

How Stable Is Logistics Performance in Leading Economies? An Analysis of World Bank Logistics Performance Index Scores, 2007–2023

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Abstract:

In this study, I look at whether the logistics performance of the leading economies remains stable over time. Since transport and logistics are of great importance for trade, only a small number of studies have tracked the same group of top countries in each edition of the World Bank Logistics Performance Index (LPI), including the 2023 edition which followed the period of the COVID-19 pandemic. I have used secondary data, consisting of the overall LPI scores for 12 high-income economies across seven editions (2007, 2010, 2012, 2014, 2016, 2018 and 2023). I analyzed the average score of the group, the changes in each economy's score between editions, the shifts in their rankings, and the amount by which each economy's score increased or decreased. The findings indicate that the average score of the group was almost identical in 2007 (4.01), in 2018 (4.00) and in 2023 (4.04). Between 2018 and 2023 six economies improved while six declined. A high score in 2018 did not ensure a high score in 2023 and the rankings changed significantly: Canada advanced by 13 places whereas the United Kingdom dropped by 10. Japan had the most stable scores and Finland and Austria the least stable. The results demonstrate that holding a top position in the LPI does not guarantee a future top position. However, the sample is small and the 2023 scores are rounded, so the conclusions have to be treated with caution.

Keywords:

Logistics Performance Index (LPI), Transport, Supply Chain, Trade Facilitation, Logistics Performance

Introduction:

The transport and logistics sector is responsible for getting goods from producers to consumers. According to Christopher in 2016, logistics involves the management of both materials and information in order that products reach the right place at the right time. Rodrigue in 2020 states that ports, roads, railways, and airports form the physical foundation of this flow. If these systems function properly, trade becomes cheaper and quicker; but if they function poorly, companies experience delays and have to pay higher costs.

The World Bank produces the Logistics Performance Index (LPI) when comparing different countries. The index is derived from a survey of logistics professionals and assigns each country a score ranging from 1 (low) to 5 (high) in six categories: customs, infrastructure, the ease of arranging shipments, the quality of logistics services, tracking and tracing, and timeliness (Arvis et al., 2018, 2023). The first version of the LPI was published in 2007 and the most recent one, using the survey-based approach, came out in 2023. Since many governments base their policies on the LPI, it is important to understand how much a country's score actually changes over time. Most studies apply the LPI in order to explain other things, for instance trade volumes or transport costs. There are not many studies which track the leading economies in all the different editions of the LPI. This represents a gap in particular concerning 2023. Arvis et al. (2023) stated that the supply chains had been severely disrupted prior to the survey and that the timeliness scores had declined in absolute terms. Hence, the primary research question is: what level of stability does the logistics performance of the leading economies show over the various editions of the LPI from 2007 to 2023?

To answer this question, my study aims to:

- 1) Describe how the average LPI score of 12 leading economies changed between 2007 and 2023.
- 2) Check whether the change between 2018 and 2023 (before and after COVID-19) is big or small.
- 3) Check if the economies with high scores in 2018 kept their position in 2023.
- 4) Identify which economies had the most stable and the most unstable scores.
- 5) Show what the results mean for governments, companies, and future research.

Literature Review:

The World Bank established the LPI in order to assess how easy and efficient it is to transport goods both across borders and within a country. According to Arvis et al. (2018), the LPI is based on a survey of logistics professionals, and subsequent versions have included additional data. In the 2023 edition, the six components showed very similar loadings in the model used to calculate the overall score, meaning that each of them contributed in a similar manner (Arvis et al., 2023). The same report also revealed that all of the top 12 economies were high-income, that timeliness was generally the strongest component, and that customs was the weakest.

There are many studies which explain the importance of logistics performance. Limao and Venables (2001) discovered that bad infrastructure leads to higher transport costs and decreases trade, in particular for countries that are far from markets or have no coastline. Wilmsmeier et al. (2006) demonstrated that the features of a port have an impact on the cost of maritime transport. Hausman et al. (2005) connected logistics indicators, for example the time taken for shipments and the degree to which they can be predicted, to bilateral trade. Time is also costly on its own: Djankov et al. (2010) found that for every additional day of delay prior to shipping trade is reduced by at least one per cent. In their study of Spanish regions, Bensassi et al. (2015) stated that better logistics infrastructure is linked to higher exports. Taken together, these studies indicate that logistics is not just a technical issue but actually a significant component of economic performance.

The LPI is by no means perfect. Beysenbaev and Dus (2020) pointed out that it is based on subjective responses from a small number of respondents and proposed methods for improving it. Guner and Coskun (2012) looked at 26 OECD countries and compared the impact of economic and social factors on logistics performance; their findings indicate that social factors can be of great importance. Marti et al. (2017) applied data envelopment analysis to construct an alternative index by altering the weights of the various components. Therefore, the scores have to be considered in light of these limitations, for instance, because of the small differences among the countries at the top.

The World Bank has likewise altered the index, the new LPI 2.0 relying on objective tracking data from the fields of shipping, aviation, and postal services rather than relying on a survey (World Bank, 2026; Wikipedia contributors, 2026). As a result, 2023 becomes the final year of the long series based on surveys which began in 2007. The absence of a straightforward examination of whether the scores of the major economies actually changed over the entire period is what this study sets out to deal with, by means of simple comparisons of the total LPI scores for 12 economies.

Macroeconomic Stability, Governance, and Trade Flows

Logistics performance is fundamentally intertwined with broader macroeconomic variables and institutional stability. Understanding the interrelatedness of these complex macroeconomic factors frequently requires high technological analytic adeptness, such as vector autoregression models (Bejjani, Toros, Elia, & Jabbour Al Maalouf, 2024). For leading economies, maintaining top-tier logistics infrastructure depends heavily on robust country-level governance, which is similarly essential for sustaining banking and financial sectors in vulnerable environments (Athari, Saliba, Khalife, & Salameh-Ayanian, 2023; El-Chaarani, Abraham, Khalife, & Salameh-Ayanian, 2023). Furthermore, global trade flows, supply chain financing, and cross-border logistics remain heavily dictated by the structural dominance of the U.S. dollar (Beainy, Kamel, Subrahmanyam, & Younis, 2025) and shifting geopolitical equity perspectives between major economic powers, such as the USA and China (Kamel & Beainy, 2025).

Technological Disruption in Supply Chains: AI and Industry 4.0

To maintain or improve scores in specific LPI components like tracking, tracing, and customs, economies are increasingly relying on the digital transformation of their supply chains. Navigating the uncertainty and complex disruptions of Industry 4.0 operations requires the deployment of smart decision support systems (Subrahmanyam & Beainy, 2027) and strategic organizational redesign driven by competitive intelligence (Subrahmanyam & Saber, 2027). Cultivating a data-driven business culture utilizing advanced business analytics directly influences organizational success and product delivery efficiency (Azoury, Subrahmanyam, & Sarkis, 2024), while leveraging big data analytics and knowledge management significantly impacts overall firm performance within global supply networks (Subrahmanyam et al., 2024). Additionally, the integration of artificial intelligence—whose nonlinear investment dynamics profoundly impact broader economic growth (Athari, Sassine, Agyemang, Kirikkaleli, & Saliba, 2026)—is revolutionizing data transparency, internal controls, and audit practices across industries (Saber & Sassine, 2022; Sawaya, Khalil, Jabbour Al Maalouf, & Kaspard, 2026), provided that organizations can navigate the ethical challenges AI introduces into business culture (Diab & El Hajj, 2024).

Blockchain and SME Logistics Resilience

Beyond AI, blockchain technology is being leveraged to create sustainable circular business models that enhance the performance and transparency of small and medium-sized enterprises (SMEs) operating within complex logistics networks (Khalife, Subrahmanyam, & Farah, 2024). When supply chains face severe bottlenecks, SMEs often experience acute financial distress, requiring predictive modeling like the Altman Z-score (Elia, Toros, Sawaya, & Balouza, 2021) and alternative equity financing solutions (Rizk & Sassine, 2023) to survive. In extreme cases of macroeconomic or infrastructural collapse, businesses and consumers adapt by utilizing

accumulated business experience to boost entrepreneurial achievement (Chaanine, Mhanna, Verdie, & Beainy, 2023) or by pivoting to alternative financial resilience strategies, including cryptocurrencies and physical gold (Aoun, Youssef, & Jabbour Al Maalouf, 2026; Beainy & Kamel, 2026; Jabbour Al Maalouf, Sfeir, Nehme, & Mawad, 2026).

Green Logistics and Sustainability (ESG)

Finally, modern logistics performance is increasingly evaluated through the lens of sustainability and non-financial performance metrics (Kaspard, Khalil, & Kamel, 2025). High-income economies leading the LPI are simultaneously spearheading the transition toward green logistics by investing in renewable energy solutions (Subrahmanyam, Khalife, & El-Chaarani, 2024) and fostering green innovation within the circular economy via digitalization and stakeholder engagement (Kamel et al., 2026). Regulatory measures, such as environmental taxes and green electricity policies, play a significant role in improving environmental quality (Athari et al., 2025), while sovereign ESG practices impact broader firm profitability (Athari, Saliba, Abboud, & El-Bayaa, 2024). As supply chains green their operations, they must exhibit mindful sustainability leadership (Subrahmanyam & Sarkis, 2025) and actively avoid the reputational damage associated with greenwashing (Daou et al., 2025), ensuring that their infrastructure advancements align with global sustainability-oriented indices (Kaspard, Kamel, Khalil, & Beainy, 2026).

Methodology:

For my research, I designed a quantitative study based on existing data instead of conducting a new survey.

The economy is the unit of analysis and each economy is looked at in seven editions of the LPI. The design is descriptive in that it indicates whether or not the scores changed but does not attempt to explain the reasons for the changes.

The LPI scores and rankings are those published by the World Bank for the editions of 2007, 2010, 2012, 2014, 2016, 2018 and 2023 (Arvis et al., 2018, 2023); the scores were obtained from the compiled table on Wikipedia (contributed by Wikipedia users in 2026), which itself reproduces the World Bank's results. In order to verify the data, I compared the 2023 scores of the three leading economies—Singapore at 4.3, Finland at 4.2, and Denmark at 4.1—with those given in the World Bank report (Arvis et al., 2023) and found that they were the same.

The sample includes 12 economies: Austria, Belgium, Canada, Denmark, Finland, Germany, Japan, the Netherlands, Singapore, Sweden, Switzerland, and the United Kingdom. These are the economies which have a complete series in all seven editions of the compiled table. Ten of them ranked in the top ten in 2018 and the other two (Switzerland and Canada) were in the top ten in

2023. Hence, the sample is a convenience sample of high-income economies and not a random one.

The key factor is the LPI score, this score ranging from 1 to 5 (it had two decimal places until 2018 and one decimal place from 2023). Additionally, I included the rank of each economy in each edition, the change (calculated as a later score minus an earlier score, a positive value indicating improvement), and stability, which indicates the extent to which the score of an economy rises and falls over the seven editions.

I carried out the analysis in a straightforward manner by means of simple calculations. Firstly, I determined the average, the lowest, the highest, and the range of the scores for each edition. Secondly, I compared the score of each economy in 2018 with its score in 2023 and also its 2007 score with its 2023 score in order to find out which economies had improved, which had declined, and by how much. Thirdly, I looked at the rankings in 2018 and in 2023 to see whether the economies occupying the top positions had retained them. Fourthly, I assessed how much the scores of each economy had changed from one edition to another in order to identify the most stable and the most unstable economies. Lastly, I examined the general trend of the scores of each economy over time (whether they had been going up, going down, or remaining almost unchanged).

There are certain limitations to the method. Since the 2023 scores have one decimal place and the earlier ones have two, there may be a small rounding error in the changes. Moreover, the sample is small (there being 12 economies), and therefore the results cannot be applied to the other 139 economies in the 2023 LPI. Finally, the 2023 ranks include ties; for instance, four economies have rank 3.

Results:

The average LPI score of the 12 economies stayed in a narrow band in all editions. Table 1 shows the average, the lowest, the highest, and the range for each edition. The group did not move much as a whole, but the economies became more different from each other in the last edition.

Table 1

Average LPI score of the 12 economies by edition

Edition	Average	Lowest	Highest	Range
2007	4.01	3.82	4.19	0.37
2010	3.96	3.76	4.11	0.35
2012	3.95	3.80	4.13	0.33
2014	3.90	3.62	4.12	0.50
2016	4.06	3.82	4.23	0.41
2018	4.00	3.73	4.20	0.47
2023	4.04	3.70	4.30	0.60

Note. Scores are on a scale from 1 to 5. Source: World Bank LPI data, author's calculation.

When I looked at each economy between 2018 and 2023, six improved and six declined. Table 2 shows the scores, the change, and the ranks of each economy.

Table 2

LPI scores and ranks of each economy, 2018 and 2023

Economy	2018 score	2023 score	Change	2018 rank	2023 rank
Singapore	4.00	4.3	+0.30	7	1
Canada	3.73	4.0	+0.27	20	7
Finland	3.97	4.2	+0.23	10	2
Switzerland	3.90	4.1	+0.20	13	3
Denmark	3.99	4.1	+0.11	8	3
Netherlands	4.02	4.1	+0.08	6	3
Austria	4.03	4.0	−0.03	4	7
Belgium	4.04	4.0	−0.04	3	7
Sweden	4.05	4.0	−0.05	2	7
Germany	4.20	4.1	−0.10	1	3
Japan	4.03	3.9	−0.13	5	13
United Kingdom	3.99	3.7	−0.29	9	19

Note. A positive change means the score improved. Ranks in 2023 include ties.

When I looked at the scores over time, the changes were too small to count as real differences. This was the case from 2018 to 2023 and also from 2007 to 2023. The scores were not identical in every edition, but overall, the group's results stayed nearly the same.

Economies that had high scores in 2018 did not keep their advantage in 2023. The scores and ranks from 2018 did not match up with those from 2023, so doing well in the past did not mean doing well later.

Looking at stability, Japan's scores changed the least, followed by Germany, the Netherlands, and Belgium. Finland and Austria had the most ups and downs. The changes for each country were small. Finland improved the most over the whole period, and the United Kingdom dropped the most, but these changes were not strong enough to count as real trends.

Finally, I checked the 2023 results for the top three economies, based on the World Bank report (Arvis et al., 2023). Singapore had the best infrastructure. The hardest areas were arranging international shipments for Singapore and Denmark, and customs for Finland. For all three, infrastructure and tracking and tracing were the strongest points, while international shipments were the weakest. I did not look at the other economies' components.

Discussion and Conclusion:

This study finds that the logistics performance of top economies can change over time. The group's average score stayed nearly the same from 2007 to 2023 (4.01 to 4.04), showing little overall change. However, within this steady average, individual countries shifted a lot. Between 2018 and 2023, half improved while half declined, and some countries moved up or down by as many as 13 places in the rankings.

For policymakers and practitioners, the key point is that being a leader is not guaranteed. A country at the top cannot expect to stay there, and those in the middle can rise quickly, as seen with Canada and Switzerland. Since the differences between top economies are often small—about 0.1 points—governments and companies should look at the actual scores before reacting to small changes in rank. The component scores show that even the best economies have weaker areas, like international shipments or customs, which could be improved. One possible reason some countries dropped in 2023 is the supply chain disruption after COVID-19, as described by Arvis et al. (2023), but my data does not confirm this.

For research, the results support the idea that the LPI should be read together with its limits, as discussed by Beysenbaev and Dus (2020) and Martí et al. (2017). Studies that use the LPI in trade or growth models should remember that the scores of top economies can change between editions without a clear trend. My results can also work as a baseline for future work with the new LPI 2.0 (World Bank, 2026).

There are some limitations to this study. The sample is small, not random, and only includes high-income countries, so the findings do not apply to developing countries. Rounding the 2023 scores introduces a small error in the change calculations. I only used the overall score and did not look into the reasons behind the changes, such as new infrastructure, customs reforms, or the effects of the pandemic. With just 12 economies, small but real changes might not be visible, so the results show "no clear evidence of change" rather than "proof of no change."

Future research could include all 139 economies from the 2023 LPI and compare different income groups. Researchers could also look at the six components separately and use advanced methods to test how factors like GDP per capita, port investment, or digital customs systems affect LPI scores. Another helpful step would be to link the survey-based data from 2007 to 2023 with the objective indicators in LPI 2.0 to see if both approaches show similar results. This study shows that top logistics performance can change, so the next question is what helps it remain high.

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