

Texas trade in forest products industry

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ABSTRACT

Keywords

forestry, international trade, paper and pulp market, solid wood market, tariffs and trade policy

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Texas boasts abundant forest resources, providing substantial economic and ecological benefits statewide. This study examines the trends in forest product trade within Texas over the past two decades, focusing on key disruptions during this period. The analysis categorizes the forest products industry into two main markets: solid wood and paper and pulp, further dividing the industry into five core sectors. The findings indicate that Texas operates as a net importer of solid wood and wood furniture products while serving as a net exporter of wood pulp and, paper and paperboard products. Both import and export values have generally shown a gradual increase over time. Notably, Mexico emerged as Texas's primary trade partner for both imports and exports in 2023. Additionally, Texas ranks as the second-largest exporter of paper and paperboard products nationally while also being the second-largest importer of solid wood products and wood furniture products. The study highlights the profound impact of the COVID-19 pandemic response on Texas's trade dynamics, emphasizing the crucial need for ongoing monitoring of trade policies and international relationships. These factors have the potential to exert significant influence on Texas's trade landscape in the foreseeable future.

INTRODUCTION

Texas has more than 59.9 million acres of forestland, of which 13.2 million acres¹ are classified as productive timberland (USDA Forest Service 2023). Recent data highlights that Texas's harvest of timber for industrial use in the production of wood products was 622.1 million cubic feet², with the majority being pine timber (579.0 million cubic feet). From this raw material, the production of sawlogs, pulpwood, and composite panel were 289.8 million cubic feet, 128.8 million cubic feet, and 123.2 million cubic feet, respectively (USDA Forest Service 2024).

The Texas forest sector directly contributed \$21.4 billion to the Texas economy in terms of industry output, providing employment for over 68,000 individuals and a payroll totaling \$4.3 billion. From the perspective of total industry output, industries of solid wood products and paper and paperboard products contributed to the Texas forest sector, with 48 percent and 49 percent, respectively (Texas A&M Forest Service 2023). In addition, the total value of Texas's forest product exports and imports in 2023 were \$2.0 billion and \$4.7 billion, respectively (US Census Bureau 2024). Please note that all amounts referenced in this article are in U.S. dollars.

Given the abundant forest resources as well as its contribution to the state's economy, this study analyzes the trends within Texas's forest products trade. The trade data was collected from the U.S. Census Bureau, Economic Indicators Division. Based on the Harmonized Tariff Schedule (HTS) from the 2023 HTSA Revision 2, the forest products industry includes five sectors in total: wood chemicals (Chapter 38 - Miscellaneous chemical products), solid wood products (Chapter 44 - Wood and articles of wood; wood charcoal), wood pulp (Chapter 47 - Wood pulp Etc; Recovd (waste & Scrap) ppr & pprbd), paper and paperboard products (Chapter 48 - Paper & paperboard & articles), and wood furniture (Chapter 94 - Furniture; bedding, mattresses; luminaries, light fixtures; prefab). Among five categories, Chapter 47 and Chapter 48 can be classified in the paper and pulp market; while Chapter 38, Chapter 44, and Chapter 94 can be classified into the solid wood market. The current article will focus on these two markets.

It is important to note that only certain products from Chapters 38 and 94 are classified as forest products. In particular, wood chemicals comprise wooden commodities found in Chapter 38

¹ 1 acre = 0.404686 hectare

² 1ft³ = 0.02832m³

(Miscellaneous chemical products), namely 3803, 3804, 3805, 3806, and 3807. Similarly, the furniture encompasses only wooden commodities from Chapter 94 (Furniture; bedding, mattresses; luminaries, light fixtures; prefab), specifically 940330 (Wooden office furniture, except seats), 940340 (Wooden kitchen furniture, except seats), 940350 (Wooden bedroom furniture, except seats), 940360 (Wooden furniture, Nesoi), 940381 (Furniture of bamboo or rattan, Nesoi), 940382 (Furniture of bamboo, Nesoi), 940383 (Furniture of rattan, Nesoi), 940391 (Wooden parts of other furniture), and 940610 (Prefabricated buildings of wood). Table 1 shows the classification of forest products based on the HTS code.

Table 1. Harmonized system codes used to classify each forestry product.

Product Description	HS Code Classification
Miscellaneous Chemical Wood Byproducts	3803; 3804; 3805; 3806; 3807
Solid Wood Products	44
Wood Pulp	47
Paper and Paperboard	48
Wood Furniture	940330; 940340; 940350; 940360; 940381, 940382; 940383; 940391; 940610

Note: For data definitions, classifications, and additional details, please visit USA Trade Online: <https://hts.usitc.gov/current>

TEXAS FOREST PRODUCTS TRADE

Total forest products trade

Exports

Figure 1 illustrates the quantity and value of Texas's forest products trade from 2008 to 2023. From an export perspective, the value of forest products exported from Texas has generally remained stable since 2008. In 2023, the total value of Texas's forest product exports reached \$2.0 billion (US Census Bureau 2024). Of this total, paper and paperboard products represented the largest share, accounting for 65 percent, with a value of \$1.3 billion. Solid wood products were the second-largest export category, valued at \$337.1 million. Other significant exports included wood pulp products (\$259.5 million), wood chemicals (\$52.6 million), and wooden furniture (\$50.6 million) (Figure 2a). In terms of export partners, the top five markets for Texas forest

products in 2023 were Mexico, Canada, the United Kingdom, China, and Finland (Figure 3a). Mexico was by far the largest export destination, representing 78 percent of Texas's forest product exports, with a value of \$1.6 billion. It was followed by Canada (\$157.5 million), the United Kingdom (\$66.2 million), China (\$45.7 million), and Finland (\$29.9 million).

Imports

Texas has seen a steady increase in forest products imports, rising from \$2.2 billion in 2008 to \$4.7 billion in 2023 (Figure 1). Overall, Texas has been a net importer of forest products since 2012. The period between 2019 and 2022 saw a sharp increase in imports, which surged by 81 percent, from \$3.7 billion in 2019 to \$6.7 billion in 2022. However, in 2023, Texas import value decreased by nearly 30 percent, dropping to \$4.7 billion. Among those forest products imported, solid wood products accounted for the largest share, representing 38 percent, with a value of \$1.8 billion. Wooden furniture was the second largest import category, valued at \$1.5 billion, or 32 percent. Paper and paperboard products came in third, with a value of \$1.2 billion. In addition, Texas imports of wood pulp and wood chemicals were valued at \$148.5 million and \$45.2 million, respectively (Figure 2b). In terms of trade partners, Texas's top five import partners for forest products in 2023 were Mexico, Canada, Vietnam, China, and Brazil (Figure 3b). Mexico was the source of imports, accounting for 22 percent of Texas's total, with a value of \$1.0 billion. This was followed by Canada (\$989.2 million), Vietnam (\$588.8 million), China (\$423.3 million), and Brazil (\$369.6 million).

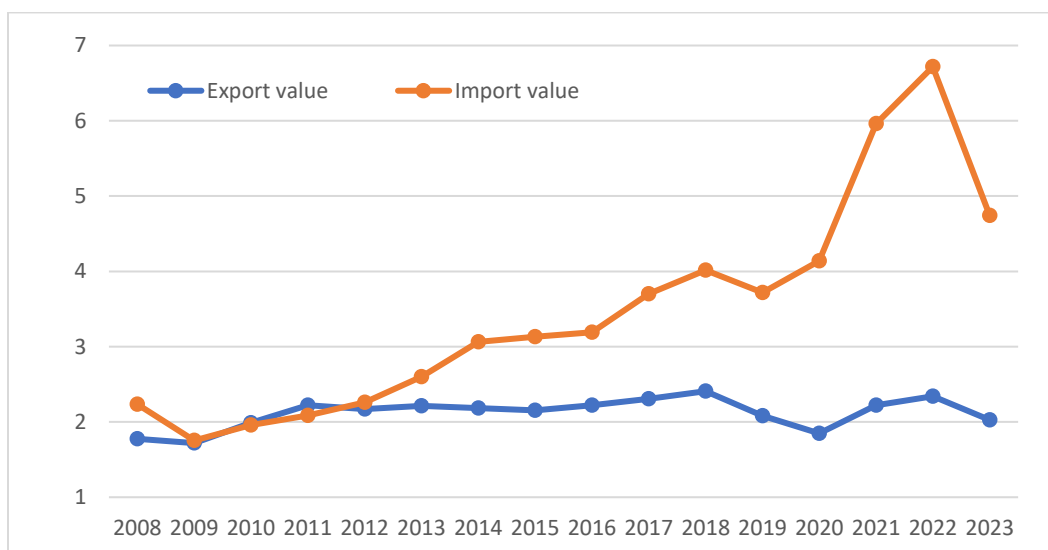


Figure 1. Total of forest products trade quantity and value in Texas from 2008-2023 (billion USD).

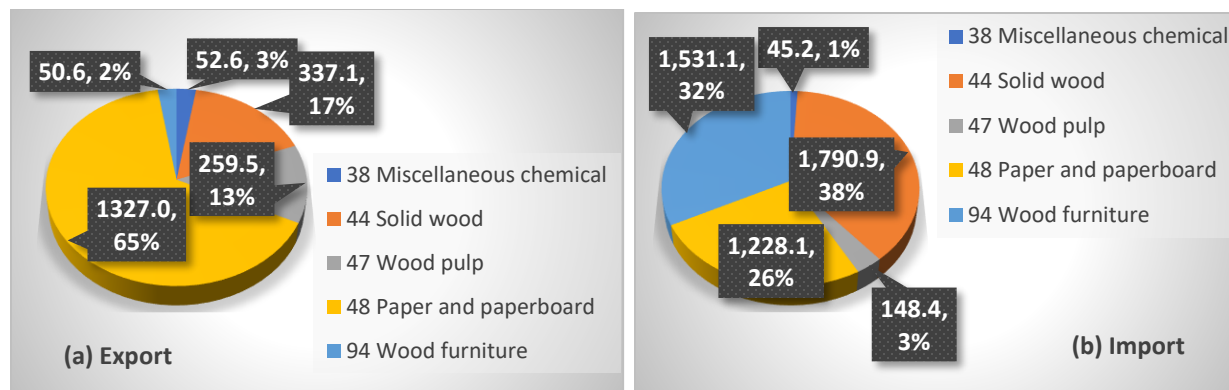


Figure 2. Texas forest products export (a) and import (b) values in 2023 (million USD).

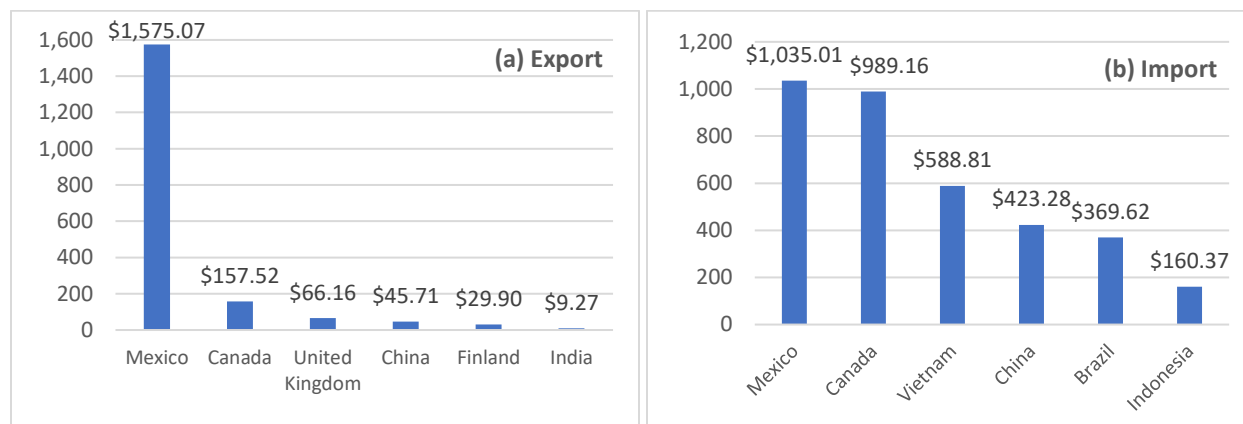


Figure 3. Texas top export (a) and import (b) partners in 2023 (million USD).

PAPER AND PULP MARKET

Paper and paperboard sector

Exports

In 2023, the value of Texas’s paper and paperboard exports was \$1.3 billion. From 2008 to 2011, Texas experienced a 24 percent increase in paper and paperboard export value, rising from \$1.3 billion in 2008 to \$1.7 billion in 2011. After 2011, the export value remained stable until 2018, but then began to decline, dropping to \$1.4 billion in 2020. Since 2021, there has been a 15 percent decrease in the export value, from \$1.6 billion in 2021 to \$1.3 billion in 2023 (Figure 4). On the national level, Texas was the second largest state for paper and paperboard exports in 2023, with \$1.3 billion in shipments, accounting for 8 percent of the national total. Georgia was the largest

state in this category, with a value of \$1.6 billion and accounting for 10 percent of national exports (Figure 5). Of Texas's paper and paperboard product exports, the majority - 85 percent, or \$1.1 billion - went to Mexico. Other top destinations included Canada (\$115.6 million), Honduras (\$7.7 million), China (\$7.7 million), and Japan (\$7.6 million).

Imports

In 2023, Texas imported \$1.2 billion worth of paper and paperboard products. The import value has increased gradually, representing a 103 percent increase from \$0.6 billion in 2008 to \$1.2 billion in 2023 (Figure 4). In terms of national imports, Texas was the largest importer of paper and paperboard products in the U.S. South, and the fifth-largest in the United States, accounting for seven percent of total national imports. Texas imported the largest share of its paper and paperboard products from Mexico (\$440.6 million), followed by Canada (\$247.3 million), China (\$159.0 million), Germany (\$87.7 million), and Vietnam (\$58.4 million).

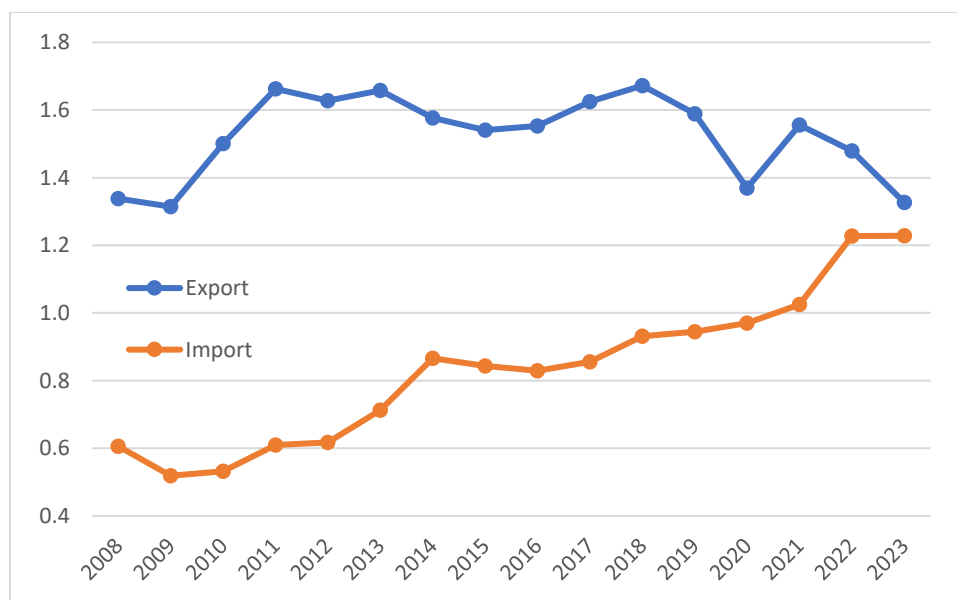


Figure 4. Texas trade value of paper and paperboard products from 2008-2023 (billion USD).

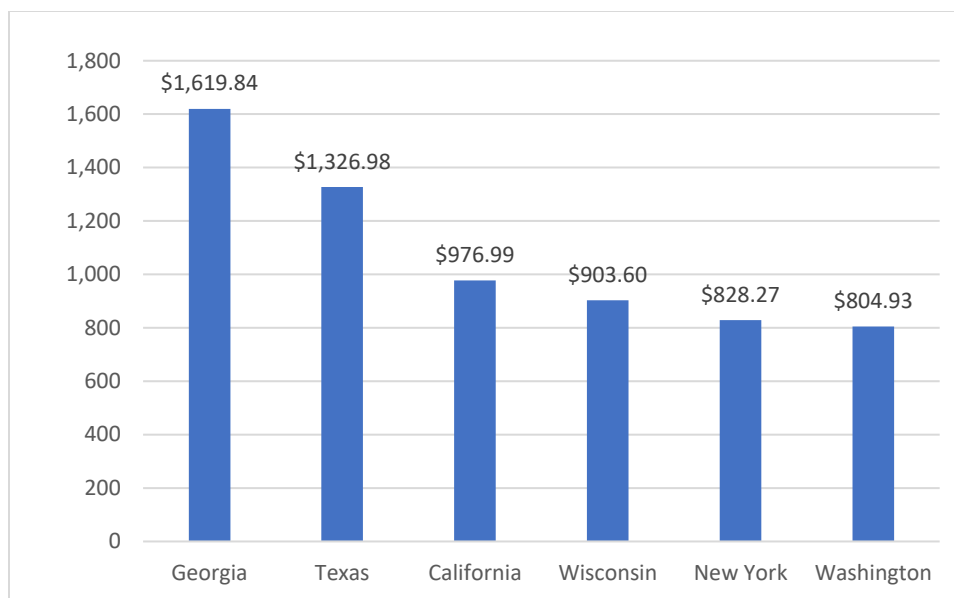


Figure 5. Top ten export states of paper and paperboard in 2023 (million USD).

Wood pulp sector

Exports

In 2023, the value of Texas's wood pulp exports was \$259.5 million. From 2008 to 2011, the export value increased by 52 percent, rising from \$188.2 million in 2008 to \$285.3 million in 2011. After 2011, the value remained stable until 2018, before declining to \$192.6 million in 2019. During the COVID-19 pandemic, Texas experienced a significant increase in wood pulp exports, with the value rising by 112 percent, from \$186.1 million in 2020 to \$393.8 million in 2022 (Figure 6). Nationally, Texas ranked as the eleventh-largest state for wood pulp exports in 2023, accounting for two percent of total U.S. exports. Mexico by far was the largest export destination, with a value of \$193.5 million, followed by China (\$25.7 million), Thailand (\$4.7 million), Indonesia (\$4.7 million), and Turkey (\$4.2 million).

Imports

In 2023, Texas imported \$148.5 million worth of wood pulp. Before 2016, Texas wood pulp import value remained relatively stable. However, it surged by 307 percent from \$50.6 million in 2016 to \$205.8 million in 2018. From 2018 to 2020, the import value decreased by 61 percent, dropping to \$80.0 million. Since the onset of the COVID-19 pandemic in 2020, Texas wood pulp imports have risen by 118 percent, reaching \$174.2 million in 2022 (Figure 6). On the national level, Texas ranked as the ninth-largest importer of wood pulp products in 2023, accounting for four percent of

total U.S. imports. the largest share of Texas wood pulp imports came from Brazil, accounting for 31 percent, or \$53.2 million, followed by Sweden (\$46.4 million), Canada (\$28.9 million), Uruguay (\$16.6 million), and Mexico (\$2.3 million).

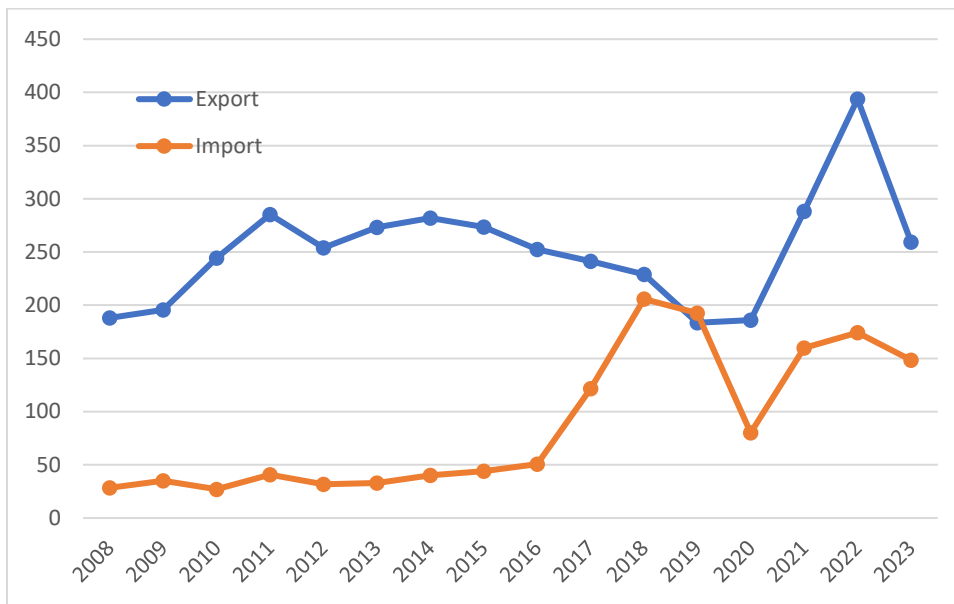


Figure 6. Texas trade value of wood pulp from 2008-2023 (million USD).

SOLID WOOD MARKET

Solid wood sector

Exports

In 2023, Texas’s solid wood export value was \$337.1 million. Since 2008, the export value of Texas solid wood products has remained stable (Figure 7). On the national level, Texas was the thirteenth-largest exporter of solid wood products, accounting for three percent of total U.S. exports. Of Texas’s solid wood exports, the majority - 66 percent or \$223.5 million worth, was shipped to Mexico, followed by the United Kingdom (\$60.5 million), Canada (\$16.3 million), China (\$9.9 million), and Dominican Republic (\$4.0 million).

Imports

In 2023, Texas's solid wood import value was \$1.8 billion, more than five times its export. From 2008 to 2018, Texas solid wood imports increased gradually by 81 percent, from \$0.8 billion in 2008 to \$1.2 billion in 2018. However, between 2019 to 2022, the import value surged by 144 percent, rising from \$1.2 billion to \$3.0 billion. After the COVID-19 pandemic, the import value returned to more typical levels, decreasing by 47 percent to \$1.8 billion in 2023 (Figure 7). Nationally, Texas was the largest importer of solid wood products in the south and the second-largest importer in the United States, after California, accounting for five percent of total U.S. imports. Among Texas solid wood imports, the largest share - 33 percent, or \$616.9 million - came from Canada, followed by Brazil (\$269.4 million), China (\$158.8 million), Mexico (\$152.4 million), and Vietnam (\$97.2 million).

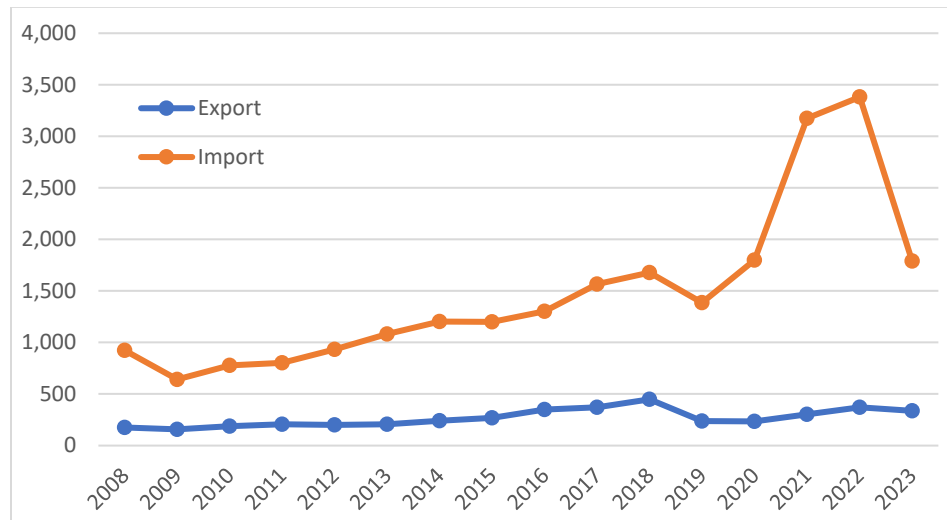


Figure 7. Texas trade value of solid wood products from 2008-2023 (million USD).

Wood furniture sector

Exports

In 2023, the value of Texas's wooden furniture exports was \$50.6 million. Since 2008, the export value of Texas wooden furniture has remained modest and stable (Figure 8). Of these exports, 58 percent or \$23.3 million worth, went to Mexico, followed by Canada (\$19.3 million), Tunisia (\$0.9 million), Germany (\$0.6 million), and the United Kingdom (\$0.5 million).

Imports

In contrast to the steady and modest trends in exports, Texas's wooden furniture imports have increased dramatically since 2008, including during the COVID-19 pandemic. From 2008 to 2022, Texas imports surged by 193 percent, rising from \$0.6 billion to \$1.9 billion. In 2023, Texas's wooden furniture import value was \$1.5 billion, more than thirty times its export value (Figure 8). Texas is the largest importer of wooden furniture in the U.S. South and the second-largest nationally after California, accounting for eleven percent of total U.S. imports. Among Texas's wooden furniture imports, Mexico was the largest source, accounting for \$439.7 million, followed by Vietnam (\$433.2 million), Malaysia (\$128.1 million), China (\$105.5 million), and Canada (\$96.0 million).

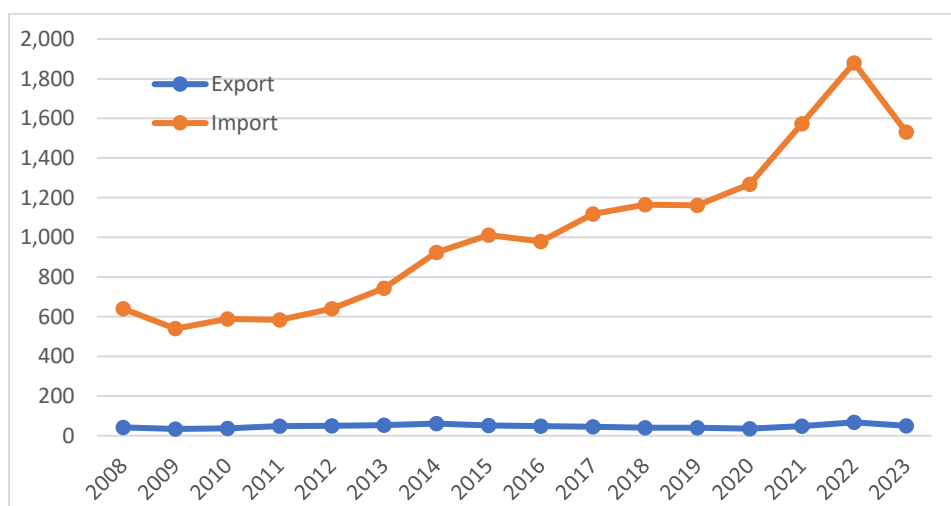


Figure 8. Texas trade value of wooden furniture from 2008-2023 (million USD).

Wood chemicals sector

Exports

Among the five categories, Texas's wood chemical trade is the smallest. In 2023, the value of Texas's wood chemical exports was \$52.6 million. The export value of wood chemical products has remained small and stable since 2008 (Figure 9). Of these exports, 57 percent or \$29.9 million worth, went to Finland, followed by Mexico (\$5.7 million), Canada (\$3.3 million), Belgium (\$2.5 million), and China (\$2.4 million).

Imports

In general, Texas wood chemical imports shows a similar trend and relatively small magnitude to those of its exports. In 2023, the value of Texas's wood chemical imports was \$45.2 million

(Figure 9). Of these imports, Malawi was the largest source of Texas’s chemical imports, accounting for \$28.9 million, followed by New Zealand (\$6.9 million), Greece (\$5.6 million), Argentina (\$0.9 million), and the Bahamas (\$0.6 million).

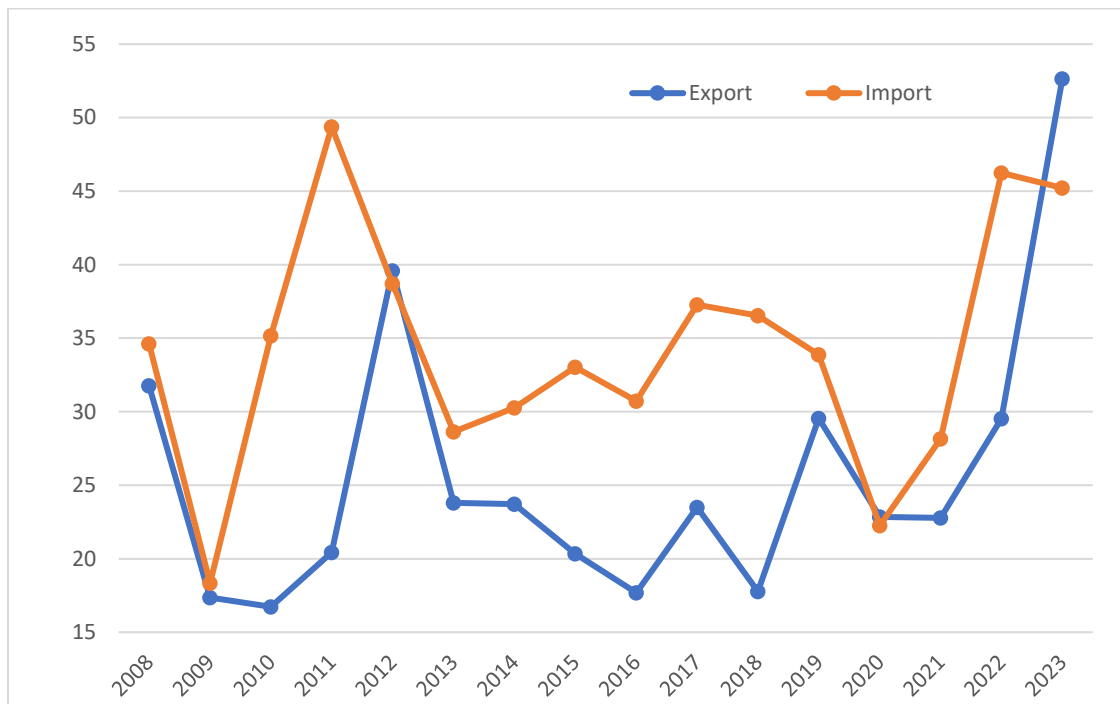


Figure 9. Texas trade value of miscellaneous chemical products from 2008-2023 (million USD).

Table 2. Texas top ten export economies by value (million USD and percentage of total by product market).

Rank	Solid wood products			Wood pulp products			Paper and paperboard			Wooden furniture			Miscellaneous Chemical		
	Economy	Value	%	Economy	Value	%	Economy	Value	%	Economy	Value	%	Economy	Value	%
1	Mexico	223.5	66	Mexico	193.5	75	Mexico	1129.1	85	Mexico	23.3	46	Finland	29.9	57
2	United Kingdom	60.5	18	China	25.7	10	Canada	115.6	9	Canada	19.3	38	Mexico	5.7	11
3	Canada	16.3	5	Thailand	4.7	2	Honduras	7.7	1	Tunisia	0.9	2	Canada	3.3	6
4	China	9.9	3	Indonesia	4.7	2	China	7.7	1	Germany	0.6	1	Belgium	2.5	5
5	Dominican Republic	4.0	1	Turkey	4.2	2	Japan	7.6	1	United Kingdom	0.5	1	China	2.4	5
6	Martinique	3.9	1	India	3.4	1	United Kingdom	4.7	<0.5	Trinidad and Tobago	0.5	1	India	2.3	4
7	Netherlands	3.5	1	Korea, South	3.1	1	Colombia	4.4	<0.5	Vietnam	0.4	1	Malaysia	1.8	3
8	Peru	1.8	1	Canada	3.0	1	India	3.5	<0.5	Nigeria	0.4	1	Colombia	1.2	2
9	Ireland	1.8	1	United Arab Emirates	2.7	1	Australia	3.3	<0.5	Cayman Islands	0.3	1	New Zealand	0.9	2
10	Brazil	1.2	<0.5	Italy	2.1	1	Singapore	3.2	<0.5	Austria	0.2	<0.5	United Kingdom	0.4	1

Table 3. Texas top ten import economies by value (million USD and percentage of total by product market).

Rank	Solid wood products			Wood pulp products			Paper and paperboard			Wooden furniture			Miscellaneous Chemical		
	Economy	Value	%	Economy	Value	%	Economy	Value	%	Economy	Value	%	Economy	Value	%
1	Canada	616.9	34	Brazil	53.2	31	Mexico	440.6	36	Mexico	439.7	29	Malawi New Zealand	28.9	64
2	Brazil	269.4	15	Sweden	46.4	27	Canada	247.3	20	Vietnam	433.2	28	Zealand	6.9	15
3	China	158.8	9	Canada	28.9	17	China	159.0	13	Malaysia	128.1	8	Greece	5.6	12
4	Mexico	152.4	9	Uruguay	16.6	10	Germany	87.7	7	China	105.5	7	Argentina	0.9	2
5	Vietnam	97.2	5	Mexico	2.3	1	Vietnam	58.4	5	Canada	96.0	6	Bahamas	0.6	1
6	Chile	83.3	5	Norway	0.7	<0.5	Brazil	46.5	4	Indonesia	57.1	4	Brazil	0.5	1
7	Indonesia	83.0	5	Germany	0.2	<0.5	Indonesia Korea, South	20.3	2	Italy	54.6	4	Haiti	0.4	1
8	Germany	71.2	4	Netherlands	<0.05	<0.5	India	17.6	1	India	40.5	3	Barbados	0.4	1
9	Cambodia	63.4	4	China	<0.05	<0.5	India	17.4	1	Poland	25.4	2	Dominica	0.3	1
10	Russia	17.4	1	Belgium	<0.05	<0.5	Italy	16.9	1	Lithuania	20.2	1	FSAL	0.3	1

Note: FSAL - French Southern and Antarctic Lands

DISCUSSION

From a broad perspective encompassing all forest products, Texas's industry is a net importer, with a value of \$2.7 billion in 2023 (Figure 1). While export values have remained relatively stable, imports have gradually increased from 2008 to 2020. From 2020 to 2022, the gap between imports and exports widened considerably, and the trend was exacerbated by the disruptions caused by the COVID-19 pandemic. During this period, the United States economy experienced a gradual recovery, supported by measures such as lower interest rates and enhanced unemployment benefits. At the same time, a surge in demand for forest products - driven by Texas' booming housing market - contributed to increased imports, especially in the solid wood and wooden furniture sectors, as these products became essential to construction efforts. Lumber cost, for instance, tripled in 2021, increasing the cost of building a 2,000-square-foot house (Zhang and Stottlemeyer 2021). However, in 2023, the import value dropped as the housing market began to cool.

On the other hand, the paper and pulp market stands out as a net exporter, driven by both the wood pulp sector and the paper and paperboard sector. Paper and paperboard exports are the largest

contributor to Texas's forest products industry, accounting for 65 percent (\$1.3 billion) of the total export value in 2023. Nationally, Texas ranked as the second-largest exporter of paper and paperboard products, holding ten percent of the U.S. market. In terms of trade partners, Mexico is by far the largest destination for Texas's paper and paperboard exports, accounting for 85 percent (\$1.1 billion). The proximity between Texas and Mexico provides significant logistical advantages, including lower transportation and labor costs, fostering trade between the two regions. Meanwhile, the impact of trade regulations and policies on U.S. forest products, such as the implementation of the United States-Mexico-Canada Agreement (USMCA), has bolstered trade between Texas and Mexico. Implementing the USMCA has provided tariff benefits, further strengthening trade with North American partners. Although wood pulp exports are smaller in value compared with paper and paperboard, they are on an upward trend, representing thirteen percent of Texas's total forest product exports.

Texas is generally a net importer of solid wood products. Compared with the trade value in solid wood and wood furniture sectors, the amount for wood chemicals remains relatively modest, with more or less balanced imports and exports. This wood market is dominated by solid wood products (Chapter 44), followed by wooden furniture (Chapter 94). Notably, Texas ranks as the largest importer in the south and the second-largest nationally after California for both solid wood and wooden furniture sectors. The trend in solid wood imports mirrors the overall pattern of Texas's imports, with steady growth followed by a sharp increase during the COVID-19 pandemic and then a return to normal levels in 2023. Canada played a significant role in this market among all trade partners, supplying 34 percent of solid wood products to Texas in 2023. Despite ongoing disputes over softwood lumber tariffs, the reduced tariffs resulting from the USMCA have helped maintain strong trade ties between Texas and Canada. However, future trade policy shifts, particularly ones related to softwood lumber, may impact Texas's import levels from Canada.

Texas's wooden furniture imports are particularly surprising, as they rank as the largest in the U.S. South and the second-largest nationally. The surge in wooden furniture imports is largely attributed to the housing market boom during the COVID-19 pandemic. Demand for new home construction and remodeling projects surged, driving up lumber prices and imports from 2020 to 2022. The housing market in the U.S. South – where Texas is a key player – has seen significant population growth, accounting for 87% (130 million) of annual population growth nationally in 2023. With its substantial population increase, Texas has attracted major corporations and further boosted

demand, including Tesla and HP. However, with rising U.S. interest rates, the housing market began to cool in the second quarter of 2022, leading to decreased imports of solid wood and wooden furniture in 2023.

Among all trade partners, Mexico and Vietnam were significant suppliers of wooden furniture to Texas, providing 29 and 28 percent of the market share in 2023, respectively. Mexico benefits from logistical advantages - lower transportation and labor costs - along with trade benefits from the USMCA. Meanwhile, Vietnam's dominance in the market stems largely from the U.S. trade policy. Prior to 2008, China was the largest supplier of wood bedroom furniture to the U.S., accounting for over half of total imports. However, the imposition of antidumping duties on Chinese wooden furniture led to a sharp decline in imports from China, which now accounts for only seven percent of the Texas market. Conversely, Vietnam has experienced exponential growth, capturing over 50 percent of the U.S. market share since 2016 and 28 percent of the Texas market (Zhang and Stottlemeyer 2024). Other Asian countries, such as Malaysia and Indonesia, have also expanded their exports, with Texas holding eight percent and four percent of their market shares, respectively.

CONCLUSIONS

This forest business note provides a comprehensive analysis of trends in Texas's forest products trade trends, covering five key product categories from 2002 to 2023. In summary, Texas's forest products industry has demonstrated a complex and evolving trade pattern over the past two decades. While Texas has largely been a net importer of forest products, driven primarily by solid wood and wooden furniture imports, it remains a significant exporter in sectors such as paper and pulp. The interplay of trade policies, such as the USMCA, and the disruptive effects of the COVID-19 pandemic response have played critical roles in shaping the state's forest products trade patterns. On the one hand, the COVID-19 pandemic played a pivotal role in amplifying trade imbalances, particularly in the housing and furniture markets, where demand surged, driving up imports and increasing prices. As the housing market cooled due to rising interest rates, Texas's import trends in 2023 reflect a return to more typical levels. On the other hand, key trade relationships, particularly with Canada and Mexico, continue to influence Texas's forest products

trade, with policies like the USMCA playing a critical role in shaping these interactions. The shift away from China as a major supplier of wooden furniture, coupled with Vietnam's rise, highlighted the transformation of global supply chains and the impact of U.S. trade policies.

Texas's forest products industry will likely continue to be impacted by evolving trade agreements and domestic economic conditions. Overall, Texas is a key player in the U.S. forest products market, and its trade dynamics will remain vital for understanding regional and national trends in the sector. Further exploration of additional influencing factors and long-term impacts is necessary to gain deeper insights into this dynamic industry.

CONFLICTS OF INTEREST

The authors confirm there are no conflicts of interest.

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