Research

The U.S. Port Competition Problem

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Executive Summary

- U.S. ports have struggled to compete with other developed countries for decades, underperforming comparable ports in nearly every major economy; only eight of the top 100 ports worldwide are in the United States.
- This analysis shows that U.S. ports take significantly more time to move cargo, are less technologically advanced, and have longer wait times that delay imports and exports.
- Policymakers should be aware that the recent East and Gulf Coast port strike negotiations threaten to worsen the state of U.S. ports by raising the cost of labor by 61.5 percent while at the same time limiting productivity with restraints on automation, ultimately increasing costs for U.S. consumers and businesses that rely on trade.

Introduction

U.S. ports have struggled to compete with other developed countries for decades, underperforming comparable ports in nearly every major economy. Only eight of the top 100 ports operate in the United States. In part, this is a consequence of the United States' lack of automation of its data systems and cargo equipment, variables for which U.S. ports score an average of 3.7 out of 10 in rankings, while competitors score an average of 7.9. These shortcomings contribute to the issue of U.S. ports taking significantly more time to move cargo, as well as their longer wait times that delay imports and exports when compared to other top 25 economies.

Whatever issues underlay U.S. ports' inability to modernize with updated technology, they are not likely to improve any time soon. In recent weeks, the International Longshoremen's Association (ILA) of unionized dockworkers on the East and Gulf Coasts struck a "win-win"

deal with the United States Maritime Alliance (USMX) that prevented a port shutdown. The agreement includes a 61.5-percent pay increase over six years, more than twice the average annual increase of the private sector. This would result in many ILA workers having an hourly wage 50 percent higher than the average hourly wage of the private sector. Wage increases this large can be supported with comparable productivity gains, usually achieved through technological innovation, automation, and more efficient systems that drive down operation costs or increase output. These technological innovations will not be forthcoming, however. While the specific contract has not yet been published, the union is expected to have extracted concessions from USMX that forbid automation of port processes in order to preserve union jobs. With rising labor costs, and the inability to offset those costs with additional innovation, U.S. ports are unlikely to compete with international peers in terms of speed, efficiency, and cost, and are likely to pass higher operation costs on to consumers and businesses that rely on ports for goods.

U.S. Port Performance

In 2023, only eight U.S. ports ranked in the top 100 most efficient ports globally, with the port of Charleston, in slot 53, ranking as the best performing in the United States according to both the World Bank Group and S&P Global. This may be in part due to less funding of transportation and infrastructure compared to other developed countries or because U.S. ports are far less technologically advanced than their foreign counterparts. When comparing the top 10 largest container ports in the United States to various ports from around the world, it becomes clear there is a significant difference in the level of automation. Figure 1 shows that U.S. ports lag not only in physically automated equipment but also in non-physical data systems and cutting-edge technologies. Digital twin technologies, for example, help monitor physical objects in order to generate more efficient port processes. In terms of technology and automation, U.S. ports have an average score of 3.7 while other countries score an average of 7.9, more than twice as high.

Figure 1: Ranking of U.S. Port and Foreign Port Automation and Technology Adoption

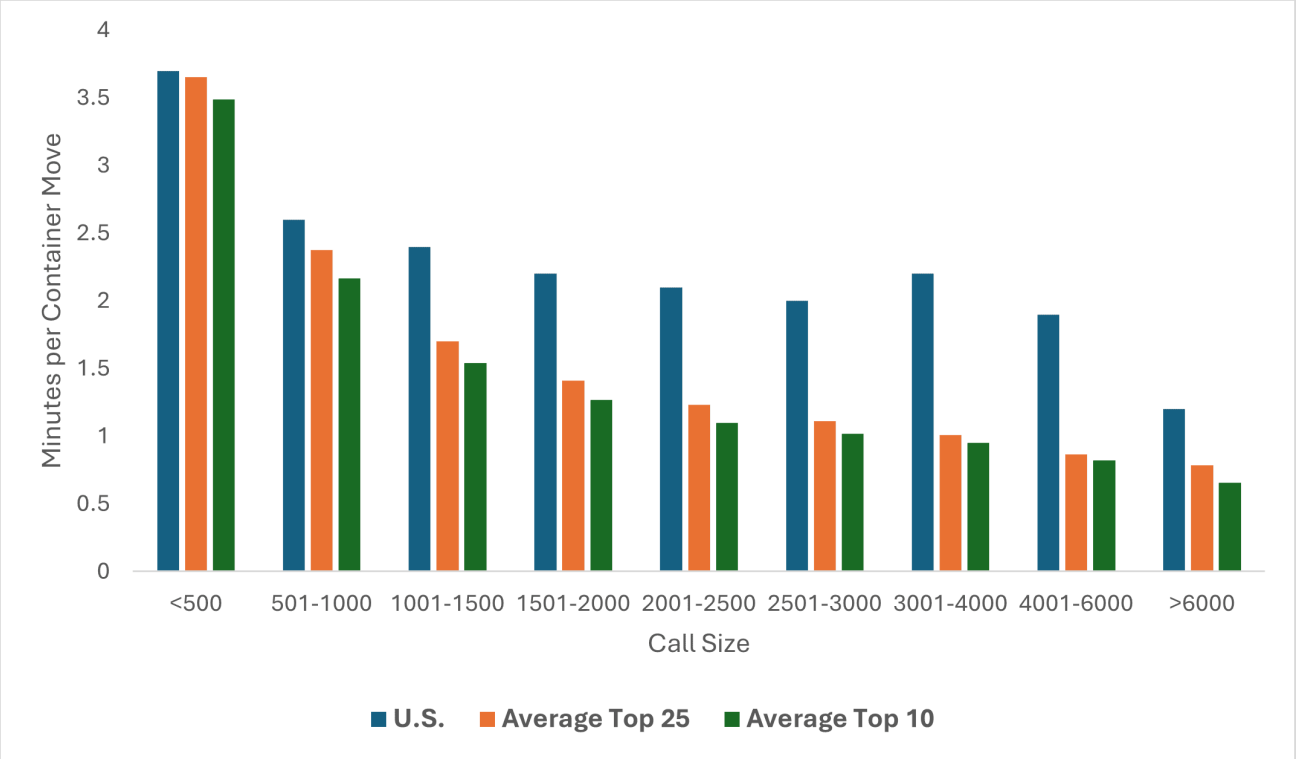
Technology	**U.S. Ports**	**Foreign Ports**
Process Automation Data Systems and Technologies		
Automated Gate Systems	10	10
Port Community Systems	8	10
AI and Machine Learning Systems	5	10

Digital Twin Technologies	1	9
Blockchain	0	9
Internet of Things Systems	7	9
Automated Cargo Handling Equipment		
Automated Gantry Cranes	4	9
Automated Guided Vehicles	1	7
Remotely operated Ship-to-Shore Cranes	0	6
Automated Straddle Carriers	1	0
Average Score	**3.7**	**7.9**

Source: United States Government Accountability Office

Figure 2 is a comparative analysis of U.S. ports and other top 25 countries by total number of port calls. It displays the amount of time it takes to move a container depending on the call size, or the total capacity of a container ship. For example, it takes U.S. ports roughly 3.7 minutes per container for a call size less than 500, which is in line with the average time it takes ports in comparable countries. U.S. ports, however, take much longer than foreign ports when the call size is larger. For instance, U.S. ports take 70 percent longer to move containers if the call size is between 2001 and 2500. Refer to Figure 10 in the appendix for more information.

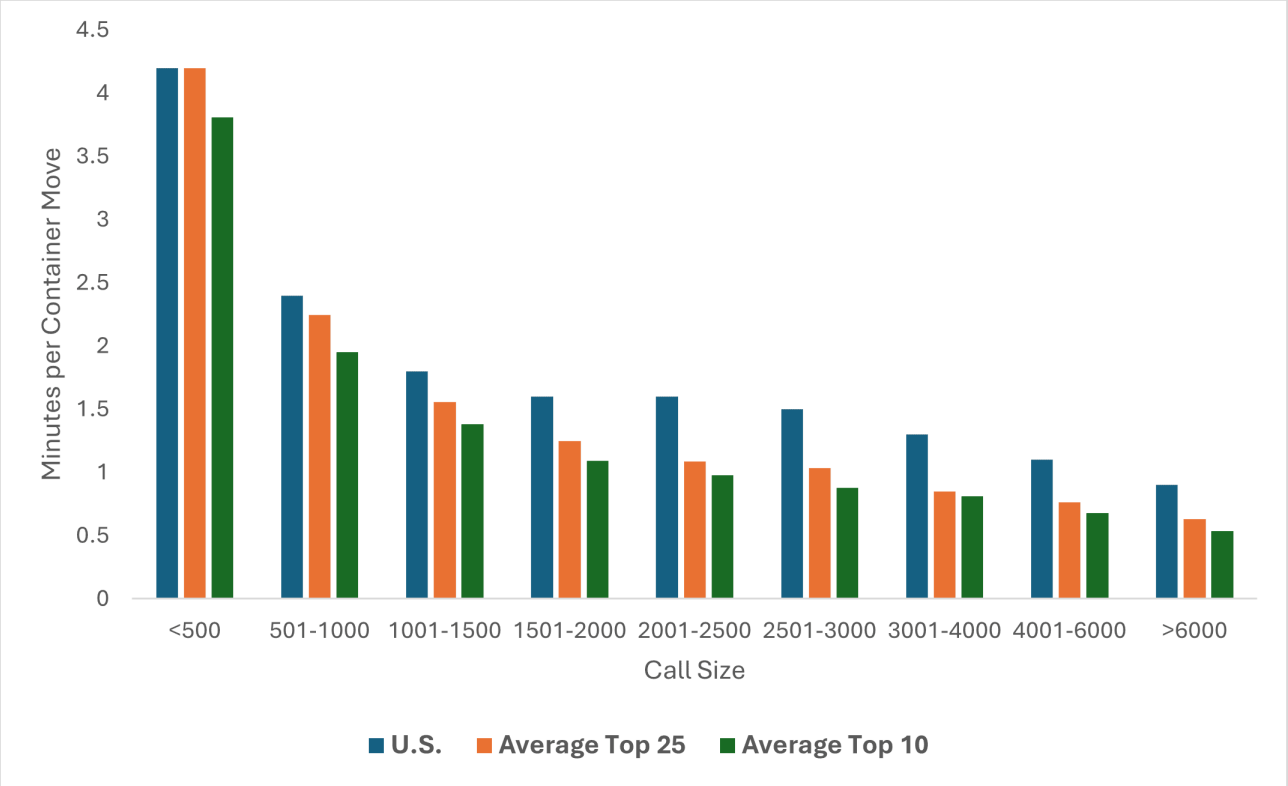
Figure 2: Minutes per Container Move by Call Size of Top 25 Countries (by Port Calls) 2022



Source: United Nations Trade and Development Review of Maritime Transport 2023

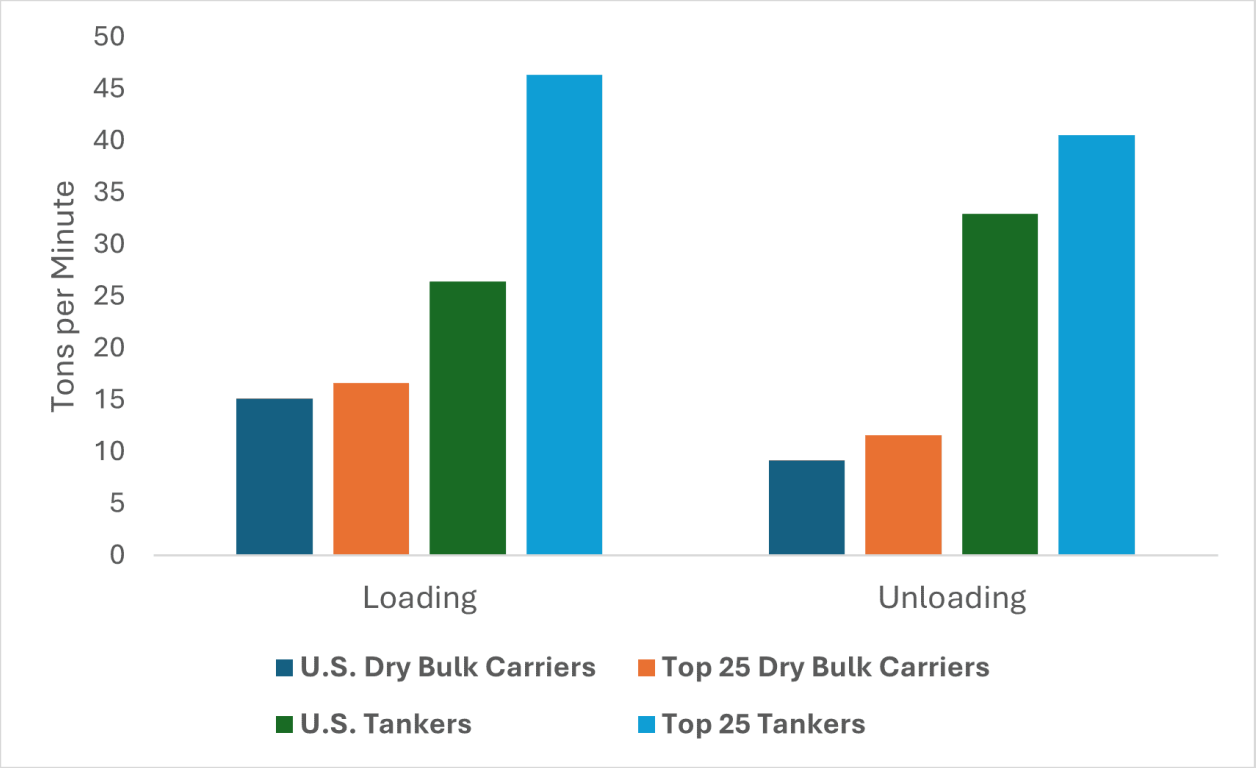
Even when examining each of the top 25 countries individually, the United States only performed better in 8 percent of categories in 2022, half of which were with call sizes of less than 500. Looking at the top 10 countries, the United States performs better in only one category out of 81. As Figures 3 and 11 show, there was slight improvement in 2023, but the United States continued to remain behind foreign ports, performing better in just 17 percent of categories when compared to the top 25 countries. It is worth noting, however, that the United States did improve its performance between 2022 and 2023 more than the average improvement of both the top 10 and top 25 countries in most call sizes, although there was more room for the United States to improve.

Figure 3: Minutes per Container Move by Call Size of Top 25 Countries (by Port Calls) 2023



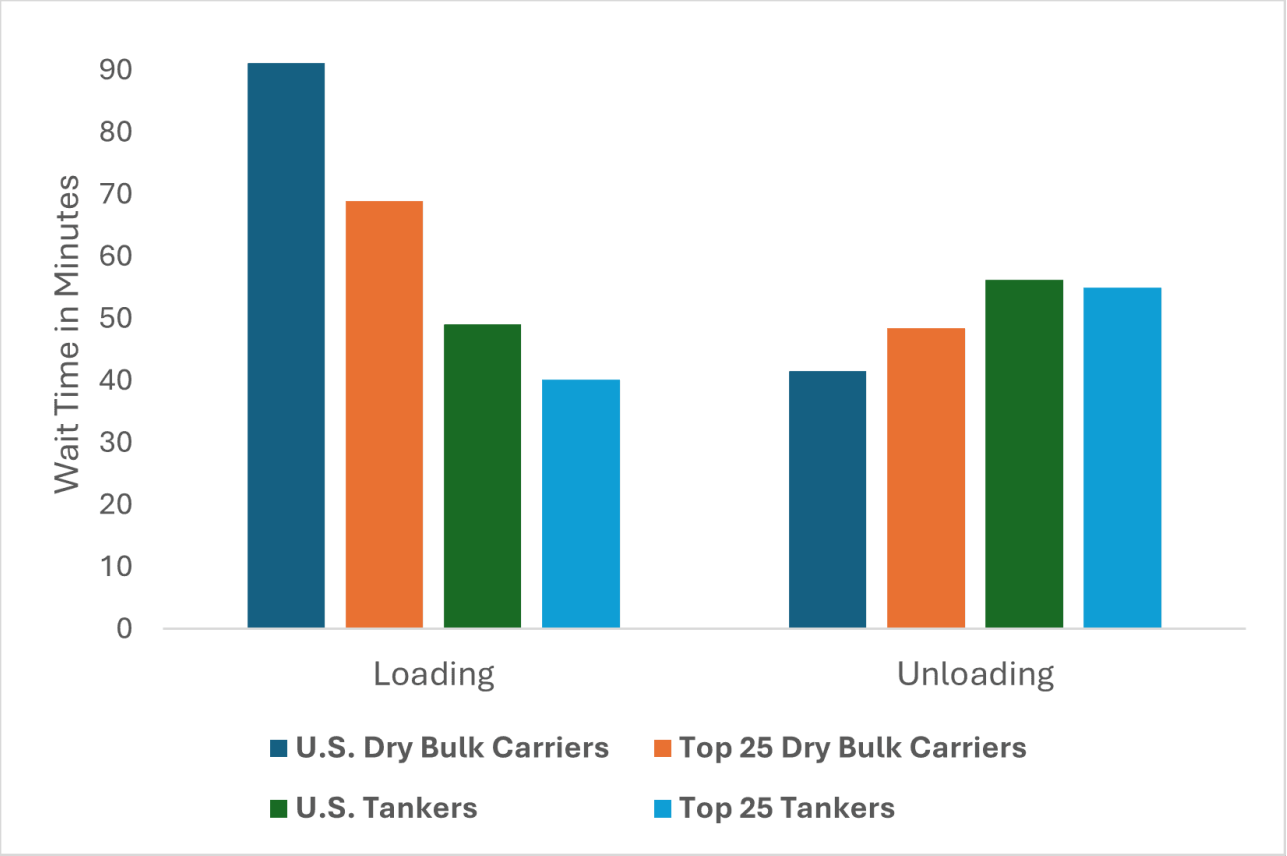
Source: United Nations Trade and Development Review of Maritime Transport 2024

Figure 4: 2023 Tons Loaded and Unloaded per Minute by Ship Type



Source: United Nations Trade and Development Review of Maritime Transport 2023

Figure 5: 2023 Average Loading and Unloading Wait Times by Ship Type



Source: United Nations Trade and Development Review of Maritime Transport 2023

Figures 4 and 5 display further the underperformance of U.S. ports in terms of tons loaded and unloaded, as well as the average loading and unloading wait times of certain ship types. Both dry bulk carriers and tankers loaded and unloaded fewer tons per minute at U.S. ports compared to the ports of the other top 25 countries. Furthermore, the average wait times to load and unload cargo at U.S. ports were longer than at foreign ports. The only area where the United States performed better than the top 25 economies concerned U.S. dry bulk carriers, which had a faster unloading time (which is counteracted by the far longer loading time).

The Impact of Unions

For East and Gulf Coast ports, there are two main players: the ILA and USMX. The ILA is the union that represents roughly 45,000 dockworkers. USMX is the association that represents 40 different employers, terminal operators, and shipping companies that operate on the East and Gulf coasts. The two parties sign a master contract, the document codifying the agreement between the ILA and USMX, which governs wages, employment, benefits, and other conditions at U.S. ports. The contract typically lasts for six years and lays out union member pay scales and wage increases that employees can expect depending on their

level of experience. A similar structure governs the relationship on the West Coast between the International Longshore and Warehouse Union (ILWU) and port operators.

The previous master contract between the ILA and USMX expired on September 30, 2024, without a negotiated deal, leading to a three-day strike that delayed a final deal until January 2025. It is worth examining this contract, however, to understand wages and wage growth of ILA workers leading into the new contract. The ILA employee wage rates for the 2018 to 2024 contract are displayed in Figure 6 assuming each employee starts at a certain level of experience and stays for the entirety of the contract. See Figure 12 in the appendix for the official wage progression formula.

Figure 6: Hourly Wages of ILA Employees Between October 2018 and September 2024

Contract Year	New Employee	1 Year	2 Years	3 Years	4 Years	5 Years	6+ Years
2018 to 2019	$20	$20.00	$23.75	$23.75	$29.40	$29.40	$35.00
2019 to 2020	$20	$24.00	$24.00	$30.00	$30.00	$36.00	$36.00
2020 to 2021	$24	$24.00	$30.00	$30.00	$36.00	$36.00	$36.00
2021 to 2022	$24.25	$30.60	$30.60	$37.00	$37.00	$37.00	$37.00
2022 to 2023	$31.25	$31.25	$38.00	$38.00	$38.00	$38.00	$38.00
2023 to 2024	$31.90	$39.00	$39.00	$39.00	$39.00	$39.00	$39.00

Source: Master Contract of the United States Maritime Alliance and International Longshoreman's Association

Looking at Figure 6, a new hire at the beginning of the contract will start out earning $20 an hour but, if they stay until the end of the contract, they will be earning $31.90 an hour as they will no longer be considered a new hire by that point. Similarly, an employee who had already worked for four years at the beginning of the contract would go from earning $29.40 an hour to $39 an hour by the contract's completion.

Figure 7: Hourly Wage Growth of ILA Employees vs Other Employee Categories (October

2018 to September 2024)

Employee	Average	Median	Total
New ILA Employee	10.4%	2.1%	59.5%
ILA 1 Year	14.9%	20.0%	95.0%
ILA 2 Years	11.0%	2.6%	64.2%
ILA 3 Years	11.0%	2.7%	64.2%
ILA 4 Years	6.0%	2.7%	32.7%
ILA 5 Years	6.1%	2.7%	32.7%
ILA 6+ Years	2.2%	2.7%	11.4%
All Employees, Total Private	4.1%	4.2%	29.1%
Production and Nonsupervisory, Total Private	4.5%	4.3%	32.6%
All Employees, Transportation and Warehousing	3.8%	4.0%	26.8%
Production and Nonsupervisory, Transportation and Warehousing	4.7%	5.0%	33.7%

Source: Master Contract, Average Hourly Earnings of All Employees, Average Hourly Earnings of Production and Nonsupervisory, Average Hourly Earnings of All Employees in Transportation and Warehousing, Average Hourly Earnings of Production and Nonsupervisory in Transportation and Warehousing

Using Figure 6, the annual and total hourly wage growth for each employee can be determined and compared to other hourly employees in the United States over the same period. Figure 7 displays the average and median annual wage growth as well as the total wage growth over the course of the contract. It compares this wage growth to all private employees, all employees excluding supervisors, all transportation and warehousing employees, and all transportation and warehousing employees excluding supervisors. The best performing ILA workers were those with one year under their belt at the beginning of the contract as they averaged almost 15-percent wage growth each year or 95 percent from start to finish. The worst performing ILA workers were those with six or more years of experience at the beginning as they averaged 2.2-percent growth each year or just above 11 percent overall. By comparison, all private employees across the United States averaged 4.1-percent growth over the same contract year or roughly 29 percent over the six-year

period. This means that nearly all ILA employees had better average annual growth and better total growth than the typical U.S. hourly earner. Even when compared to a similar job category, transportation and warehousing, the ILA saw better wage growth.

Figure 8: Hourly Wage Difference Between ILA Employees and Other Employee Categories

Start of Contract	All Employees, Total Private	Production and Nonsupervisory, Total Private	All Employees, Transportation & Warehousing	Production and Nonsupervisory, Transportation & Warehousing
New Employees	-36.9%	-14.5%	-21.5%	-9.5%
1 Year	-36.9%	-14.5%	-21.5%	-9.5%
2 Years	-15.2%	3.6%	-2.3%	7.8%
3 Years	-15.2%	3.6%	-2.3%	7.8%
4 Years	6.9%	22.1%	17.4%	25.5%
5 Years	6.9%	22.1%	17.4%	25.5%
6+ Years	21.8%	34.6%	30.6%	37.4%
End of Contract	All Employees, Total Private	Production and Nonsupervisory, Total Private	All Employees, Transportation & Warehousing	Production and Nonsupervisory, Transportation & Warehousing
New Employees	-10.8%	4.8%	3.4%	8.2%
1 Years	9.4%	22.2%	21.0%	25.0%
2 Years	9.4%	22.2%	21.0%	25.0%
3 Years	9.4%	22.2%	21.0%	25.0%
4 Years	9.4%	22.2%	21.0%	25.0%
5 Years	9.4%	22.2%	21.0%	25.0%
6+ Years	9.4%	22.2%	21.0%	25.0%

Source: See Figures 6 and 7

Figure 8 examines the percentage difference in hourly wages between an ILA employee and other employee groups at both the beginning and end of the 2018 to 2024 contract. For

example, at the start of the contract, newly hired ILA employees have an hourly wage that is roughly 37 percent below the average hourly wage of all private employees in the United States. If, however, this same newly hired ILA employee stayed until the end of the contract, they would have a higher hourly wage than most other employee groups. In contrast, a six-year ILA employee at the beginning of the contract makes nearly 22 percent more on an hourly basis when compared to the average hourly wage of all private employees. At contract's end, this same six-year employee will make a little over 9 percent more than the average hourly wage of all private employees.

This analysis shows that many ILA workers have higher hourly wages and higher wage growth when compared to other employees in the United States. Yet these premium wages have not translated into more productive ports when compared to foreign competitors. Solely looking at U.S. ports over time, wait times have not improved and neither has the amount of cargo being handled. In fact, the dwell (or wait) times at East and Gulf Coast ports grew by 40 percent from 2018 to 2022. Even factoring in supply chain disruptions, the value of imports rose around 27 percent during the same contract period, which is lower than the wage growth of most ILA employees. The same story holds for total container volume.

The New Contract Threatens Port Performance Further

On January 8, several days before potential strikes could have resumed, a deal was reached that will include a 61.5-percent wage increase over six years and therefore the gap between wage rates determined by market forces and ILA wages will only grow wider. This averages out to an 8.3 percent annual wage increase every year, which will be about double the average wage growth of all private employees. Extrapolating the average wage growth between 2007 and 2024 as well as between 2018 and 2024, the range for potential wage growth of each employee category is listed in Figure 9. Many ILA workers will have higher average and total wage growth over the course of the new contract while it remains to be seen whether or not productivity will see similar growth.

Figure 9: Estimated Hourly Wage Growth of ILA Employees vs Other Employee Categories (2025 to 2031)

Employee	Average	Total
ILA 6+ Years	8.3%	61.5%
All Employees, Total Private	3.1% to 4.4%	20% to 29%
Production and Nonsupervisory, Total Private	3.3% to 4.8%	22% to 33%

All Employees, Transportation and Warehousing	2.7% to 4.0%	18% to 26%
Production and Nonsupervisory, Transportation and Warehousing	3.1% to 5.1%	20% to 35%

Source: Average Hourly Earnings of All Employees, Average Hourly Earnings of Production and Nonsupervisory, Average Hourly Earnings of All Employees in Transportation and Warehousing, Average Hourly Earnings of Production and Nonsupervisory in Transportation and Warehousing

Appendix

Figure 10: Minutes per Container Move Difference Between U.S. and Top 25 Countries in 2022

	<500	501-1000	1001-1500	1501-2000	2001-2500	2501-3000	3001-4000	4001-6000	>6000
U.S.	3.7	2.6	2.4	2.2	2.1	2	2.2	1.9	1.2
Average Top 25	3.7	2.4	1.7	1.4	1.2	1.1	1.0	0.9	0.8
Median Top 25	3.6	2.2	1.5	1.3	1.1	1.0	0.9	0.8	0.8
U.S. vs Average	1%	9%	41%	56%	70%	80%	118%	119%	53%
U.S. vs Median	3%	18%	60%	69%	91%	100%	144%	153%	60%

Source: United Nations Trade and Development Review of Maritime Transport 2023

Figure 11: Change in Container Move Time Between 2022 and 2023

	Change in U.S.	Change in Top 25	Change in Top 10
<500	14%	15%	9%
501-1000	-8%	-5%	-10%
1001-1500	-25%	-8%	-10%
1501-2000	-27%	-12%	-14%
2001-2500	-24%	-12%	-11%

2501-3000	-25%	-7%	-14%
3001-4000	-41%	-16%	-15%
4001-6000	-42%	-12%	-17%
>6000	-25%	-20%	-18%

Source: United Nations Trade and Development Review of Maritime Transport 2023, United Nations Trade and Development Review of Maritime Transport 2024

Figure 12: Wage Progression Formula of the Master Contract (Expires January 15, 2025)

Contract Years	10/01/18 09/30/19	10/01/19 09/30/20	10/01/20 09/30/21	10/01/21 09/30/22	10/01/22 09/30/23	10/01/23 09/30/24
* Wage Increase of $1.00 only for Highest Rate		*		*	*	*

If the employee has the following Qualified Anniversary Years of Service on October 1 of the Contract Years set forth above, the Employee's straight-time basic wage rate for each Contract Year of this Master Contract will be:

0	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
1	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
2	$23.75	$24.00	$24.00	$24.25	$24.50	$24.75
3	$23.75	$24.00	$24.00	$24.25	$24.50	$24.75
4	$29.40	$30.00	$30.00	$30.60	$31.25	$31.90
5	$29.40	$30.00	$30.00	$30.60	$31.25	$31.90
6 or More	$35.00	$36.00	$36.00	$37.00	$38.00	$39.00

Source: Master Contract of the United States Maritime Alliance and International Longshoreman's Association