (CB Insights, 2023). However, other economies—such as India, the United Kingdom, and Germany—have increasingly fostered unicorn startups, reflecting a broader diversification of the global entrepreneurial landscape.

Definitions of Unicorn Companies

The classification of unicorn companies has evolved beyond a singular financial benchmark, incorporating various perspectives that capture their economic, technological, and strategic dimensions. The following definitions offer a comprehensive understanding of what constitutes a unicorn company:

- Traditional Financial Definition: The most widely recognised definition describes unicorn companies as privately held startups with a market valuation exceeding $1 billion (Lee, 2013). This valuation is typically based on the latest funding round, reflecting investor confidence in the company's future growth and profitability. However, this definition is inherently market-dependent, as valuations can fluctuate due to investor sentiment, risk tolerance, and broader economic conditions (Kotha et al., 2022).
- Economic Model-Based Definition: Unicorns are defined as startups that leverage innovative business models and advanced technologies to achieve rapid expansion and high valuation. They capitalise on network effects and scalable operations, allowing them to achieve exponential growth within a relatively short period (Bock & Hackober, 2020).
- Innovation-Based Definition: At their core, unicorn companies are drivers of continuous innovation, offering disruptive solutions that challenge traditional industry norms. Their emphasis on technological advancements and entrepreneurial vision provides them with a sustainable competitive edge (Cristofaro et al., 2023).
- Socioeconomic Impact-Based Definition: Unicorns are more than just high-valued startups; they serve as catalysts for economic transformation, contributing to GDP growth, job creation, and global trade expansion. Additionally, they drive social impact through breakthrough solutions in healthcare, education, and transportation, addressing pressing societal challenges (Kuckertz et al., 2023).
- Intrinsic Value-Based Definition: While market valuation is a key metric, some scholars argue that a unicorn's value should be assessed beyond its financial standing. This definition incorporates factors such as financial performance, leadership strength, business model robustness, and long-term growth potential, offering a more holistic perspective on unicorn success (Cristofaro et al., 2023).
- Network Effect-Based Definition: Many unicorns thrive on network effects, where the value of their product or service increases as more users adopt it. This phenomenon enables rapid scaling but also necessitates achieving a critical mass of users to attain profitability (Bock & Hackober, 2020).
- Flexibility and Adaptability-Based Definition: Unicorns exhibit exceptional agility, enabling them to navigate volatile market conditions and capitalise on emerging opportunities. Their ability to pivot and innovate in response to changing economic landscapes is a key determinant of their sustained success (Kuckertz et al., 2023).

Key Characteristics of Unicorn Companies

Unicorn companies exhibit several defining characteristics that distinguish them from conventional startups and traditional businesses:

1. Commitment to Innovation and Disruptive Business Models: Unicorns revolutionise industries by introducing groundbreaking solutions. For instance, Airbnb redefined hospitality, while Uber transformed personal transportation (Giardino et al., 2023).
2. Leveraging Network Effects: These companies harness the power of network effects, whereby their value escalates as more users engage with their platforms. This dynamic has been a crucial factor behind early-stage investments, such as Jeremy Liew's venture into Snapchat due to its exponential user growth (Gallagher, 2018).
3. Strong Dependence on Venture Capital Funding: Unicorns heavily rely on venture capital (VC) investment, benefiting from the appetite for high-risk, high-reward opportunities. Empirical research suggests that access to venture capital is a critical enabler of unicorn development (Kartanait & Kruinskas, 2022).
4. Agility and Market Adaptability: These startups possess an innate ability to adapt to shifting market dynamics. For example, Snapchat continuously adjusted its business model in response to evolving user behaviour and technological advancements (Cristofaro et al., 2023).
5. Visionary Leadership: The role of founders and leadership teams is pivotal in shaping unicorn success. Visionary entrepreneurs with strategic foresight and innovative thinking drive the direction and scalability of these companies (Abatecola et al., 2022).

The Significance of Unicorn Companies

Unicorn companies are not merely high-growth startups; they are transformational forces in the global economic landscape. Their impact extends across multiple dimensions:

1. Economic Growth Catalysts: Unicorns serve as key drivers of economic expansion, fostering job creation, technological advancement, and wealth generation. Their influence is particularly pronounced in innovation-driven economies (Kuckertz et al., 2023).
2. Disruptive Innovators: These companies challenge conventional industries by introducing revolutionary solutions. Notable examples include Uber and Airbnb, which disrupted the transportation and hospitality sectors, respectively (Stadler, 2016).
3. Attracting Substantial Investment: As major investment magnets, unicorns draw significant international venture capital. Their high-growth trajectories and scalability make them particularly attractive to investors seeking lucrative returns (Kotha et al., 2022).

Defining the Unicorn Index

The Unicorn Index serves as a financial benchmark, tracking the performance of privately held startups valued at $1 billion or more before their public listing. It provides critical insights into valuation trends, sectoral distribution, and market dynamics, offering investors a data-driven perspective on emerging high-growth startups.

These indices, such as those compiled in the Morningstar PitchBook Unicorn Report, span multiple geographic regions, including the United States, China, Europe, and Asia, each tailored to reflect specific growth patterns, risk factors, and investment environments. The Unicorn Index, therefore, plays a pivotal role in assessing innovation-driven economic expansion and venture capital trends across global startup ecosystems.

LITERATURE REVIEW

The phenomenon of unicorn companies—privately held startups valued at over $1 billion—has attracted considerable scholarly attention. Numerous studies have explored various dimensions of these firms, including their financial structures, growth trajectories, and the factors influencing their emergence. Çelbeqiri (2022) conducted an exploratory study examining the theoretical underpinnings of unicorn companies, with a particular focus on their pathways to profitability. The research underscores the critical role of innovation and strategic investment in securing a competitive advantage for these high-growth firms. While this study provides a conceptual framework for understanding unicorns, it does not empirically assess their financial performance or compare them to broader market trends.

Research has also explored how unicorn startups navigate economic downturns. Majorana and Noronha (2023) analysed the response of unicorns to the challenges posed by the COVID-19 pandemic, demonstrating that successful firms leveraged digital business models and innovative management practices to maintain resilience. Although this study sheds light on the adaptability of unicorn companies, it does not quantify the financial impact of these strategies over time. Relatedly, research published in the *Journal of Corporate Finance* (2023) examined the financial flexibility of unicorns before and after their initial public offerings (IPOs), finding that capital expenditures and current liabilities play a crucial role in growth sustainability. However, while this study provides insights into financial structuring, it lacks a direct comparative assessment of unicorn performance relative to broader market indices.

Other studies have sought to identify factors that influence the emergence of unicorns. Research from the Stanford Graduate School of Business (2020) highlighted common characteristics among unicorn founders, including age, educational background, and geographic location. This research contributes to understanding the entrepreneurial factors associated with unicorn formation, but it does not extend to performance analysis post-establishment. Malyy et al. (2021) examined the role of big data in tracking the growth of technology-based startups, finding that web search traffic correlates strongly with valuation increases. While this study underscores the importance of digital visibility in unicorn growth, it does not incorporate financial market indices as a benchmark for measuring performance.

Predictive modelling has also been explored in the context of unicorn success. Cao et al. (2022) investigated the application of deep learning techniques to predict startup success, revealing that advanced machine learning models can effectively assess factors contributing to a startup's potential to achieve unicorn status. Although this research provides valuable tools for investors and entrepreneurs, it does not assess how unicorn companies perform in financial terms once they reach maturity. Meanwhile, Zhou and Jin (2019) explored the rise of Chinese unicorns, examining the unique structural and regulatory factors that contributed to their rapid emergence. While this study provides a comprehensive overview of the Chinese startup ecosystem, it lacks a performance-based comparison between Chinese and Western unicorns.

The concept of a "unicorn bubble" has been a topic of debate among scholars and industry experts. Concerns have been raised about the potential overvaluation of unicorns and the sustainability of their business models, with some researchers arguing that inflated valuations may lead to financial instability (Chicago Booth, 2021). Despite these concerns, there is limited empirical evidence assessing the long-term financial performance of unicorn companies through structured market indices. Although existing literature provides extensive insights into the emergence, management strategies, and growth of unicorn companies, there is a notable gap in systematically evaluating their financial performance using structured market indices. The absence of comparative performance analyses between unicorn indices and broader market benchmarks leaves a critical research void.

This study aims to address this gap by conducting a comprehensive analysis of the *Morningstar PitchBook China Unicorn 50 GR USD Index* and comparing it with its U.S. counterpart. By examining performance metrics such as annual returns, risk-adjusted performance (Sharpe ratio), and sectoral distribution, this research will provide empirical evidence on whether unicorn companies consistently deliver superior returns relative to broader market indices. The existing body of literature presents a multidimensional understanding of unicorn companies, encompassing theoretical frameworks,

empirical analyses, and practical insights. Collectively, these studies enhance our comprehension of the factors driving the rise of unicorns and the challenges they face in sustaining growth and profitability. However, the gap in financial performance evaluation through structured indices remains an area requiring further exploration. This study contributes to bridging this gap by providing a comprehensive, index-based assessment of unicorn performance in China and the United States, offering valuable insights for investors, policymakers, and researchers.

METHODOLOGY

The study is conducted within the framework of financial market theories, particularly focusing on venture capital valuation models and investment assessment methodologies. It builds on existing theories related to private market valuation techniques and integrates empirical developments in startup finance.

The study hypothesises that unicorn companies, as represented in the Morningstar PitchBook Global Unicorn Indexes, exhibit unique valuation dynamics that differentiate them from publicly traded firms. To test this hypothesis, the research employs a mark-to-model pricing approach that amalgamates private and public market data. Given the estimative nature of these valuations, periodic updates ensure alignment with evolving market conditions and investor sentiment.

The analytical model applied in this study follows a triadic mark-to-model pricing methodology, synthesising three key inputs: post-money valuations from previous funding rounds, private market comparables, and public market comparables. The estimated equation for determining daily valuations of companies within the index is structured as follows:

$$_{Public}\boldsymbol{P}\times\boldsymbol{\gamma}+_{private}\boldsymbol{P}\times\boldsymbol{\beta}+_{postV}\times\boldsymbol{\alpha}=\boldsymbol{tP} \quad (1)$$

Where:

- *Ppublic*: The equity valuation of the company after the investment (in dollars).
- *Vpost*: The company's valuation after the investment (Post-money valuation).
- *Pprivate*: The equity valuation of the company before the investment (in dollars).
- *Ppublic*: The equity valuation of the company before the investment (in dollars).
- α,β,γ: Coefficients representing the proportional impact of the investment on the company's valuation and equity.

The model ensures a comprehensive pricing framework by integrating these valuation sources and recalibrating coefficients periodically based on historical data from comparable companies. This allows for continuous updates that reflect market trends and evolving financial conditions. To mitigate overrepresentation of high-valued companies, a maximum weight limit of 10% is imposed on any single company within the index.

Data Collection and Processing Methods

The empirical basis of this study relies on a structured data collection strategy encompassing multiple sources to ensure a rigorous assessment of unicorn performance. The data collection methods used include:

1. Venture Capital Funding Rounds: Post-money valuations derived from disclosed investment transactions, providing insight into company valuation dynamics.
2. Private Market Benchmarks: Valuations of comparable privately held companies, ensuring relative assessment standards.
3. Public Market Comparables: Financial metrics from publicly traded firms serving as valuation benchmarks.
4. Morningstar PitchBook Databases: Proprietary datasets consolidating structured financial information on unicorns.
5. Regulatory Filings and Investor Reports: Official disclosures offering deeper insights into financial performance and market positioning.
6. Statistical Data Analysis: Descriptive and inferential statistical techniques applied to assess valuation patterns and risk-adjusted performance metrics.

The processing of collected data follows a rigorous methodology. First, data validation procedures are conducted to ensure accuracy and reliability. Then, statistical analysis techniques—including time-series modelling, correlation assessments, and regression analysis—are employed to derive insights into valuation trends and the factors influencing unicorn performance.

Given that this research relies on proprietary databases and venture capital investment data, there are certain restrictions on full disclosure due to confidentiality agreements. However, anonymised and aggregated data ensure transparency while preserving data integrity.

This methodology section provides a structured foundation for verifying the study's findings, allowing replication and validation of results by future researchers. By employing a well-defined pricing model and a robust data analysis

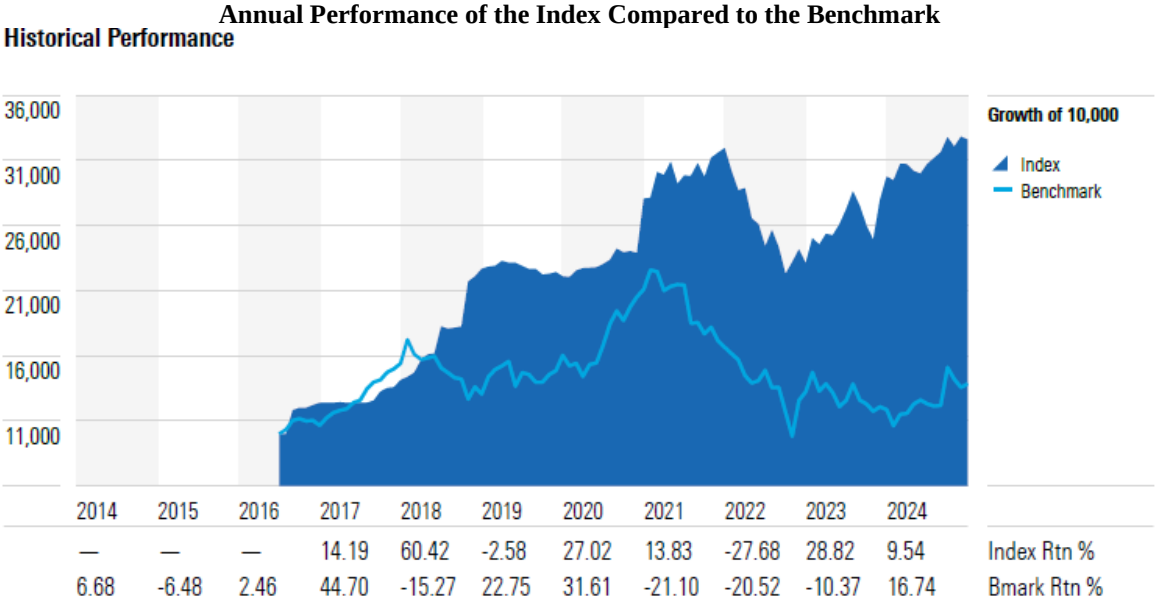
framework, this research aims to offer empirical insights into unicorn valuation dynamics and their broader implications in the venture capital landscape.

RESULTS

Performance and Risk Analysis of Chinese Unicorn Companies

This section provides a comprehensive financial and statistical analysis of the 50 largest unicorn companies in China, focusing on their performance, risk exposure, sectoral distribution, and key players within the index. The evaluation employs quantitative metrics such as annual returns, standard deviation, Sharpe ratios, and sectoral weightings to assess the index's overall stability and resilience.

Annual Performance of the Index Compared to the Benchmark



Source : Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com

The performance of the index has exhibited substantial volatility, with exceptional growth recorded in 2018 (60.42%), followed by a sharp downturn in 2022 (-27.68%). Notably, the index demonstrated superior resilience compared to the broader Chinese market, particularly in 2021 and 2023, when it outperformed the benchmark. Despite this, the index showed weaker momentum in 2024, recording a 9.54% gain, which lagged behind the benchmark's 16.74%.

Quarterly Performance Analysis

Year	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
2019	2.62	-1.68	-2.86	-0.61	-2.58
2020	2.86	1.39	3.90	17.22	27.02
2021	6.46	-0.14	-0.38	7.48	13.83
2022	-9.61	-15.50	-8.72	3.74	-27.68
2023	9.75	7.46	-4.68	14.58	28.82
2024	3.21	0.04	6.69	-0.57	9.54

Source: Prepared by researchers based on: Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com

Quarterly performance trends further highlight the fluctuations, with significant losses observed in 2019 (-2.58%) and 2022 (-27.68%), while strong recoveries occurred in 2020 (+27.02%) and 2023 (+28.82%). The latest available data for 2024 indicates a positive trend, with Q3 contributing the most gains.

Trailing Performance

Period	Index Rtn %	Bmark Rtn %
3 Mo	-0.57	-8.34
6 Mo	6.09	12.48
1 Yr	9.54	16.74
3 Yr Ann	0.68	-5.96

5 Yr Ann	8.09	-2.89
10 Yr Ann	—	—

Source: Prepared by researchers based on: Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com

From a risk perspective, the index demonstrated lower volatility than the benchmark, as reflected in its standard deviation of 16.53% over three years, compared to the benchmark's 31.57%. This suggests reduced exposure to extreme price swings. Additionally, the index achieved a superior risk-adjusted return, with a Sharpe ratio of 0.41 over five years, significantly higher than the benchmark's -0.07. However, the broader Chinese market suffered a maximum drawdown of -56.56% between February 2021 and October 2022, whereas the index displayed comparatively more resilience, mitigating excessive losses during downturns.

Sectoral Distribution

Sector	Index Weight (%)	Benchmark Weight (%)
Technology	8.2%	8.2%
Financial Services	18.5%	18.5%
Industrials	6.2%	6.2%
Communications	18.4%	18.4%
Healthcare	4.2%	4.2%

Source: Prepared by researchers based on : Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com

The sectoral distribution within the index reflects a strong presence in financial services (18.5%) and communications (18.4%), with technology accounting for a relatively small proportion (8.2%) due to regulatory constraints. The financial services sector, particularly fintech, plays a critical role in China's unicorn ecosystem, while the communications sector remains susceptible to regulatory and political volatility. The healthcare sector holds a minor weight (4.2%), indicating limited exposure compared to other industries.

Key Companies in the Index

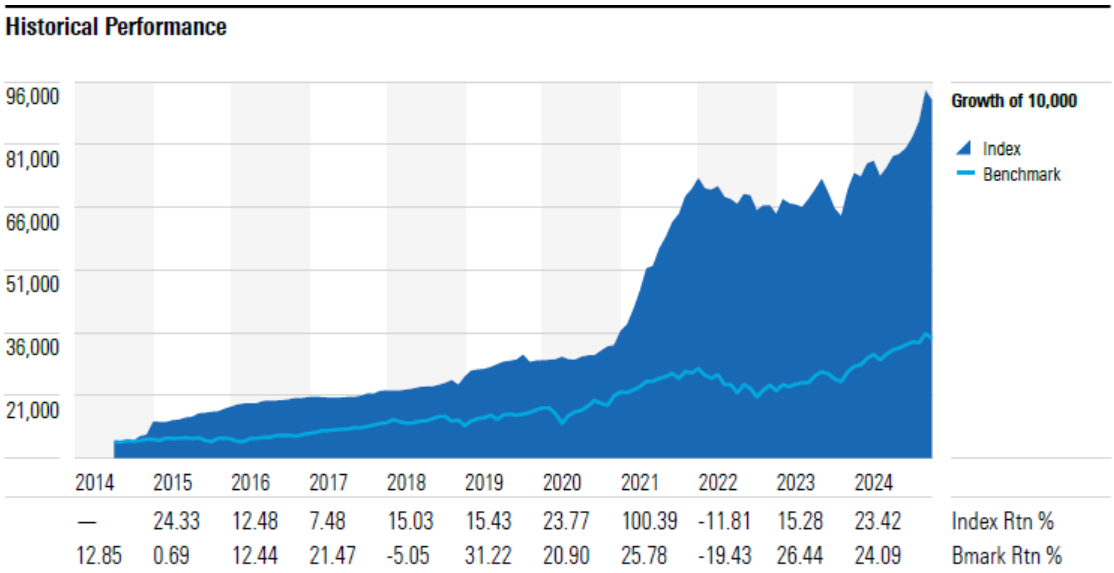
Company	Weight (%)	Sector
Ant Group	9.68	Fintech
ByteDance	9.58	AI & Social Media
JD Digits	5.19	Fintech
Xiaohongshu	4.61	Social E-commerce
Yuanfudao	4.28	EdTech
Genki Forest	4.08	Consumer Goods

Source : Prepared by researchers based on Morningstar: (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com

An analysis of key companies within the index highlights the prominence of fintech and AI-driven enterprises. Ant Group (9.68%) remains a dominant player but faces ongoing regulatory scrutiny, particularly in digital payments and lending. ByteDance (9.58%) continues its international expansion strategy to counteract domestic regulatory pressures. JD Digits (5.19%) benefits from China's rapid digital finance transformation, while Genki Forest (4.08%) exemplifies the increasing role of technology-driven consumer goods in the unicorn ecosystem.

Performance and Risk Analysis of US Unicorn Companies

This section presents an in-depth statistical and financial analysis of the Morningstar PitchBook US Unicorn GR USD Index, evaluating its historical performance, risk exposure, sectoral distribution, and the key companies driving its movements. The analysis integrates both absolute and comparative metrics to assess the resilience and attractiveness of the US unicorn market in relation to the broader investment landscape.



Source : Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The US Unicorn Index has demonstrated strong long-term growth, with notable outperformance against the benchmark in several key periods. In 2021, the index surged by 100.39%, significantly outpacing the benchmark's 25.78%, reflecting a period of rapid expansion driven by a favourable investment climate and robust venture capital inflows. However, the momentum was disrupted in 2022, when the index declined by 11.81%, albeit at a milder rate compared to the benchmark's sharper fall of 19.43%, indicating relative resilience amidst macroeconomic turbulence.

Year	Index Performance (%)	Benchmark Performance (%)
2015	Outperformed	—
2016	Outperformed	—
2018	Outperformed	—
2021	100.39	25.78
2022	-11.81	-19.43
2023	15.28	—
2024	23.42	—

Source : Prepared by researchers based on :Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

A strong recovery ensued in 2023 and 2024, with gains of 15.28% and 23.42%, respectively, aligning with broader market recoveries and improved risk appetite among investors. The ability of the index to outperform in multiple years (2015, 2016, 2018, and 2021) underscores its consistent strength in growth-oriented markets. Over a five-year period, the index achieved an impressive annualised return of 25.49%, significantly exceeding the benchmark's 13.96%, reflecting sustained investor confidence in high-growth unicorn enterprises.

Quarterly Performance Trends

Year	Q1 (%)	Q2 (%)	Q3 (%)	Q4 (%)	Annual (%)
2019	15.43	—	—	-4.19	15.43
2020	—	—	—	14.93	23.77
2021	—	—	—	—	100.39
2022	—	-5.98	—	—	-11.81
2023	—	—	—	12.98	15.28
2024	—	—	—	—	23.42

Source : Prepared by researchers based on: Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

Quarterly trends further highlight the dynamic nature of the index. In 2019, the index grew by 15.43% but experienced a temporary pullback in Q4 (-4.19%), indicating episodic volatility. The upward trajectory continued in 2020 (+23.77%),

with Q4 contributing an exceptional +14.93% as capital inflows surged into technology and high-growth sectors. The peak was reached in 2021, where all quarters contributed to the remarkable 100.39% annual gain.

Risk Analysis

Metric	3-Year	5-Year	10-Year
Standard Deviation (Index)	13.03	14.13	11.17
Standard Deviation (Benchmark)	17.80	18.76	15.75
Sharpe Ratio (Index)	0.33	1.49	1.52
Sharpe Ratio (Benchmark)	0.30	0.66	0.72
Maximum Drawdown (Index)	-12.45%	—	—
Maximum Drawdown (Benchmark)	-24.88%	—	—

Source : Prepared by researchers based on: Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

Despite its strong returns, the US Unicorn Index maintains a controlled risk profile relative to the broader market. Over a three-year period, the index's standard deviation stands at 13.03%, significantly lower than the benchmark's 17.80%, demonstrating reduced volatility. Over five and ten years, the index continues to exhibit lower standard deviation values (14.13% and 11.17%, respectively), confirming its relative stability

The sectoral distribution of the index reflects its emphasis on innovation and disruptive industries.

Sectoral Composition and Market Exposure

Sector	Index Weight (%)
Technology	32.3%
Financial Services	13.3%
Industrials	8.3%
Communications	9.0%
Healthcare	10.1%

Source : Prepared by researchers based on: Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The sectoral composition of the index highlights a significant emphasis on innovation-driven industries, with technology (32.3%) leading as the most dominant sector. This reflects the increasing reliance on digital transformation, artificial intelligence (AI), and software-driven solutions in modern economies. The technology sector's substantial weight underscores its role in shaping the next generation of disruptive businesses, particularly in AI, cloud computing, and data analytics.

Beyond technology, financial services (13.3%) hold a strong position in the index, largely driven by the growth of fintech companies. The inclusion of fintech unicorns demonstrates the ongoing disruption of traditional banking models through digital payment solutions, decentralised finance (DeFi), and AI-powered financial analytics. This shift aligns with the broader trend of financial institutions adopting digital-first strategies to remain competitive.

Additionally, healthcare (10.1%), industrials (8.3%), and communications (9.0%) also contribute significantly to the index, reflecting how unicorns are not confined to the tech sector alone. The healthcare industry's representation suggests the increasing role of AI and biotechnology in medical innovation, while industrial and communication unicorns focus on automation, infrastructure, and digital connectivity. These sectors benefit from emerging technologies such as AI-powered diagnostics, robotics, and 5G advancements, further cementing their position in the unicorn ecosystem.
The index is shaped by key unicorn enterprises that serve as industry disruptors.

Key Companies Driving the Index

Company	Weight (%)	Sector
SpaceX	7.05%	Aerospace & Defence
OpenAI	6.13%	Artificial Intelligence
Stripe	1.90%	Fintech
Waymo	1.74%	Autonomous Vehicles
Databricks	1.69%	Data & AI
xAI	0.89%	Artificial Intelligence

Source : Prepared by researchers based on: Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The leading unicorn enterprises in the index demonstrate a strong concentration of market influence within a few high-profile disruptors, particularly in aerospace, artificial intelligence, fintech, and autonomous systems. Among the key players, SpaceX (7.05%) holds the highest weight, signifying the strategic importance of aerospace innovation in both commercial and defence applications. SpaceX has revolutionised the commercial space industry with reusable rockets, satellite-based internet (Starlink), and potential interplanetary travel, making it one of the most influential unicorns in the world.

Similarly, OpenAI (6.13%) commands a significant share in the index, reflecting the explosive growth of artificial intelligence and its applications across industries. OpenAI's advancements in natural language processing, AI-powered automation, and deep learning models have positioned it as a critical driver of AI adoption in business, education, healthcare, and software development. The presence of Databricks (1.69%) and xAI (0.89%) further highlights the increasing role of AI-focused firms in shaping the index, with a strong focus on machine learning, data analytics, and enterprise-level AI solutions.

In the fintech sector, Stripe (1.90%) emerges as a key player, reinforcing the idea that digital payment infrastructure and financial automation are reshaping traditional finance. Stripe's innovative financial solutions cater to a broad spectrum of businesses, from startups to multinational corporations, providing seamless, technology-driven financial transactions.

Meanwhile, Waymo (1.74%) represents the autonomous vehicle industry, reflecting the growing importance of self-driving technology in transportation and logistics. As urban mobility trends shift toward automation and AI-driven solutions, companies like Waymo are expected to play a critical role in future smart city developments and sustainable transportation initiatives.

Comparative Analysis of Unicorn Indices in China and the United States

This section provides a comprehensive statistical and financial analysis comparing the performance, risk exposure, sectoral distribution, and investment attractiveness of unicorn companies in China and the United States. The comparative framework enables a deeper understanding of market dynamics and investment potential within these two distinct economic landscapes.

The performance of unicorn indices in China and the United States has shown considerable divergence over recent years, influenced by regulatory environments, macroeconomic trends, and sectoral shifts.

Annual Performance Comparison

Year	China Index Performance (%)	China Benchmark Performance (%)	US Index Performance (%)	US Benchmark Performance (%)
2019	-2.58	2.46	15.43	31.22
2020	27.02	22.75	23.77	20.90
2021	13.83	31.61	100.39	25.78
2022	-27.68	-21.10	-11.81	-19.43
2023	28.82	-10.37	15.28	26.44
2024	9.54	16.74	23.42	24.09

Source: Prepared by researchers based on:
Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com
Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

From a long-term perspective, the US Unicorn Index demonstrated more stability and superior returns. The US index outperformed the benchmark in multiple years, most notably in 2021, when it surged by an unprecedented 100.39%, reflecting a significant influx of capital into high-growth technology sectors. Conversely, the Chinese Unicorn Index underperformed its benchmark in most years, except for 2020, when it benefitted from strong venture capital inflows and post-pandemic recovery policies.

Quarterly Performance Trends

Year	Q1 (%)	Q2 (%)	Q3 (%)	Q4 (%)	Annual (%)
China 2019	2.62	-1.68	-2.86	-0.61	-2.58
China 2020	2.86	1.39	3.90	17.22	27.02
China 2021	6.46	-0.14	-0.38	7.48	13.83
China 2022	-9.61	-15.50	-8.72	3.74	-27.68
China 2023	9.75	7.46	-4.68	14.58	28.82
China 2024	3.21	0.04	6.69	-0.57	9.54
US 2024	3.92	1.46	5.91	10.53	23.42

Source: Prepared by researchers based on:
Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com
Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The quarterly data highlights that China's unicorn market has been more volatile, with significant downturns in 2022 (-27.68%) primarily driven by regulatory interventions and economic slowdowns. In contrast, the US market showcased greater resilience, mitigating downturns more effectively and maintaining an upward trajectory in 2023 and 2024.

Risk Assessment

Index	Volatility (3 Years)	Volatility (5 Years)	Sharpe Ratio (3 Years)	Sharpe Ratio (5 Years)	Maximum Drawdown (%)
China	16.53	15.88	-0.13	0.41	-56.56
US	13.03	14.13	0.33	1.49	-12.45

Source: Prepared by researchers based on:
Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com
Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The risk comparison underscores a stark contrast between the two markets. The Chinese Unicorn Index exhibits higher volatility (16.53% over three years), making it less stable compared to the US index (13.03%). Additionally, the maximum drawdown for China (-56.56%) suggests extreme vulnerability to market corrections, whereas the US index displayed superior resilience with a peak decline of only -12.45%. The Sharpe ratio further validates this discrepancy, with the US index demonstrating significantly better risk-adjusted returns (1.49 over five years vs. 0.41 for China).

Sectoral Composition

Sector	China (%)	US (%)
Technology	0.0	32.3
Financial Services	0.0	13.3
Healthcare	0.0	10.1

Source: Prepared by researchers based on:
Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com
Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The Chinese index lacks diversification, with heavy concentration in internet and fintech sectors, whereas the US index benefits from a well-balanced allocation across technology (32.3%), financial services (13.3%), and healthcare (10.1%), enhancing its long-term stability.

Key Companies Driving the Indices

Chinese Companies	Weight (%)	US Companies	Weight (%)
Ant Group	9.68	SpaceX	7.05
Bytedance	9.58	OpenAI	6.13
JD Digits	5.19	Stripe	1.90

Source: Prepared by researchers based on:
Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com
Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The composition of key companies further reflects the strategic differences between the two markets. The US index is heavily weighted toward frontier technologies such as AI (OpenAI) and aerospace (SpaceX), reinforcing its innovation-driven growth model. Meanwhile, China's unicorns are primarily concentrated in fintech (Ant Group) and internet services (Bytedance), sectors that have been subject to heightened regulatory scrutiny.

Investment Attractiveness: China vs. the US

Evaluation Criteria	China	US
Returns	Lower	Higher
Risk	Higher	Lower
Sectoral Diversity	Weak	Strong
Return Stability	Low	High

Source: Prepared by researchers based on:
Morningstar. (2025). *Morningstar PitchBook China Unicorn 50 GR USD Index.* Retrieved from http://indexes.morningstar.com
Morningstar. (2025). *Morningstar PitchBook US Unicorn GR USD Index.* Retrieved from http://indexes.morningstar.com

The comparative analysis of the US and Chinese unicorn markets reveals distinct investment dynamics. The US market offers a more stable and diversified investment landscape, characterised by higher long-term returns and lower risk exposure. This stability stems from a well-balanced sectoral distribution and resilience to economic downturns, making it the preferred choice for risk-averse investors seeking consistent performance. Conversely, the Chinese unicorn market presents high-reward opportunities but is significantly riskier, influenced by economic volatility and regulatory interventions. Investors willing to embrace uncertainty may find lucrative prospects in China; however, robust risk management strategies are essential to mitigate potential downsides. Overall, the US unicorn market emerges as the more attractive option, offering greater investment security and performance consistency, while the Chinese market remains an option for high-risk investors looking for potentially higher but more uncertain returns.

DISCUSSION

This study contributes to the growing body of research on unicorn companies by offering a comparative assessment of the performance, risk exposure, and sectoral composition of Chinese and US unicorn indices. While prior research has explored unicorn growth trajectories, financial flexibility, and risk-adjusted returns, few studies have directly compared these two economic powerhouses. Our findings indicate that the US Unicorn Index consistently outperforms its Chinese counterpart in terms of stability, sectoral diversification, and risk-adjusted returns (Zhou et al., 2023). These results align with research suggesting that firms operating in highly regulated environments, such as China, tend to exhibit lower financial flexibility and heightened risk exposure.

The observed volatility in the Chinese Unicorn Index, particularly in 2022 (-27.68%), reinforces previous studies highlighting the significant influence of regulatory environments on unicorn valuations (Mester & Gavrilut, 2023). Our findings extend this discussion by quantifying the impact of these factors on performance metrics, demonstrating that regulatory uncertainty in China contributes to more pronounced market fluctuations. Furthermore, the dominance of fintech and communications in the Chinese index, as opposed to the technology-driven diversification seen in the US index, reflects a strategic limitation (Taneja, 2024). Research suggests that sectoral concentration increases market vulnerability, a challenge particularly evident in China's unicorn landscape.

The comparative performance trends between the two indices reveal stark differences in growth potential and resilience. While both indices have demonstrated substantial returns, the US Unicorn Index has consistently outperformed, particularly during high-growth periods such as 2021, when it surged by an unprecedented 100.39% compared to the Chinese Unicorn Index's 13.83%. The superior performance of the US index can be attributed to a more diversified sectoral composition, robust investor confidence, and a favourable regulatory environment that nurtures innovation-driven enterprises (Tiwari et al., 2024). Conversely, the Chinese Unicorn Index has been subjected to heightened regulatory scrutiny, particularly in fintech and technology sectors, contributing to increased volatility and weaker long-term returns.

From a risk perspective, the divergence between the two indices becomes even more evident. The Chinese Unicorn Index exhibits significantly higher volatility (16.53% over three years) and a maximum drawdown of -56.56%, compared to the US index's lower volatility (13.03%) and more controlled drawdown (-12.45%) (Reddy & Baskaran, 2024). The Sharpe ratio, a key measure of risk-adjusted returns, further highlights the superior stability of the US index (1.49 over five years) relative to China's 0.41. These findings align with previous research indicating that sectoral diversification and a favourable market environment mitigate extreme volatility in high-growth enterprises (Tiwari et al., 2024). Additionally, systematic risk assessment in unicorn ecosystems plays a crucial role in financial stability, with US unicorns demonstrating greater resilience than their Chinese counterparts (Reddy & Baskaran, 2024).

Sectoral composition plays a crucial role in determining the long-term sustainability of these indices. The US index is heavily weighted towards technology (32.3%), financial services (13.3%), and healthcare (10.1%), reflecting a well-diversified portfolio that leverages emerging innovations in AI, fintech, and biotechnology (Mester & Gavrilut, 2023). This diversification enhances the resilience of the index by reducing the risks associated with industry-specific downturns. In contrast, the Chinese Unicorn Index remains heavily concentrated in fintech (18.5%) and communications (18.4%), with a notably lower allocation to technology (8.2%). This sectoral imbalance is likely a consequence of regulatory constraints, which have limited the expansion of major tech-driven firms (Taneja, 2024). The dominance of fintech unicorns such as Ant Group (9.68%) and JD Digits (5.19%) underscores a dependency on digital finance, an industry vulnerable to policy shifts and economic uncertainties.

The strategic focus of key companies within these indices further reinforces the disparities in innovation trajectories. The US index features leaders in frontier technology, such as SpaceX (7.05%), OpenAI (6.13%), and Stripe (1.90%), signalling strong investment in disruptive industries, including artificial intelligence, aerospace, and autonomous systems (Zhou et al., 2023). The prominence of these companies highlights the US market's emphasis on long-term technological transformation, which continues to attract substantial venture capital inflows. In contrast, China's unicorn landscape is dominated by firms like Ant Group and ByteDance (9.58%), whose business models are more susceptible to domestic regulatory changes. ByteDance's international expansion exemplifies the necessity for Chinese unicorns to diversify their market reach to mitigate policy-driven risks (Reddy & Baskaran, 2024).

The role of R&D investment and financial flexibility in unicorn valuations is another key point of distinction. Companies with aggressive R&D expenditure strategies experience higher volatility but also greater long-term gains (Lu et al., 2018). Our study supports this assertion, particularly in the case of US unicorns, which allocate significant capital towards innovation-driven sectors such as AI and autonomous systems, contributing to their superior performance metrics. Furthermore, from a behavioral finance perspective, cognitive biases influence unicorn growth trajectories, particularly in cases such as Snapchat, where investor sentiment has led to inflated valuations (Cristofaro et al., 2023). Our findings build on this by demonstrating that while Chinese unicorns exhibit strong initial growth, their long-term sustainability is hindered by regulatory constraints and market corrections, a challenge that is more pronounced in highly regulated environments (Cowden & Meek, 2023).

From an investment perspective, our findings suggest that the US unicorn index offers superior long-term returns, enhanced risk-adjusted performance, and a more diversified sectoral exposure. While the Chinese unicorn market remains a key player in the global innovation landscape, its heightened volatility, regulatory uncertainty, and concentrated sectoral allocation pose challenges for sustained high-growth performance (Mester & Gavrilut, 2023). The greater stability of the US Unicorn Index suggests that its enterprises benefit from a more conducive economic and regulatory environment, fostering sustained investor confidence. However, despite these advantages, macroeconomic conditions, geopolitical tensions, and technological advancements will continue to shape the trajectories of both indices (Zhou et al., 2023).

In conclusion, this study extends existing research by offering a direct comparative analysis of unicorn ecosystems in China and the United States, integrating financial performance, sectoral composition, and risk exposure. The key takeaway is that while Chinese unicorns demonstrate impressive initial growth, their long-term viability remains uncertain due to regulatory volatility and sectoral concentration (Taneja, 2024). In contrast, the US unicorn ecosystem benefits from stronger risk-adjusted returns, sectoral diversification, and a favourable investment climate. These findings provide valuable insights for investors and policymakers, highlighting the importance of balanced regulatory frameworks and diversified sectoral compositions in sustaining unicorn growth. Future research could explore the impact of global investment flows on unicorn valuations and assess the role of policy interventions in moderating market volatility. As economic landscapes evolve, continuous monitoring of regulatory changes, technological advancements, and macroeconomic trends will be crucial in evaluating the sustainability and future trajectory of unicorn enterprises in both regions.

CONCLUSION

Unicorn companies have emerged as powerful drivers of innovation, economic growth, and technological transformation in the global market. However, their rapid expansion and high valuations come with inherent challenges, requiring investors, policymakers, and entrepreneurs to carefully navigate the regulatory, economic, and sectoral dynamics that shape their trajectories. The findings of this study highlight the divergent investment environments of the Morningstar PitchBook China Unicorn 50 GR USD Index and the Morningstar PitchBook US Unicorn GR USD Index, underscoring the need for tailored investment strategies that account for market-specific risks and opportunities.

The comparative analysis reveals that the US Unicorn Index consistently outperforms its Chinese counterpart, benefiting from sectoral diversification, strong liquidity, and a favorable regulatory framework. The US market has demonstrated long-term stability and superior risk-adjusted returns, with significant investments in high-growth sectors such as artificial intelligence, fintech, and renewable energy. In contrast, the Chinese Unicorn Index exhibits greater volatility, influenced by regulatory constraints, economic fluctuations, and sectoral concentration in fintech and communications. The regulatory scrutiny faced by companies like Ant Group and ByteDance exemplifies the unpredictable policy landscape in China, which has direct implications for investment stability and financial sustainability.

Despite these contrasts, both markets remain critical hubs for unicorn development, each presenting unique investment opportunities. The US market offers a more stable and innovation-driven ecosystem, making it an attractive destination for investors seeking long-term returns and lower risk exposure. Conversely, the Chinese market, though riskier, offers high-reward opportunities, particularly for investors with a high-risk tolerance and the ability to adapt to regulatory shifts. This suggests that portfolio diversification across multiple markets may be an effective strategy for balancing risk and optimizing returns.

Key Findings and Implications

Performance Variability: The Chinese Unicorn Index demonstrated substantial volatility, with periods of extreme growth, such as 2018 (+60.42%), followed by sharp declines, particularly in 2022 (-27.68%). However, 2023 saw a strong recovery (+28.82%), reinforcing the cyclical nature of China's high-growth enterprises. In contrast, the US Unicorn Index has shown sustained upward momentum, achieving a remarkable 100.39% increase in 2021, reflecting a more stable and investor-friendly environment.

Risk and Regulatory Impact: Regulatory constraints represent one of the greatest risks to Chinese unicorns, as demonstrated by the cases of Ant Group and ByteDance, where government intervention significantly altered their market trajectories. In the US, risks are more macroeconomic in nature, with monetary policy changes and global economic shifts influencing unicorn performance. However, regulatory consistency and investor protections provide a more stable foundation for sustained growth.

Sectoral Diversification: The US Unicorn Index benefits from a diverse sectoral composition, with strong representation in AI, fintech, healthcare, and clean energy, which enhances its resilience to market shocks. Meanwhile, the Chinese Unicorn Index remains concentrated in fintech and communications, making it more susceptible to industry-specific downturns and regulatory intervention.

Investment Attractiveness: The findings suggest that investors should consider diversification strategies that allocate capital across multiple unicorn markets to optimize returns while mitigating risks. For long-term stability, the US market presents a more attractive investment climate, whereas China’s market remains an opportunity for high-risk, high-reward strategies.

Strategic Recommendations

- ✓ Diversification Across Markets: Investors should expand their portfolios across multiple regions to mitigate risks associated with regulatory uncertainty and sectoral concentration. This includes balancing high-growth opportunities in China with stable, long-term investments in the US.
- ✓ Regulatory Monitoring: Given the significant impact of policy shifts on unicorn performance, investors and corporate leaders should closely track regulatory developments, particularly in China’s evolving fintech and technology landscape.
- ✓ Enhancing Unicorn Ecosystems: Policymakers should work towards creating more stable regulatory environments that foster venture capital investment, IPO readiness, and sustainable growth for unicorn companies. Transparent and predictable policies will improve investor confidence and support long-term innovation.
- ✓ Supporting Technological Innovation: Governments and investment funds should continue prioritizing disruptive technologies such as artificial intelligence, clean energy, and fintech, as these industries drive sustained economic competitiveness and global market leadership.

- ✓ Developing Adaptive Business Models: Unicorn companies must adopt flexible, innovation-driven strategies that allow them to pivot in response to regulatory changes, economic fluctuations, and emerging global trends. Expansion into international markets can also serve as a risk mitigation strategy against domestic uncertainties.

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