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CHOICES

AAEA Agricultural & Applied Economics Association

Volume 39. Quarter 3

Theme Overview: U.S. Agricultural Trade and ASEAN

Andrew Muhammad, Md Deluair Hossen, and Amanda M. Countryman

JEL Classifications: Q11, Q17, Q18
Keywords: Agriculture, ASEAN, International trade

The Association of Southeast Asian Nations (ASEAN) is an economic and political union comprising ten member countries: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. These countries have a combined total population of almost 700 million and a combined GDP of $3.2 trillion (Council on Foreign Relations, 2023). ASEAN has also played an important role in Asian economic integration—creating free trade agreements with Australia, New Zealand, China, India, Japan, South Korea, and Hong Kong—and is a member of the Regional Comprehensive Economic Partnership (RCEP), which includes all the above countries except India. ASEAN countries also have their own individual free trade agreements beyond the Asian region. For instance, Vietnam and the Philippines have agreements with the United Kingdom and the EU, respectively, and four ASEAN countries (Brunei Darussalam, Malaysia, Singapore, and Vietnam) are members of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The United States does not have a have free trade agreements with any ASEAN countries other than Singapore (Cimino-Isaacs, 2023). These widespread agreements present challenges for U.S. agricultural exports as ASEAN countries deepen trade with competing countries.

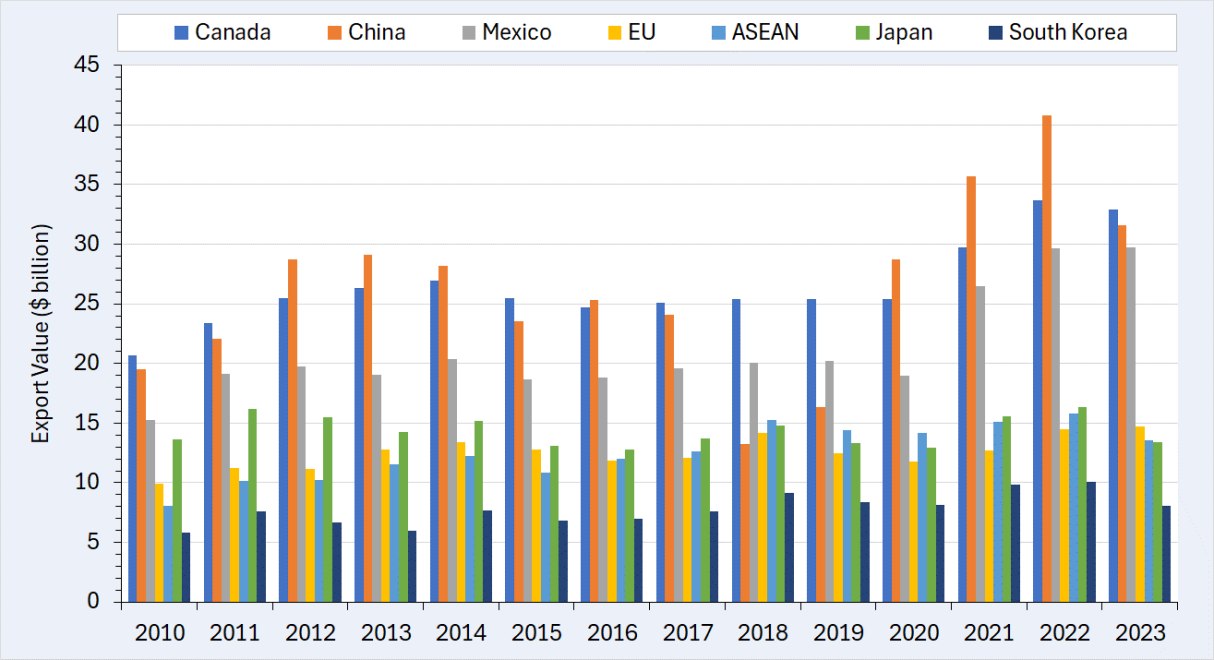
ASEAN countries are important to U.S. agricultural trade. (Lee and Jones, 2023). U.S. agricultural exports to ASEAN reached $15.8 billion in 2022 (includes related products like forestry and seafood products), placing ASEAN among the top five destinations for U.S. agricultural exports. In 2023, U.S. agricultural export sales to ASEAN were comparable to the EU and Japan and exceeded South Korea (See Figure 1). In fact, three ASEAN countries are among the top 15 destinations for U.S. agricultural exports: the Philippines (9th largest destination in in 2023), Vietnam (10th), and Indonesia (12th). ASEAN countries account for a major share of U.S. exports of soybeans, cotton, wheat, soybean meal, dairy products, animal feeds, distiller grains, food preparations, fresh fruits, tree nuts, and forest products. In 2023, Indonesia ranked 5th for soybeans, the Philippines ranked 2nd for wheat, and Vietnam ranked 3rd and 7th for cotton and forest products, respectively (U.S. Department of Agriculture, 2024).

Although agricultural tariffs are relatively low in ASEAN when compared to other countries, the lack of significant trade agreements means that the United States faces some market access and regulatory obstacles in the region. U.S. agricultural exports are subject to tariffs that range, on average, from around 3% in Malaysia to almost 30% in Thailand. Products such as beverages, tobacco, dairy, fruits and nuts, and sugar products are subjected to effective tariff rates exceeding 10%. Additionally, the proliferation of nontariff measures (NTMs) has a substantial impact on U.S. agricultural exports to ASEAN. These NTMs range from import licensing mandates, health and safety regulations, and

Articles in this Theme:

- **Understanding ASEAN Agricultural Production, Consumption, and Trade Potential**
  S. Aaron Smith and Aditya R. Khanal
- **Cotton Markets in ASEAN Countries and U.S. Export Potential**
  Darren Hudson and Tanmoy Ghose
- **U.S. Meat Export Potential in ASEAN**
  Taís C. Menezes and Amanda M. Countryman
- **U.S. Timber Trade and Vietnam: Exploring the Impacts of the Trade War and Environmental Policies**
  Andrew Muhammad, Shamar Stewart, and Md Deluair Hossen
- **U.S. Soy Exports Could Crush it in the Association of Southeast Asian Nations**
  Kelsey Story, Scott Gerlt, and Amanda M. Countryman

Figure 1. U.S. Agricultural Exports to Top Destinations, 2010–2023



Note: Exports include agricultural-related products such as forestry and seafood products.
Source: USDA (2024).

technical standards to sanitary and phytosanitary measures, including the complexity of bureaucratic procedures (Hossen, 2023).

This Choices theme covers issues affecting U.S. agricultural trade with ASEAN, with a focus on export sectors important to the U.S. agricultural and forest economy. The five articles in this theme describe ASEAN agricultural markets and investigate the potential for U.S. increased agricultural exports to the region. Smith and Khanal provide a detailed summary of production and consumption of agricultural commodities in ASEAN. The authors describe opportunities for U.S. agricultural trade expansion in the region considering increased population, differentiated consumer demands, and ASEAN's expanding production-consumption deficit for key agricultural products. Hudson and Ghose explore trends in U.S. cotton exports to ASEAN and highlight the factors that offer both opportunities and challenges for U.S. cotton exports to the region. Their analysis reveals that top export destinations for U.S. cotton beyond China include Vietnam and Indonesia, and that recent expansion of U.S. cotton exports to ASEAN are largely driven by yarn exports from ASEAN countries to China.

Next, de Menezes and Countryman describe the trade and policy landscape of ASEAN meat imports and employ a computable general equilibrium modeling framework to investigate the potential effects of tariff eliminations on meat trade between the U.S. and ASEAN. Results provide insights into how tariff elimination could increase U.S. meat exports to the region. Muhammad, Stewart, and Hossen focus on U.S. timber exports to Vietnam given its major import potential. They describe the U.S. investigation of Vietnam's illegal timber trade, which could have restricted U.S. finished wood product imports from Vietnam, indirectly affecting demand for U.S. timber exports. The analysis gives perspective on the growth potential for U.S. timber in Vietnam. Finally, Story, Gerlt, and Countryman describe ASEAN import markets for soybean and soy products. While ASEAN soybean meal import demand has been increasing since the early 2000s and has largely been filled by Argentina and Brazil, the article explores the potential for expanded U.S. soy product exports to the region. The discussion provides context for how the U.S. may become a key soy product exporter to ASEAN with increased market access.

For More Information

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CHOICES

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Volume 39. Quarter 3

Understanding ASEAN Agricultural Production, Consumption, and Trade Potential

S. Aaron Smith and Aditya R. Khanal

JEL Classifications: F10, F13, F14, F19, N10, Y20
Keywords: ASEAN, Agriculture, Consumption, International trade, Production

Exports account for approximately 20% of the total value of U.S. agricultural and food products (USDA, 2020). Expanding access to growing foreign markets can further enhance the value U.S. producers receive for their products, thus supporting farm income and rural communities. A potential source of export growth for U.S. agricultural and food products is the Association of Southeast Asian Nations (ASEAN) region (Lee and Jones, 2023), which includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar (Burma), the Philippines, Singapore, Thailand, and Vietnam (ASEAN, 2023). Some of these countries (e.g., Vietnam, Indonesia, the Philippines) are major destination markets for U.S. agricultural exports. The region has an estimated population of over 685 million people, approximately 8.5% of the world's 2023 estimated population of 8.03 billion. Additionally, over half of the ASEAN population is under 35 years old (Figure 1), and the middle class is expanding rapidly, from 41 million in 2000 to over 200 million in 2020 (Statista, 2022; Brueckner et al., 2017). These factors suggest that ASEAN will continue to be a major destination market for U.S. agriculture. While this special issue is focused on the potential for increased agricultural trade between the United States and ASEAN, this article summarizes the production and consumption of major agricultural commodities to assess the overall trade potential and potential for increased U.S. agricultural exports to the region.

Agricultural Production and Consumption in ASEAN

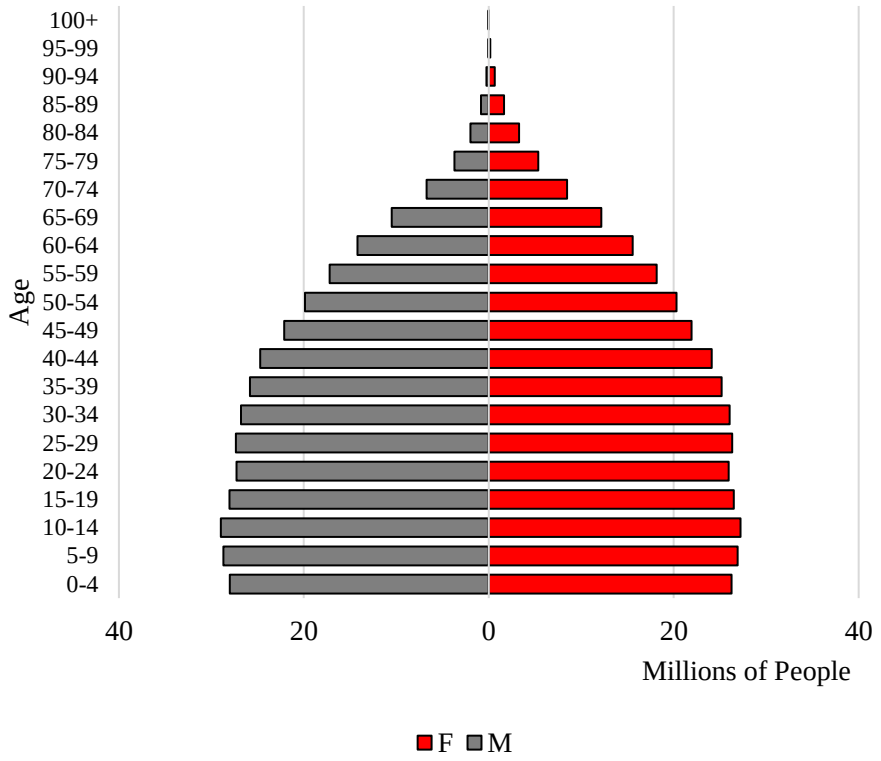
Using USDA Foreign Agricultural Service (USDA-FAS) data we examine ASEAN production for four broad categories: (i) grain, oilseeds, meal, and oil, (ii) dairy and meat products, (iii) select specialty crops, and (iv) cotton. As a share of global production, ASEAN countries contributed 36.6%, 23.2%, 7.5%, 4.3%, and 4.3% of total oil, rice, chicken meat, swine meat, and oilseed production, respectively. ASEAN countries also represented 21.1%, 15.3%, 9.7%, 7.4%, and 5.9% of rice, oil, cotton, chicken meat, and oilseed consumption, respectively.

Grain, Oilseeds, Meal, and Oil

Grain production in the region is dominated by rice, averaging an estimated 116.0 million metric tons (MMT) across the region (USDA-FAS, 2023, Figure 2).[1] Among ASEAN countries, Indonesia, Vietnam, and Thailand are the top three rice producers. Corn, wheat, millet, and sorghum production is estimated at 35.3 MMT for 2021/2022, with an average of 35.0 MMT over the previous 5 years. Corn production was reported for eight of the ten ASEAN countries, with Indonesia, the Philippines, and Thailand being the top three producers. Myanmar was the only ASEAN country reporting wheat and millet production, and Thailand was the only country reporting sorghum production. For 2021/2022, oilseed, meal, and oil production were estimated at 26.5 MMT, 15.0 MMT, and 80.0 MMT, respectively,[2] compared to previous 5-year averages of 25.7 MMT, 14.0 MMT, and 75.7 MMT, respectively. Oilseed and meal production are dominated by palm kernel production, accounting for over 65% and 60% of total production, respectively. Palm oil and palm kernel oil contribute over 94% of total oil production in the region. Indonesia is the largest regional producer of palm kernel, palm kernel oil, palm kernel meal, and palm oil.

[1] Unless otherwise stated, production and consumption estimates are from data reported by the U.S. Department of Agriculture Foreign Agricultural Services (USDA-FAS) production supply and distribution (PS&D) estimates (USDA-FAS, 2023).
[2] Oil includes coconut, cottonseed, palm, palm kernel, peanut, rapeseed, soybean, and sunflower seed oil. Meal includes copra, cottonseed, palm kernel, peanut, rapeseed, soybean, and sunflower seed meal. Oilseeds include copra, cottonseed, palm kernel, peanut, rapeseed, soybean, and sunflower seed.

Figure 1. ASEAN 2023 Population Pyramid



Data Source: PopulationPyramid.net

Domestic consumption of reported grains in the ASEAN region includes milled rice, corn, wheat, barley, millet, sorghum, and oats (Figure 3). Milled rice consumption accounted for 58.7% of regional grain consumption in 2021/022. Indonesia, Vietnam, and the Philippines were the top three domestic users of milled rice. Corn and wheat comprised 26.5% and 14.0% of regional grain consumption. Nine of the ten ASEAN countries reported corn consumption (the exception was Brunei). Regional consumption of oilseed, meal, and oil in 2021/2022 was 37.7 MMT, 26.7 MMT, and 36.4 MMT, respectively. For 2021/2022, 47.4% of oilseed consumption was palm kernel, 92.6% of oil use was palm and palm kernel oil, and 84.3% of meal use was soybean meal.

Dairy and Meat Products

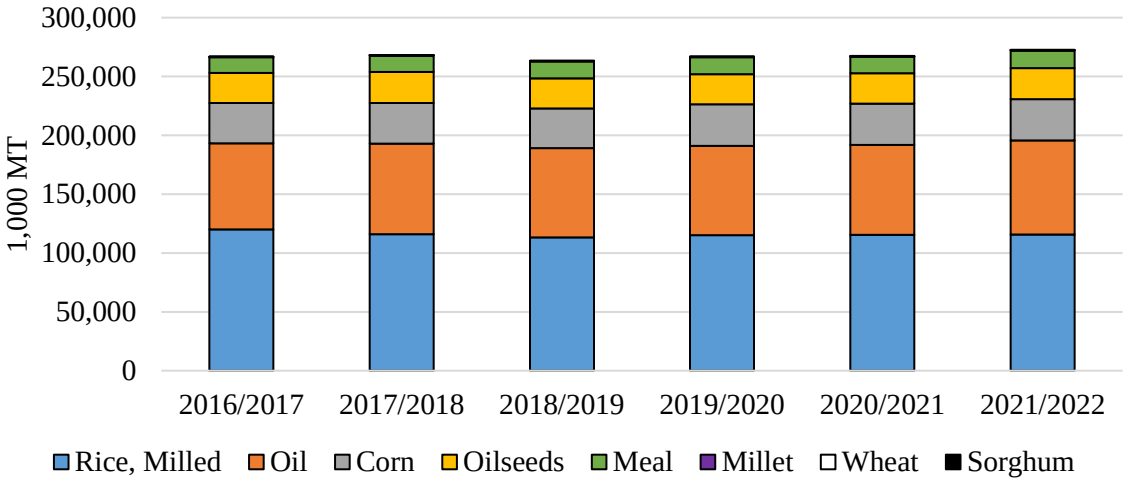
Domestic chicken meat production increased from 6.8 MMT in 2016/2017 to 7.5 MMT in 2021/2022 (Table 1). Thailand, Malaysia, and the Philippines were the top three producers of chicken meat in the region. Production of swine meat has fluctuated between 3.6 MMT carcass-weight equivalent (CWE) and 4.4 MMT CWE. Vietnam and the Philippines account for over 95% of reported swine meat production in the region. Beef and veal production in 2021/2022 was 493,000 MT CWE, 11,000 MT CWE above the previous 5-year average. Vietnam, the Philippines, and Malaysia were the only countries that reported beef and veal production. Fish meal production was 894,000 MT in 2021/2022 and averaged 917,000 MT in each of the previous 5 years. Vietnam and Thailand were the largest reported producers of fish meal. Dairy production was comprised of dry whole milk powder, cheese, and fluid milk. Of the 88,000 MT of dairy products produced in 2021/2022, 67.0% was dry whole milk powder, 30.7% was fluid milk, and 2.2% was cheese. The Philippines was the only country reporting fluid milk and cheese production in the ASEAN region. Thailand was the sole reported country for dry whole milk powder.

From 2016/2017 to 2021/2022, dairy consumption in the region increased from 582,000 MT to 755,000 MT (Table 2). This includes a 54.6% growth of fluid milk, 37.5% growth of nonfat dry milk, 25% growth of cheese, and 20.4% growth of dry whole milk powder. The reported increase in dairy consumption is from the Philippines and Indonesia. For 2021/2022, chicken, pork, and beef consumption were reported at 7.5 MMT, 4.9 MMT, and 1.2 MMT, respectively. Fish meal use, for 2021/2022 was 894,000 MT compared to a 5-year average of 881,600 MT.

Select Specialty Crops

ASEAN specialty crop production data reported by USDA-FAS were limited to green coffee, oranges, sugar,

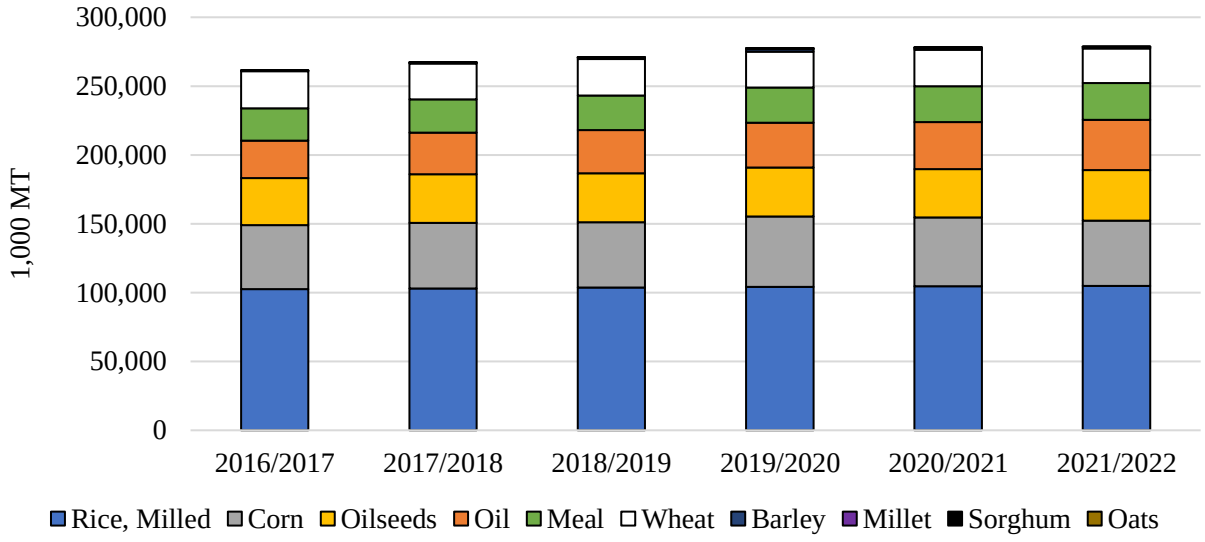
Figure 2. ASEAN Grain, Oilseed, Meal, and Oil Production, 2016/17 to 2021/22



Notes: Oil – Coconut, Cottonseed, Palm, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed oil.
Meal – Copra, Cottonseed, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed meal.
Oilseeds – Copra, Cottonseed, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed.
Data Source: USDA FAS – Production, Supply, and Distribution

and tangerines/mandarins. Green coffee production was estimated at 45.7 million 60-kg bags for 2021/2022, with an average of 43.5 million 60-kg bags over previous 5-year period (Table 1). Vietnam, Indonesia, and Malaysia were the top three reported producers of green coffee. Orange production increased from 868,000 MT in 2016/2017 to 1.16 MMT in 2021/22. Vietnam was responsible for over 95% of reported orange production in the region. Tangerine and mandarin production averaged 176,600 MT between 2016/2017 and 2021/2022. Thailand and the Philippines were the only reporting countries. Seven out of ten ASEAN countries reported sugar production. Sugar production was 16.0 MMT in 2021/2022 and averaged 17.5 MMT over the previous 5 years. The top three sugar producers were Thailand, Indonesia, and the Philippines.

Figure 3. ASEAN Grain, Oilseed, Meal, and Oil Domestic Consumption, 2016/17 to 2021/22



Notes: Oil – Coconut, Cottonseed, Palm, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed oil.
Meal – Copra, Cottonseed, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed meal.
Oilseeds – Copra, Cottonseed, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed.
Data Source: USDA FAS – Production, Supply, and Distribution

Table 1. ASEAN Dairy, Meat, and Specialty Crop Production, 2016/17 to 2021/22

	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	Unit
Dairy	100	106	108	114	124	88	1,000 MT
Meal, fish	888	913	898	893	994	894	1,000 MT
Meat, beef and veal	469	478	486	490	488	493	1,000 MT CWE
Meat, chicken	6,790	7,055	7,405	7,406	7,378	7,517	1,000 MT
Meat, swine	4,325	4,432	4,038	3,610	3,953	4,052	1,000 MT CWE
Coffee, green	41,085	43,400	44,550	45,490	43,210	45,725	1,000 60-kg bags
Oranges	868,000	865,000	1,028,000	1,161,000	1,161,000	1,161,000	MT
Sugar, centrifugal	16,963	21,350	21,121	14,514	13,520	16,007	1,000 MT
Tangerines/mandarins	178,000	196,000	173,000	168,000	168,000	168,000	MT
Cotton	722	735	709	734	709	734	1,000 480-lb bales

Data Source: USDA FAS – Production, Supply, and Distribution

ASEAN specialty crop consumption data reported by USDA-FAS included almonds, apples, green coffee, peaches and nectarines, pears, oranges, sugar, and tangerines/mandarins (Table 2). Thailand, Malaysia, and Indonesia accounted for all almond consumption reported. Apple consumption was reported in seven (Myanmar, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) of the ten ASEAN countries. Based on the reported data, ASEAN coffee consumption in 2021/2022 was 16,825 1,000 60 kg-bags, a slight increase relative to the 5-year average of 15,120 1,000 60-kg bags. Table 2 reports domestic consumption of oranges (Malaysia, Singapore, and Vietnam), tangerines and mandarins (Indonesia, Malaysia, Philippines, Thailand, and Vietnam), peaches and nectarines (Vietnam), pears (Myanmar, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam), and apples (Myanmar, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam). Among specialty crop consumption, a notable increase is seen in sugar consumption, which increased from 16.8 MMT in 2016/2017 to 17.6 MMT in 2021/2022.

Cotton

Cotton production in the region was dominated by Myanmar, with a 5-year average production of 715,000 480-lb bales. Other reporting countries included Vietnam (3,000 480-lb bales), Indonesia (2,600 480-lb bales), the Philippines (2,000 480-lb bales), and Thailand (2,000 480-lb bales).

Domestic cotton use in the region was reported for eight of the ten countries (excluding Brunei and Laos). The top five cotton users were Vietnam (6.7 million bales), Indonesia (2.6 million bales), Thailand (725,000 bales), Myanmar (650,000 bales), and Malaysia (325,000 bales). Annual cotton use in the region ranged from 10.821 million bales to 12.346 million bales (Table 2).

ASEAN Production Compared to Consumption

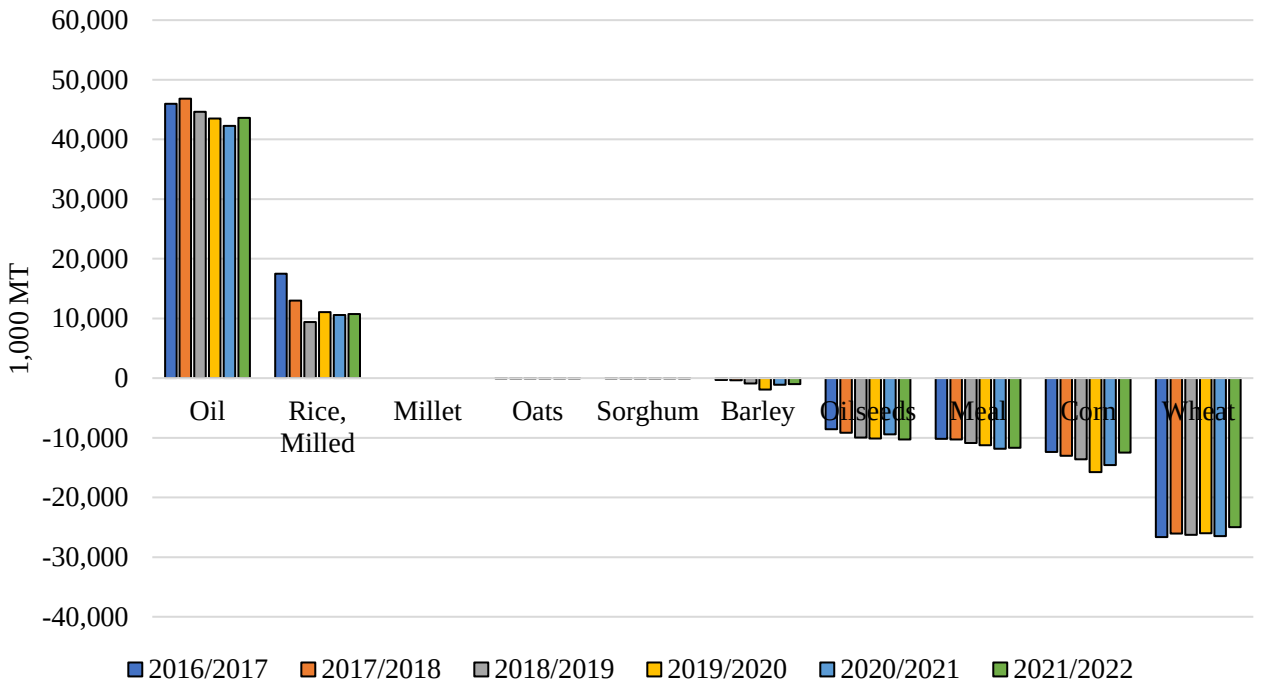
Using the reported production and consumption data above, we examine the surplus or deficit (production less consumption) for the selected agricultural commodities and products in the ASEAN. Oil (from oilseeds) and milled rice had consistent surplus production relative to

Table 2. ASEAN Dairy, Meat, and Specialty Crop Domestic Consumption, 2016/17 to 2021/22

	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	Units
Dairy	582	634	700	737	740	755	1,000 MT
Meal, fish	873	932	897	843	863	894	1,000 MT
Meat, beef and veal	875	926	957	996	1,038	1,162	1,000 MT CWE
Meat, chicken	6,462	6,709	7,155	7,167	7,231	7,538	1,000 MT
Meat, swine	4,676	4,890	4,425	4,114	4,813	4,916	1,000 MT CWE
Almonds, shelled basis	9,000	14,900	13,200	14,000	14,800	15,500	MT
Apples, fresh	837,600	728,100	914,700	1,030,000	1,014,000	951,000	MT
Coffee, green	14,373	14,420	15,270	15,755	15,780	16,825	1,000 60-kg bags
Oranges, fresh	954,000	1,057,000	1,055,000	1,195,000	1,372,000	1,354,000	MT
Peaches & nectarines, fresh	22,300	12,600	64,600	50,800	24,500	20,000	MT
Pears, fresh	423,600	321,200	542,200	440,700	464,500	416,500	MT
Sugar, centrifugal	16,798	16,375	16,829	17,452	17,182	17,643	1,000 MT
Tangerines/mandarins, fresh	593,000	607,000	683,000	685,000	957,000	777,000	MT
Cotton	11,001	12,346	12,401	10,821	11,375	11,041	1,000 480-lb bales

Data Source: USDA FAS – Production, Supply, and Distribution

Figure 4. ASEAN Grain, Oilseed, Meal, and Oil Production Less Domestic Consumption, 2016/17 to 2021/22



Notes: Oil – Coconut, Cottonseed, Palm, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed oil.
Meal – Copra, Cottonseed, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed meal.
Oilseeds – Copra, Cottonseed, Palm Kernel, Peanut, Rapeseed, Soybean, and Sunflower seed.
Data Source: USDA FAS – Production, Supply, and Distribution

consumption in the period examined (2016/2017 to 2021/2022) (Figure 4). However, wheat, corn, oilseed meal, oilseeds, and barley had an average deficit of 26.1 MMT, 13.6 MMT, 11.0 MMT, 9.6 MMT, and 0.9 MMT, respectively. The average cotton deficit was 10.8 million bales (Figure 5). Additionally, Table 3 shows the annual deficit for dairy, meat, fish meal, and selected specialty crops. Expansion in the deficits occurred in beef, chicken, and pork meat during the 6-year period examined. Over those 6 years, sugar and chicken meat in the region transitioned from a surplus to a deficit.

Surplus and deficits for types of oilseeds, different types of oilseed meals, and oils are shown in Table 4. In oilseeds, large deficits were in soybeans (9.6 MMT) and peanuts (0.6 MMT). In different types of oilseed meals, a surplus was for palm kernel (7.2 MMT) and a deficit

Figure 5. ASEAN Cotton Production Less Domestic Use, 2016/17 to 2021/22

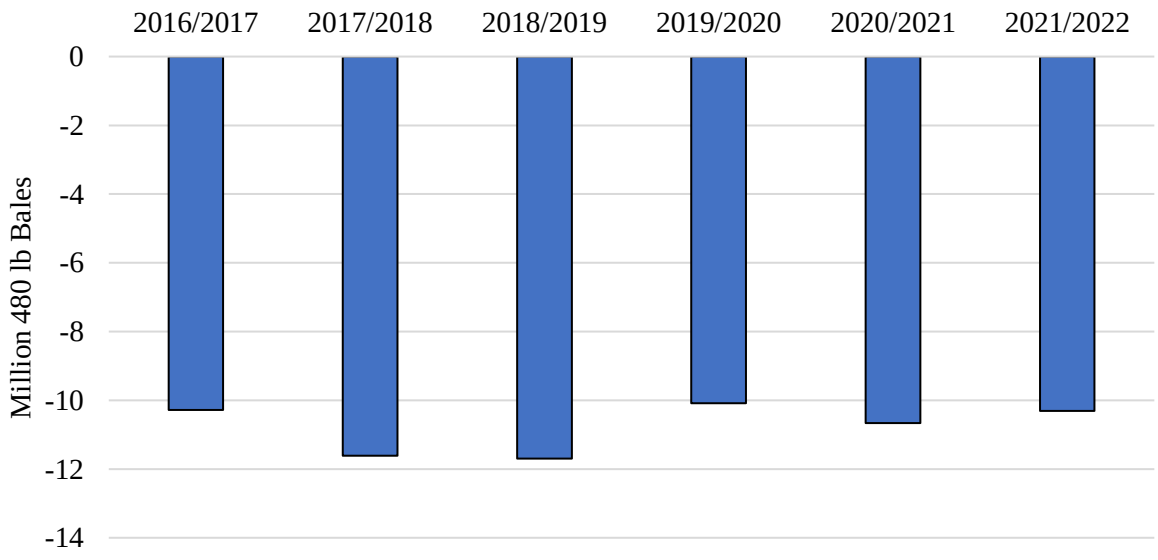


Table 3. ASEAN Dairy, Meat, and Specialty Crop Production Less Domestic Consumption, 2016/17 to 2021/22

	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	Units
Dairy	-482	-528	-592	-623	-616	-667	1,000 MT
Meal, fish	15	-19	1	50	131	0	1,000 MT
Meat, beef and veal	-406	-448	-471	-506	-550	-669	1,000 MT CWE
Meat, chicken	328	346	250	239	147	-21	1,000 MT
Meat, swine	-351	-458	-387	-504	-860	-864	1,000 MT CWE
Almonds, shelled basis	-9,000	-14,900	-13,200	-14,000	-14,800	-15,500	MT
Apples, fresh	-837,600	-728,100	-914,700	-1,030,000	-1,014,000	-951,000	MT
Coffee, green	26,712	28,980	29,280	29,735	27,430	28,900	1,000 60 kg bags
Oranges, fresh	-86,000	-192,000	-27,000	-34,000	-211,000	-193,000	MT
Peaches & nectarines, fresh	-22,300	-12,600	-64,600	-50,800	-24,500	-20,000	MT
Pears, fresh	-423,600	-321,200	-542,200	-440,700	-464,500	-416,500	MT
Sugar, centrifugal	165	4,975	4,292	-2,938	-3,662	-1,636	1,000 MT
Tangerines/mandarins, fresh	-415,000	-411,000	-510,000	-517,000	-789,000	-609,000	MT

Data Source: USDA FAS – Production, Supply, and Distribution

Table 4. ASEAN Oilseed, Meal, and Oil Production and Domestic Consumption (1,000 MT), 2021/22

	Production	Consumption	Surplus/Deficit
Oilseed			
Palm Kernel	17,390	17,413	-23
Copra	4,691	4,667	24
Peanut	3,059	3,699	-640
Soybean	631	10,254	-9,623
Sunflower seed	390	402	-12
Cottonseed	291	291	0
Rapeseed	2	2	0
Meal			
Palm Kernel	9,036	1,881	7,155
Soybean	3,816	22,502	-18,686
Copra	1,532	1,010	522
Fish	894	894	0
Peanut	341	359	-18
Cottonseed	138	138	0
Sunflower seed	128	182	-54
Rapeseed	1	605	-604
Oil			
Palm	68,064	28,307	39,757
Palm Kernel	7,655	5,396	2,259
Coconut	2,937	1,441	1,496
Soybean	887	764	123
Peanut	281	283	-2
Sunflower seed	131	146	-15
Cottonseed	48	48	0
Rapeseed	1	13	-12

Data Source: USDA FAS – Production, Supply, and Distribution

(18.7 MMT) was for soybean meal. In oil production, the greatest surplus was in palm (39.8 MMT) and palm kernel oil (2.3 MMT). However, the relationship between oilseed, oil, and meal production in the region is complex, with meal and oilseed deficits and oil surpluses. Overall, there exist opportunities and potential future growth for U.S. oilseed meal and oilseed exports to the ASEAN region.

Trends in ASEAN Production and Domestic Consumption

From 2016/2017 to 2021/2022, the five commodities or agricultural products with the largest growth in ASEAN production, in percentage terms, were oranges (33.8%), oilseed meal (13.1%), coffee (11.3%), chicken meat (10.7%), and oil (9.2%) (Table 5). Agricultural commodities and products with the largest reported decline in production, in the ASEAN region, were wheat (−25.9%), dairy (−12.0%), swine meat (−6.3%), sugar (−5.6%), and tangerines/mandarins (−5.6%). Swine meat production declines can be attributed, in part, to African Swine Fever.

Changes in consumption of agricultural commodities and products, from 2016/2017 to 2021/2022, provide further evidence of a growing middle class in the ASEAN region. Some notable increases in specialty crop consumption were reported in almonds, oranges, apples, tangerines/mandarins, and coffee beans (Table 5). Dairy consumption was up 29.7% in the region. Beef, chicken, and swine meat consumption were up 32.8%, 16.7%, and 5.1%, respectively. Oilseed meal, used primarily for feeding livestock, poultry, and aquaculture, was reported up 13.9%.

Discussion and Conclusion

The projected population and economic growth of ASEAN countries make the region a desirable trade partner for U.S. agricultural commodities and products. Accessing markets through trade negotiations that reduce tariff and nontariff trade barriers will be an important step for U.S. agriculture to expand exports. The growth in ASEAN consumption and the expanding production-consumption deficit for soybeans, peanuts, soybean meal, beef, chicken, and swine meat, and specialty crops provide an opportunity for further U.S. agricultural trade to the ASEAN region.

This analysis is limited by the availability of USDA-FAS production and consumption data in the ASEAN region. USDA-FAS estimates provide the most consistent data over time but have incomplete coverage for the ASEAN region. As such, these data need to be interpreted cautiously.

Table 5. Change in ASEAN Production and Domestic Consumption for Reported Commodities and Categories, 2016/2017 to 2021/2022

Commodity/Category	Production	Domestic Consumption
Almonds, shelled basis	n/a	72.2%
Apples, fresh	n/a	13.5%
Barley	n/a	203.0%
Coffee, green	11.3%	17.1%
Corn	2.2%	1.9%
Cotton	-0.1%	0.4%
Dairy	-12.0%	29.7%
Meal	13.1%	13.9%
Meal, fish	0.7%	2.4%
Meat, beef and veal	5.1%	32.8%
Meat, chicken	10.7%	16.7%
Meat, swine	-6.3%	5.1%
Millet	0.0%	0.0%
Oats	n/a	8.7%
Oil	9.2%	33.4%
Oilseeds	3.3%	7.5%
Oranges, fresh	33.8%	41.9%
Peaches & nectarines, fresh	n/a	-10.3%
Pears, fresh	n/a	-1.7%
Rice, milled	-3.6%	2.4%
Sorghum	0.0%	19.7%
Sugar, centrifugal	-5.6%	5.0%
Tangerines/mandarins, fresh	-5.6%	31.0%
Wheat	-25.9%	-6.4%

Data Source: USDA FAS – Production, Supply, and Distribution

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Appendix

Appendix Table A1. ASEAN Countries with USDA FSA Reported Production and Consumption of Selected Agricultural Commodities and Products

Consumption	Countries Reported by USDA FSA PS&D
Almonds, shelled basis	Indonesia, Malaysia, Thailand, Vietnam
Apples, fresh	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Barley	Philippines, Thailand, Vietnam
Coffee, green	Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam
Corn	Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Cotton	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Dairy, cheese	Philippines
Dairy, dry whole milk powder	Indonesia, Philippines
Dairy, milk, fluid	Philippines
Dairy, milk, nonfat dry	Indonesia, Philippines
Meal, copra	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
Meal, cottonseed	Myanmar
Meal, fish	Indonesia, Malaysia, Philippines, Thailand, Vietnam
Meal, palm kernel	Indonesia, Malaysia, Philippines, Thailand, Vietnam
Meal, peanut	Indonesia, Malaysia, Myanmar, Thailand, Vietnam
Meal, rapeseed	Indonesia, Thailand, Vietnam
Meal, soybean	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Meal, sunflower seed	Myanmar, Thailand
Meat, beef and veal	Malaysia, Philippines, Vietnam
Meat, chicken	Malaysia, Philippines, Singapore, Thailand, Vietnam
Meat, swine	Philippines, Singapore, Vietnam
Millet	Myanmar
Oats	Malaysia
Oil, coconut	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
Oil, cottonseed	Myanmar
Oil, palm	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Oil, palm kernel	Indonesia, Malaysia, Philippines, Singapore, Thailand
Oil, peanut	Indonesia, Malaysia, Myanmar, Thailand, Vietnam
Oil, rapeseed	Indonesia, Vietnam
Oil, soybean	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
Oil, sunflower seed	Myanmar
Oilseed, copra	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
Oilseed, cottonseed	Indonesia, Myanmar
Oilseed, palm kernel	Indonesia, Malaysia, Philippines, Thailand
Oilseed, peanut	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Oilseed, rapeseed	Vietnam
Oilseed, soybean	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Oilseed, sunflower seed	Myanmar
Oranges, fresh	Malaysia, Singapore, Vietnam
Peaches & nectarines, fresh	Vietnam
Pears, fresh	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Rice, milled	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Sorghum	Philippines, Thailand
Sugar, centrifugal	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Tangerines/mandarins, fresh	Indonesia, Malaysia, Philippines, Thailand, Vietnam
Wheat	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam

Data Source: USDA FAS – Production, Supply, and Distribution

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Cotton Markets in ASEAN Countries and U.S. Export Potential

Darren Hudson and Tanmoy Ghose

JEL Classifications: Q11, Q17
Keywords: ASEAN, Cotton, Exports

The Association of Southeast Asian Nations (ASEAN) region represents an important market for agricultural products due both to its relative share of global population and its income growth potential, with per capita GDP increasing at an average annual rate of 3.74% in nominal terms from 2000 to 2021 (World Bank, 2023). Unlike food products, however, cotton is an industrial good with a complicated web of interconnected supply chains that depend on different comparative advantages, complex international and domestic policies, and factor availability. We discuss here the trends in U.S. cotton exports to the region as well as some of these complicated factors that both offer opportunities and challenges to U.S. cotton exports.

Overview of U.S. Cotton Trade with ASEAN

From 2010 to 2022, U.S. cotton exports to ASEAN countries increased from $838 million to more than $1.5 billion, mostly driven by increased exports to Vietnam, which is currently the second largest market for U.S. cotton exports (USDA-FAS, 2023) (Figure 1). A primary advantage for U.S. cotton exports is that the ASEAN region is not a major cotton-producing region. In 2020, the region produced approximately 325,000 bales of cotton, roughly the equivalent of a few counties in the Texas High Plains (FAOSTAT, 2023). The low production level means that if the region is to be a significant producer of cotton textiles it must rely on imported cotton. In fact, four ASEAN countries (Vietnam, Indonesia, Thailand, and Malaysia) were among the world's top ten cotton importing countries in 2021, with Vietnam being the second largest importing country at almost $3 billion (United Nations, 2023).

Overall U.S. cotton exports to ASEAN countries experienced a rapid expansion starting in 2012, peaking in 2018, and have rapidly contracted since then (Figure 1). U.S. regional market share has averaged around 16%, peaking at 20% in 2018 (for the United States, exports to ASEAN countries represents about 15% of total U.S. exports, on average). But the aggregate numbers can be misleading, as almost all that growth was in Vietnam and Indonesia. More importantly, however, is what happens to that cotton once it arrives in those countries. That is, to assess export potential for cotton to ASEAN nations, it is helpful to understand why they are importing cotton from the United States.

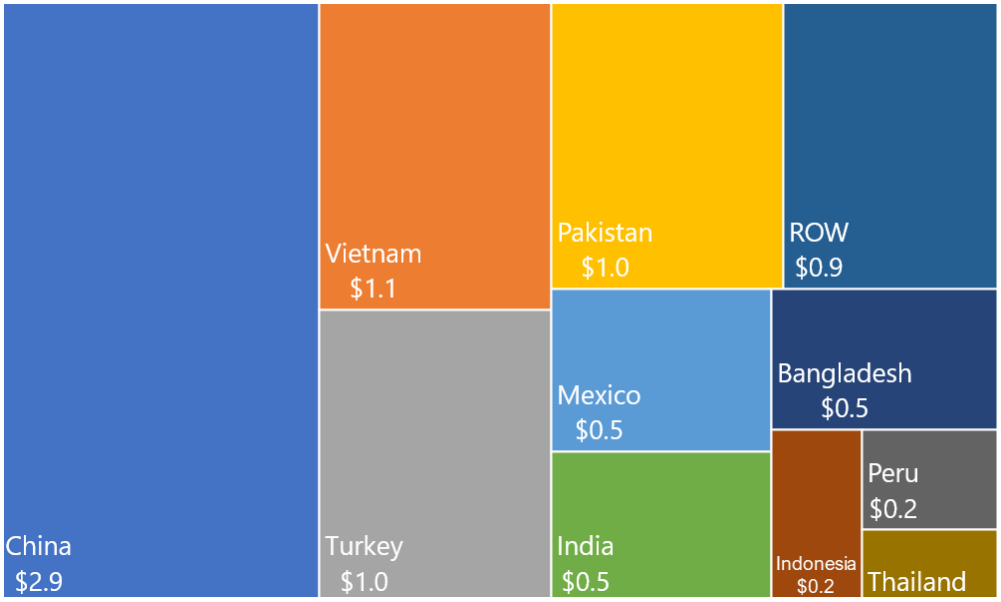
Importance of China to ASEAN Demand

China remains the largest consumer of cotton in the world (and the largest exporter of products that contain cotton). Because China's mill use of cotton is larger than its domestic production, China has a large import demand to meet the requirements of its domestic textile and apparel production. But China maintains a complex import two-tier tariff scheme that favors domestic cotton over imports. However, China has no such tariff scheme for imports of cotton yarn; the result has been an increasing reliance on imports of cotton yarn (Davis David and Gale, 2022) (Figure 2).

Figures 2 and 3 shows the correlation between the rapid rise in yarn imports from 2012 and the U.S. cotton exports to ASEAN countries in the same year. There is also a corresponding decline in Chinese yarn imports along with the decline in U.S. cotton exports over the latter part of the period. Again, Vietnam is the primary exporter of yarn to China representing 78% of export value to China from ASEAN countries (United Nations, 2023). The bypassing of the two-tier cotton import policy in China is demonstrated also by the correlation between Chinese foreign direct investment in Vietnam and Vietnamese exports of yarn to China (Figure 4). Of course, not all Foreign Direct Investment (FD) FDI from China was aimed at textile mills, but a significant portion has been, and this investment makes sense when you consider that even Chinese textile mills must be concerned about the cost of materials used in meeting contracts for textiles and apparel.

It appears from the data, then, that the ASEAN countries (especially Vietnam) are at least in part currently importing U.S. cotton to be spun into yarn and then exported to China. According to FAS data, U.S. cotton

Figure 1. U.S. Cotton Exports in 2022 by Destination Market



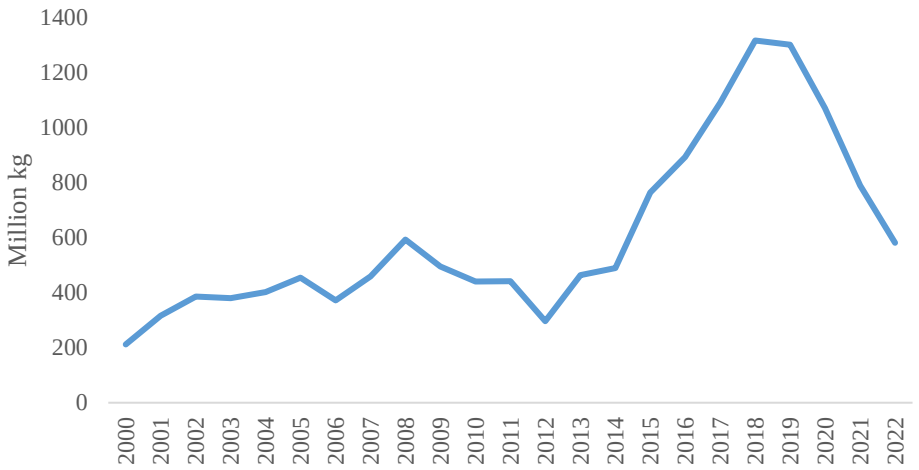
Source: U.S. Department of Agriculture, Foreign Agricultural Service.

exports averaged about 600 million kilograms from 2000 to 2022. Over that same period, according to UN COMTRADE data, ASEAN countries exported an average of about 328 million kilograms of yarn to China alone. Accounting for differences in data, wastage, etc., ASEAN countries exported well over half of the U.S. cotton they imported to China in the form of yarn. It would seem than that as Chinese textile and apparel production and exports go, so go U.S. cotton exports to ASEAN countries.

But are U.S. exports to the region going to be that closely tied to regional exports to China for the long-term? The answer to that is a bit more complicated.

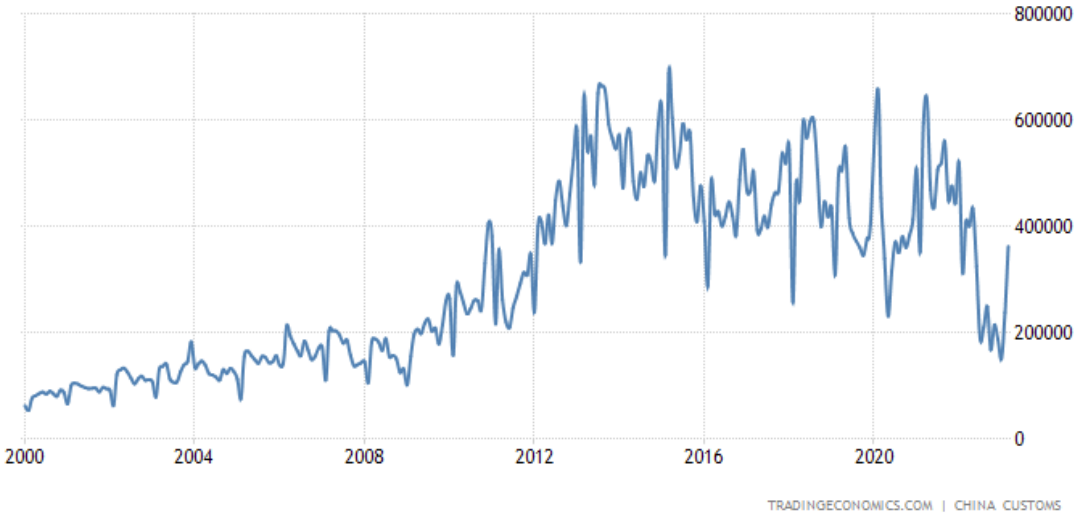
First, as noted, regional income growth has been relatively strong at an annual rate of nearly 5%. Typical estimates of the income elasticity of demand for cotton have been between 0.80 and 1.20, suggesting that regional income growth will lead to greater cotton consumption even for local use (not exported). This income growth trend is a positive for U.S. export potential, but—like most regions of the world in recent years—regional real income has stagnated or declined due to inflation. But the expectation is that, overall, regional income growth will contribute to greater opportunities for U.S. cotton exports. And with installed spinning capacity in part from Chinese FDI, ASEAN countries have capacity to produce more goods for local

Figure 2. Volume of U.S. Exports of Cotton, Linters, and Waste to ASEAN Countries, 2000–2022



Source: USDA-FAS (2023).

Figure 3. Value of China Cotton Yarn Imports in 1,000 USD, 2000–2022

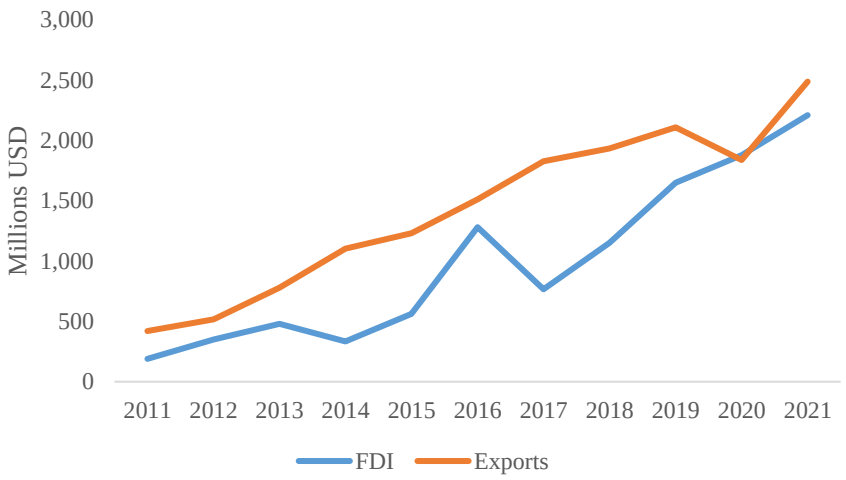


Source: TradingEconomics.com from Chinese Customs Data.

consumption. Likewise, population growth favors greater total demand, though per capita demand is likely more closely tied to real income growth. That means that unless the real income declines faster than population grows, total cotton consumption should grow as well. Because none of the ASEAN countries are major cotton producers, any growth experienced in regional cotton consumption will need to be filled by imports.

Second, and a challenge to U.S. exports, is the regional proximity to Australia, a major producer/exporter of cotton. Lower transport cost, tighter business relationships due to proximity, and cultural exchange that has occurred through time between Australia and ASEAN countries offers Australia a distinct advantage in supplying cotton to the region. However, due to its greater reliance on rainfed production systems, greater production volatility in Australia offers its own set of challenges to Australian cotton exports to the region. To some extent, Australia and U.S. cotton are complementary in regional textile production owing to the different growing/harvest seasons in the two countries. U.S. exports fill requirements part of the year and Australia another part. Brazil is also entering the global market as a major competitor to the United States, but logistics challenges remain an impediment to textile mill imports to ASEAN countries from Brazil. Additionally, Brazilian cotton exports compete more directly with Australian exports because it they enter the market at the same time.

Figure 4. Value of Chinese Foreign Direct Investment to Vietnam and Value of Vietnamese Yarn Exports to China, 2011–2021



Sources: National Bureau of Statistics, China (FDI) and United Nations, COMTRADE (Exports).

Third, China remains the global leader in textile and apparel production. However, China is facing its own issues with labor availability/cost, environmental concerns, and aging infrastructure that supports textile production. Southeast Asia writ large, and ASEAN countries (especially Vietnam and Cambodia) have been targets for investment in textile capacity. But Thailand, Malaysia, Indonesia, and the Philippines have also seen growth in textile production and have represented areas of U.S. export growth. The current U.S. (and European) moves toward "de-coupling" with China will, if they continue, offer opportunities for these countries to become larger textile producers in the global economy. But de-coupling of supply chains will not happen overnight and will require developing new productive capacity (for example, fabric manufacture and cutting and sewing operations) that are largely prevalent in those countries. Resourcing outside of China will likely lead to greater U.S. exports to the region over the longer-term.

Finally, international policy has a role to play in the future location of production of cotton and textiles. The Uyghur Forced Labor Prevention Act (UFLPA) bans U.S. imports of products sourced from the Xinjiang region of China, or the primary cotton-producing region of China. Europe has taken similar, though less aggressive, steps toward the same outcome. Designed to disincentivize the use of forced labor and other human rights violations in China, the policy restricts the importation of cotton textiles (and other products) from cotton sourced or processed in Xinjiang. At first blush, this policy would seem to enhance U.S. exports to textile processors attempting to meet the requirements of the policy. But the outcome is far less certain.

First, there is the obvious issue that China may simply manipulate their data so that products meet requirements on the surface (Yin Yiu, 2022). Second, while the policy may place a temporary constraint on Chinese activity it may only serve to increased Chinese FDI in cotton producing regions such as Central Asia, West Africa, and others so that China can source cotton from those areas, comply with international policies, and simply utilize Xinjiang cotton for domestic consumption purposes. We have already witnessed increase Chinese sourcing of Brazilian and Australian cotton because of this policy. The upshot is that the Law of Unintended Consequences applies in this situation as well.

Closing

The complexity of the global supply chain for cotton-containing textiles and apparel presents real challenges for understanding, much less predicting, export potential for a specific region of the world. ASEAN regional economic growth is likely a net positive for U.S. cotton exports to the region. However, further development in textile processing (fabrics, cutting, and sewing) are necessary if the region is going to be a reliable source of future demand outside of the "demand pull" from the Chinese textile industry. The region has ample labor supply and logistics to be a reasonable target for U.S. supply chains wishing to "de-couple" from China, but areas of political instability likely will hinder any U.S. or European investment in the near term. Therefore, while the region remains an important customer for U.S. cotton, future growth potential is uncertain at best.

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U.S. Meat Export Potential in ASEAN

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JEL Classifications: F10, F13, Q10, Q13, Q17, Q18
Keywords: ASEAN, International Trade, Meat exports, Trade barriers, United States

Meat exports, which are important for the U.S. agricultural sector, have more than doubled in the past 4 decades, increasing from $13.5 billion (in 2022 prices) in 1980 to $32.4 billion in 2022 (USDA, 2023). The United States plays an important role as a supplier of beef, pork, and chicken to the global market, and a substantial portion of U.S. meat exports are destined for Asian markets, including South Korea (representing 8% of U.S. meat exports in 2022), Japan (11%), China/Hong Kong (10%), and Taiwan (4%) (USDA, 2022). However, there is potential for expanded U.S. exports to Asia, including increased meat exports to the 10 member countries of the Association of Southeast Asian Nations (ASEAN).[1] Future export growth for U.S. meat depends on income growth of importing countries, competitiveness of U.S. products, and access to global markets. Trade barriers, such as import tariffs, hamper U.S. exports. Even though the average tariff rates on imports into ASEAN countries decreased from 9% in 2000 to 4.5% in 2015, nontariff measures (NTMs)— mostly related to sanitary and phytosanitary (SPS) measures and technical barriers to trade—increased from 1,634 to 5,975 measures over the same period (UNCTAD, 2016). Although ASEAN established several preferential trade agreements, trade barriers remain on agricultural products, and there is no trade agreement between the United States and ASEAN (Beckman, Gopinath, and Daugherty, 2021). This article examines the ASEAN meat import market and the potential for increased U.S. meat exports to ASEAN resulting from tariff removal for animal products.

Economic growth in Southeast Asia has been strong in the past decade. Income levels have been rising with the accelerated development of the region, leading to an increase in protein-based diets (OECD and FAO, 2017). The increasing demand for animal protein in ASEAN presents opportunities for U.S. suppliers to increase meat exports to the region (Lee and Jones, 2023). ASEAN is both strategically and economically important for the United States. ASEAN has become one of the most important players in the global trading system and represents the world's fifth largest economy (Elms, 2020). In addition, all ASEAN countries are projected to increase consumption of pork and poultry, especially over the next decade, representing potential for increased meat imports, which could be supplied by the United States (Petri and Plummer, 2014; Lee and Hansen, 2019). ASEAN has strong relationships and free trade agreements (FTA) with China, Hong Kong, South Korea, Japan, India, Australia, and New Zealand and is a member of the 15-country Regional Comprehensive Economic Partnership. Meanwhile, the United States does not have important free trade agreements with countries in the region, except for an FTA with Singapore. The lack of trade policy commitments in the region are likely to hamper U.S. export potential in the future and may limit U.S. competitiveness in the ASEAN meat import market.

This article explores ASEAN export potential for U.S. meat by providing a detailed trade profile for ASEAN meat import sourcing for beef, pork, and poultry. We discuss the tariff and nontariff barriers that impede U.S. meat exports in the region and focus on the U.S. productive capacity to meet the growing demands for animal products in Southeast Asia. This article is an important contribution given the importance of U.S. meat export potential in the Southeast Asia region. The competitiveness of U.S. meat in Southeast Asian export markets is continually highlighted by agriculturalists as a key agricultural trade policy priority (Ufer, Padilla, and Link, 2023).

ASEAN Meat Imports

The ASEAN Free Trade Area (AFTA) is formed by the 10 ASEAN members. AFTA reduced tariffs and removed quantitative restrictions and other nontariff barriers through a common effective preferential tariff among ASEAN countries, aiming to increase ASEAN economic growth. Outside of AFTA, ASEAN also facilitated trade

[1] The ASEAN countries are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

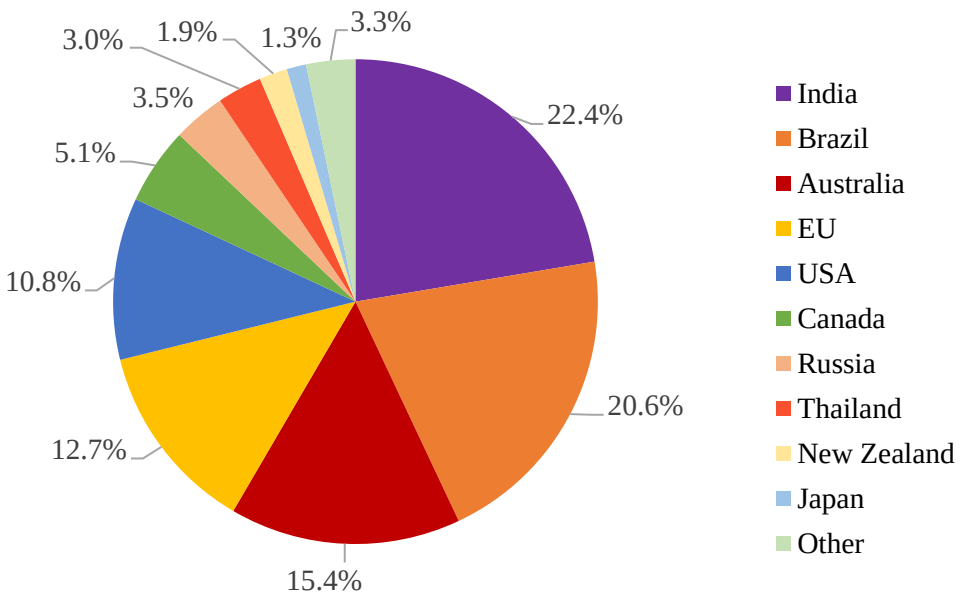
liberalization with China, Japan, South Korea, Australia, India, and New Zealand. Both the United States and the European Union (EU) have free trade agreements with Singapore but not with the other ASEAN member countries.

Meat consumption dynamics are changing substantially in ASEAN due to the pace of economic development of the region, demonstrating the potential for increased animal product exports to the region. However, opening ASEAN markets to imports is not so simple. ASEAN members impose different types of constraints on imports, especially food imports. Thailand imposes the largest number of SPS measures on imports (282 SPS measures), followed by the Philippines (150), Indonesia (144), Malaysia (88), and Vietnam (83). Singapore and Brunei have a moderate number of SPS measures, while Cambodia, Laos, and Myanmar have the lowest number of SPS measures in ASEAN. Since 2009, NTMs were imposed specifically on beef, pork, and poultry imports from the United States and other countries by Indonesia (24 NTMs), Vietnam (18), Malaysia (14), the Philippines (13), Laos (11), Myanmar (9), Cambodia (6), and Thailand (4) (UNCTAD, 2023). NTMs are policy measures that can potentially have an economic effect on international trade, changing the quantities and/or prices of goods traded. NTMs consist of mandatory requirements, rules, or regulations that are legally established by countries. Examples of NTMs include technical barriers to trade, SPS measures, certification, quotas, imports and export licenses, and rules of origin.

Despite trade barriers, ASEAN countries have become increasingly important meat importers. Expanded demand for meat in the region has been driven by urbanization, improved standards of living, and changes in dietary preferences of the region's ascending urban middle-class (Lee and Hansen, 2019). In addition, the Russia–Ukraine conflict reduced the global supply of feed, which ASEAN countries depend on for livestock production. Consequently, ASEAN meat production was negatively affected, creating an increased need for meat imports among ASEAN members. Beef and pork production in ASEAN countries decreased by -5% and -4.6%, respectively, between 2017 and 2021, while poultry production increased by a meager 1.5% in the same period (FAO, 2023). At the same time, ASEAN pork imports increased by 27% from 2017 to 2021, largely as a result of augmented pork imports by Cambodia, Vietnam, and Thailand. Poultry imports in ASEAN increased by 5% in the same period, led by Thailand, the Philippines, and Cambodia. Beef imports decreased by -4.9% between 2017 and 2021. However, disaggregated data at the country level shows that Cambodia increased beef imports by 45%, Indonesia by 20%, the Philippines by 14%, and Thailand by 12% in that period (UN Statistics Division, 2023).

ASEAN members combined imported $2.9 billion of beef, $1.2 billion of pork, and $1.2 billion of poultry in 2021, representing 5% of total world imports of both beef and poultry and 3.5% of world pork imports in that year. Figure 1 shows the share of the 10 main exporters of meat to ASEAN. India, Brazil, and Australia comprise

Figure 1. ASEAN Beef, Pork, and Poultry Imports by Source Share, 2021



Source: UN Statistics Division (2023)

Note: Data include harmonized system (HS) product codes 0201 (meat of bovine animals, fresh or chilled), 0202 (meat of bovine animals, frozen), 0203 (meat of swine, fresh, chilled, or frozen), and 0207 (meat and edible offal of poultry of the poultry of heading no. 0105, i.e., fowls of the species Gallus domesticus, fresh, chilled, or frozen).

almost 60% of total ASEAN imports of beef, pork, and poultry. Approximately 22% of ASEAN imports of meat come from India, followed by nearly 21% from Brazil. The United States represents approximately 11% of ASEAN imports, behind Australia with a share of 15% and the EU with 13%. India represented 41% of ASEAN beef imports in 2021, while Australia's share was 26%, followed by Brazil (14%) and the United States (7%). Five ASEAN members concentrated 94% of the region's beef imports in the same year: Indonesia (27%), Malaysia (20%), Vietnam (19%), the Philippines (18%), and Singapore (10%). The EU was the largest source of ASEAN pork imports in 2021, representing 36% of the region's total pork imports. The other sources of pork in ASEAN were Brazil, with a 22% share, followed by Russia (14%), Canada (13%), and the United States (9%). Pork imports within the region are relatively more concentrated compared to beef imports. The Philippines imported 39% of ASEAN total pork imports, while Vietnam's and Singapore's share were 31% and 25%, respectively. Brazil represented 36% of ASEAN poultry imports in 2021, followed by the United States (23%), EU (11%), and China (5%). Approximately 98% of ASEAN poultry imports in 2021 were concentrated in four countries: the Philippines (38%), Singapore (24%), Vietnam (20%), and Malaysia (16%).

U.S. Meat Exports to ASEAN

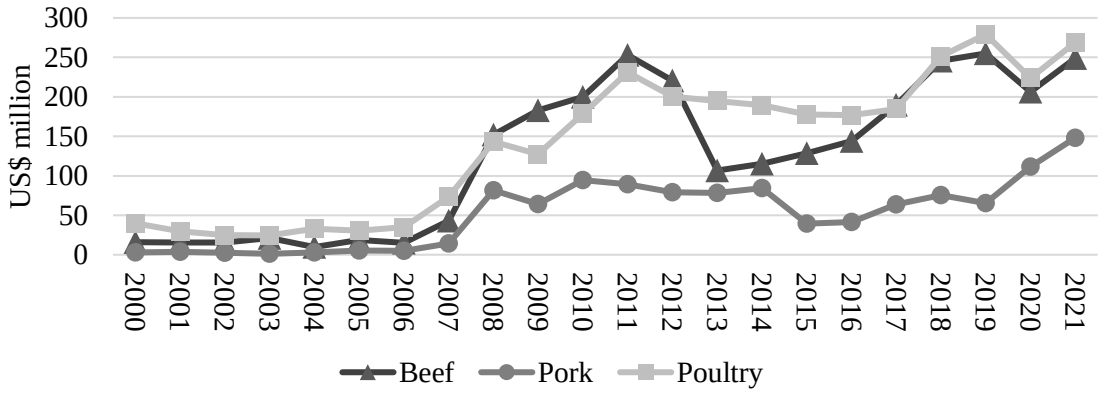
The United States faces several challenges to export meat to ASEAN countries. First, customers are spread across many small countries, making it harder to connect exporters to buyers. Second, besides the geographical challenge, import requirements vary widely from country to country. A great number of tariff and nontariff barriers imposed by ASEAN countries, which are established by the government agencies of each country, are related to animal products (UNCTAD, 2016). The United States faces some of the largest tariffs on agricultural product exports to ASEAN, especially for exports of pork (19.1%), other meat (15.8%), and beef (8.7%) (Beckman, Gopinath, and Daugherty, 2021).

Over the last 2 decades, U.S. meat exports to ASEAN have risen substantially, increasing from $58.7 million in 2000 to $665.7 million in 2021. Figure 2 shows U.S. beef, pork, and poultry exports to ASEAN between 2000 and 2021. However, ASEAN still represents only a small fraction of U.S. exports of meat, highlighting the potential for U.S. exports to the region. Approximately 2.7% of U.S. beef exports in 2021 were destined for ASEAN, valued at $249 million, with 95% being frozen beef and only 5% fresh or chilled beef. Further, 35% of U.S. beef exports to ASEAN in 2021 were destined for Indonesia, while 27% went to the Philippines, 17% to Vietnam, and 15% to Singapore.

U.S. pork exports to ASEAN totaled $148 million in 2021, representing 2.5% of U.S. total pork exports in that year, with 86% destined for the Philippines, 7% to Vietnam, and 6% to Singapore. On the other hand, ASEAN represented 5.6% of U.S. poultry exports in 2021, corresponding to approximately $269 million. 52% of U.S. poultry exports to ASEAN were destined for the Philippines, 37% to Vietnam, and 6% to Singapore in the same year.

Although the United States has reached meat export records to East Asia in recent years, U.S. exports destined for ASEAN have grown move slowly compared to exports to South Korea, China, Hong Kong, Japan, and Taiwan. In fact, South Korea has been the most valuable destination for U.S. meat exports since 2021 as a result of the South Korea–U.S. Free Trade Agreement. This shows how imperative it is for the United States to negotiate trade agreements with ASEAN to improve the meat trade and increase the market share in the region.

Figure 2. U.S. Beef, Pork, and Poultry Exports to ASEAN, 2000–2021



Source: UN Statistics Division (2023)

Note: Data include harmonized system (HS) product codes 0201 (meat of bovine animals, fresh or chilled), 0202 (meat of bovine animals, frozen), 0203 (meat of swine, fresh, chilled, or frozen), and 0207 (meat and edible offal of poultry of the poultry of heading no. 0105, i.e., fowls of the species Gallus domesticus, fresh, chilled, or frozen).

Table 1. Changes in Exports (percentage)

Sector/Region	Australia	New Zealand	China and Hong Kong	Japan	South Korea	ASEAN	India	Canada	United States	Mexico	South America	European Union and United Kingdom	Rest of the World
Grains	0.03	0.02	-0.03	-0.01	0.00	0.12	0.01	0.02	-0.09	0.00	0.02	0.01	0.00
Other agricultural products	0.07	0.03	-0.01	-0.01	0.00	0.13	0.00	0.04	-0.13	-0.04	0.03	0.00	0.00
Live animals	-0.05	0.03	-0.01	-0.15	-0.07	0.16	0.11	0.22	-0.15	0.26	0.07	-0.03	-0.01
Other primary products	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
Beef	-0.21	-0.08	-1.12	-1.44	-0.43	-2.21	-1.45	0.06	2.17	0.04	-0.05	-0.03	-0.17
Other meat	-5.37	-1.59	-0.77	-2.34	-4.91	-0.97	-0.97	-0.45	5.24	-0.06	-0.54	-0.34	-0.27
Other processed foods	0.01	0.01	-0.01	-0.02	-0.01	0.05	0.00	0.03	-0.05	0.00	0.01	0.00	-0.01
Manufacturing	0.03	0.04	0.00	0.00	0.00	0.03	0.01	0.03	-0.04	0.00	0.04	0.00	0.00
Services	0.02	0.02	0.00	0.00	0.00	0.02	0.01	0.03	-0.03	0.01	0.03	0.00	0.00

Source: Authors' simulation.

Potential U.S. Meat Exports to ASEAN

The United States can benefit from a free trade agreement with ASEAN, since those countries have been recently pursuing comprehensive economic partnerships with important trade partners (Beckman, Gopinath, and Daugherty, 2021). One of the most comprehensive ASEAN free trade agreements to date is the ASEAN–Australia–New Zealand Free Trade Agreement, which is expected to lead to a sharp increase in ASEAN meat imports from Australia and New Zealand in the coming years (Penh, 2022). Important competitors of the United States, including Australia and New Zealand, have a relatively greater opportunity to export agricultural products to ASEAN countries when the United States is excluded from trade negotiations, resulting in a substantial cost for U.S. agricultural exporters (Heerman, Arita, and Gopinath, 2015).

To investigate the potential for increased U.S. meat exports with improved market access in ASEAN, we simulate complete import tariff removal on meat trade between ASEAN and the United States, employing the GTAP model and version 11 of the GTAP database detailed in Aguiar et al. (2022). The GTAP model represents demand, supply, and trade and is a useful tool for an ex-ante analysis of trade policy (Gilbert, Furusawa, and Scollay, 2017). In the model, producers are assumed to be perfectly competitive cost minimizers, with technology defined as a nested production function, and producers demand intermediate inputs based on prices of inputs and outputs. Consumer demand is described by a constant difference of elasticity demand system, and each region's representative household is assumed to maximize utility derived from the consumption of market goods and savings subject to a regional income constraint. The 160 regions and 65 sectors represented in the database were aggregated into 13 regions and nine sectors, including five agriculture-related sectors plus two meat sectors (beef and other meat) for this analysis. The scenario assumed complete removal of ASEAN import tariffs on U.S. meat and the complete removal of U.S. import tariffs on ASEAN meat, as could happen in the case of a free trade agreement between the two economies. The simulations consider a short-run setup (1-year) timeframe.

Results show that beef imports would increase by 2.6%, while other meat imports would increase 9.6% in ASEAN. At the same time, U.S. beef exports would increase by 2.17%, and other meat exports by 5.24%. U.S. other meat exports to ASEAN would double, and U.S. beef exports to ASEAN would increase by 67%. With the increase in imports from the United States, ASEAN would decrease beef and other meat imports from other countries by approximately 3.6% and 16%, respectively. U.S. competitors in exports to ASEAN would experience decreases in beef and other meat exports. The most negatively affected in terms of beef exports would be ASEAN (-2.21%), India (-1.45%), and Japan (-1.44%). In terms of other meat exports, Australia and South Korea would be the most negatively affected, with a simulated decrease in other meat exports equal to 5.37% and 4.91%, respectively (Table 1). ASEAN other meat exports would slightly decrease by nearly 1%. In the aggregate, world exports of beef and other meat are simulated to increase by 0.13% and 0.35%, respectively. The international trade of other products is not affected in this scenario as tariffs for trade of other products remain unchained.

The complete removal of tariffs on the international trade of beef and other meat between ASEAN and the United States would lead to a decrease in ASEAN production of live animals, beef, and other meat production by 0.34%, 0.38%, and 1.43%, respectively. At the same time, U.S. live animal production is simulated to increase by 0.27%, while U.S. beef production would slightly increase by 0.15% and other meat production by 0.58%. ASEAN household demand for imported beef and other meat is simulated to increase by 2.45% and 11.64%, respectively. On the other hand, changes in U.S. household demand for imported beef and other meat would be negligible, increasing by only 0.10%. Commodity prices would not change in the aggregate for this scenario, but import prices in ASEAN would decrease for imports of beef and, especially, for other meat (Table 2).

Table 2. Changes in Key Variables in ASEAN and the United States (percentage)

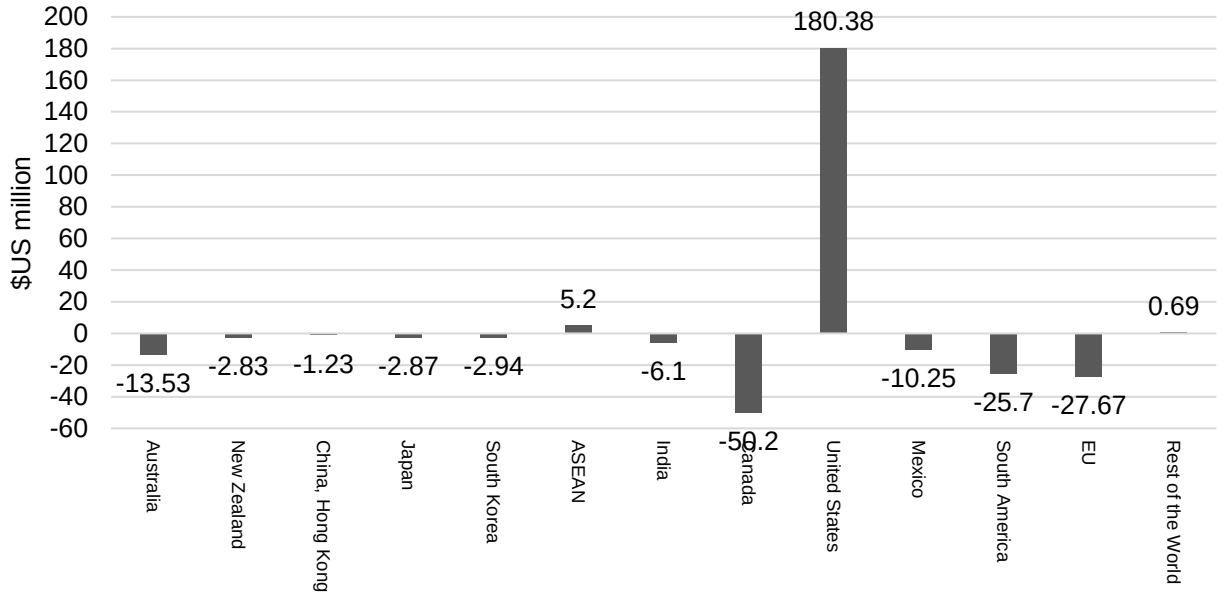
Sector	Production		Household Import Demand		Import Price	
	ASEAN	United States	ASEAN	United States	ASEAN	United States
Grains	0.02	-0.03	-0.06	0.04	0.00	0.00
Other agricultural products	0.05	-0.02	-0.05	0.05	0.00	-0.01
Live animals	-0.34	0.27	-0.09	0.04	-0.02	-0.01
Other primary products	0.01	-0.01	0.00	0.01	0.00	0.00
Beef	-0.38	0.15	2.45	0.10	-0.75	-0.01
Other meat	-1.43	0.58	11.64	0.11	-3.05	-0.01
Other processed foods	0.01	0.00	-0.02	0.02	-0.01	0.00
Manufacturing	0.03	-0.02	-0.01	0.02	0.00	0.00
Services	0.00	0.00	-0.01	0.02	0.00	0.00

Source: Authors' simulation.

Figure 3 shows the welfare effects from the removal of ASEAN import tariffs on U.S. meat. Welfare is measured by equivalent variation. As expected, the United States is simulated to have the largest gain in welfare equal to $180.4 million, followed by ASEAN, with a $5.2 million increase in welfare. The driver of the welfare increase in ASEAN is changes in allocative efficiency, while the gains from changes in terms of trade is the largest contributor to increased welfare for the United States. Canada presents the highest decrease in welfare (-$50.2 million), followed by the EU (-$27.7 million) and South America (-$25.7 million), resulting from deteriorating terms of trade.

Overall, results show that the United States would benefit from the total removal of import tariffs on meat traded between the United States and ASEAN. On the other hand, ASEAN is simulated to have small decreases in meat production and exports, while beef and other meat import prices would decrease and import volume would increase substantially. The largest U.S. competitors in the ASEAN meat import market, including Australia, EU, and South America would be negatively affected in terms of lost exports and associated decreased welfare. The removal of tariffs would create trade diversion in favor of U.S.-sourced imports at the detriment of imports from other meat suppliers to ASEAN.

Figure 3. Changes in Welfare ($US millions)



Source: UN Statistics Division (2023)
Note: Data include harmonized system (HS) product codes 0201 (meat of bovine animals, fresh or chilled), 0202 (meat of bovine animals, frozen), 0203 (meat of swine, fresh, chilled, or frozen), and 0207 (meat and edible offal of poultry of the poultry of heading no. 0105, i.e., fowls of the species *Gallus domesticus*, fresh, chilled, or frozen).

Conclusions

Although the United States exports meat to ASEAN, most of the ASEAN import market share for meat-related products is concentrated in other countries, including Australia, Brazil, and the EU. Simulation results show that U.S. beef and other meat exports to ASEAN could increase by 67% and 100%, respectively, when considering the removal of import tariffs on meat traded between the United States and ASEAN. Despite economic shocks and uncertainty during the last 3 years, ASEAN still presents great potential for U.S. meat exports, with no indicators of substantial economic slowdown in the future (Mikic, 2023). The expected accelerating growth of the middle class in ASEAN and corresponding increased meat consumption are also strong indicators of the region's meat import potential. While results show the market effects from the elimination of import tariffs on meat traded between the United States and ASEAN, there are limitations to this simple analysis. First, tariff reform would include sectors throughout the economy, yet we focus only on the meat sector. Second, tariff reform would likely occur over a phase-in period, and we model immediate tariff removal. Third, the highly aggregated commodity grouping of meat into two sectors, beef and other meat, masks the within-product variation in tariff levels and corresponding magnitudes of changes in tariffs that would occur with an FTA between the two regions. While meat is highly aggregated, this research shows the potential, general implications of tariff reform for the meat market. This article describes the ASEAN meat import market and demonstrates the potential for increased U.S. meat exports to the region with the elimination of ASEAN import tariffs. However, the United States will continue to lose competitiveness in ASEAN without a preferential trade agreement, while U.S. competitors enjoy favorable access to the ASEAN market.

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U.S. Timber Trade and Vietnam: Exploring the Impacts of the Trade War and Environmental Policies

Andrew Muhammad, Shamar L. Stewart, and Md Deluair Hossen

JEL Classifications: Q23, Q27
Keywords: International trade, Forestry, Timber, Vietnam

The United States supplies timber products such as logs and lumber to Asian manufacturers of finished wood products like furniture and flooring. A large share of these finished products is "reexported" to the United States or sold to other high-income countries. At the time of the 2018 trade war, the United States exported logs and lumber mostly to China and imported products like wooden furniture mostly from China (Muhammad and Jones, 2021; Jiang and Muhammad, 2024). Consequently, the tariffs imposed by the Trump administration on Chinese products indirectly decreased demand for raw materials from the United States, but the retaliatory tariffs that China then imposed on U.S. timber products decreased that demand even more. After the start of the trade war, U.S. log and lumber exports decreased by more than 25% from nearly $6.0 billion in 2018 to $4.5 billion in 2019. This overall decline was mostly due to export sales to China falling by over 40% (USDA, 2023). Consequently, U.S. timber companies are now eyeing other manufacturing hubs, like Vietnam, for export sales.

The trade war also affected U.S. importers of finished wood products and increased their reliance on Vietnam to satisfy demand. For instance, U.S. wooden furniture imports (for home use only) increased from $13 billion in 2018 to $18 billion by 2022. During this period, however, the share of imports from China decreased from 40% to 15%, while the share of imports from Vietnam increased from around 26% to 40% (Jiang and Muhammad, 2024).

Undoubtedly, the trade war resulted in major shifts in U.S. trade. Vietnam has emerged as a major supplier of finished wood products to the United States and has been a consistent buyer of U.S. timber products for over a decade. However, U.S. trade relations with Vietnam have not been without controversy. For timber in particular, the United States has been concerned with Vietnam importing illegally harvested timber from high-risk countries with unsustainable forest management practices and importing or using at-risk tree species in their manufacturing sector (USTR, 2021). In October 2020, the Office of the U.S. Trade Representative (USTR) launched a Section 301 investigation into Vietnam's actions, policies, and practices concerning its timber imports. (Section 301 of the 1974 Trade Act grants the United States authority to address unfair trade practices.) While the act mostly addresses actions by foreign governments considered discriminatory or trade restricting, this was the first 301 investigation to address environmental concerns. Vietnam was given a reprieve to improve enforcement and monitoring of illegal timber in their supply chain. However, this issue has not been fully resolved (USTR, 2021).

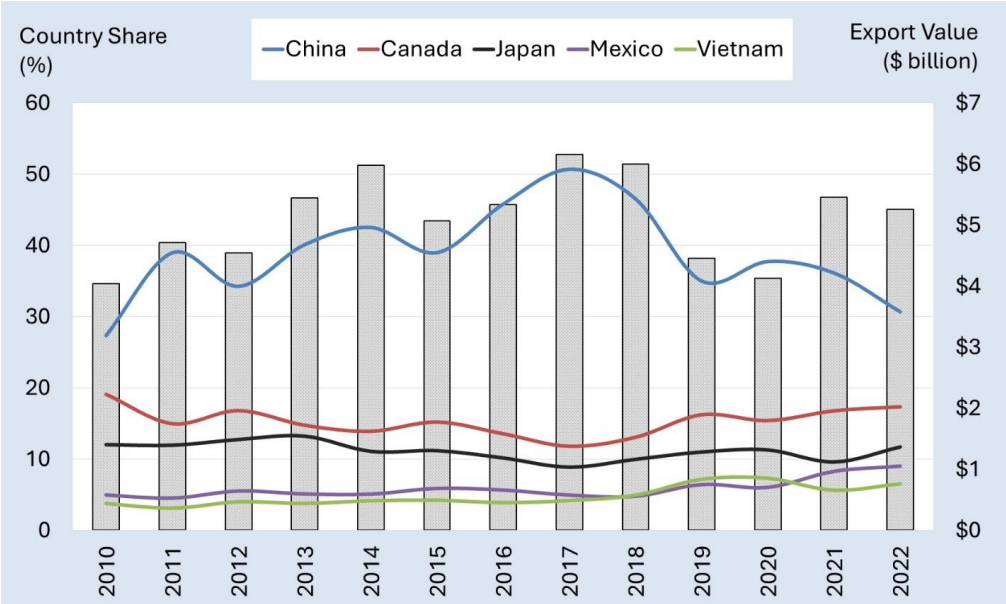
In this paper, we consider an overlooked market that was significantly impacted by the trade war: timber products. We focus on Vietnam, which has potential as a major buyer of U.S. logs and lumber in the future. We also highlight the Section 301 investigation of Vietnam's illegal timber trade, which could have resulted in restrictions on U.S. imports of finished wood products from Vietnam. We close the paper with a discussion of how agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership might have addressed illegal timber harvesting and trade had the United States remained a member.

Trade Overview

U.S. Exports

Figure 1 reports U.S. log and lumber exports and destination-country shares. From 2010 to 2017, U.S. exports increased from $4.0 billion to around $6.2 billion. Most of this growth was due to increasing export sales to China, which accounted for 27% of U.S. export sales in 2010 but more than 50% of export sales by 2017. As shown in Figure 1, the effects of the trade war were immediate. U.S. export sales declined to $4.5 billion in 2019 and then reached a low of $4.1 billion by 2020, likely the result of both the trade war and the onset of the COVID-19 pandemic. What is important to note is that export sales to China are still below pre-trade war levels, despite higher exports in 2021 and 2022 (Figure 1).

Figure 1. U.S. Log and Lumber Exports and Importing-Country Share by Destination, 2010–2022



Note: Logs and lumber are defined by the following Harmonized System (HS) Classifications: HS 4403 (logs) *wood in the rough, whether stripped of bark or sapwood, or roughly squared,* and HS 4407 *(lumber) wood sawn or chipped lengthwise, sliced, or peeled, whether planed, sanded or end-jointed, of a thickness exceeding 6 mm.*

Source: USDA (2023).

Although Vietnam imports significantly less than China (e.g., $350 million versus $1.6 billion, 2022), it has been a reliable market for U.S. timber products. Vietnam is the fifth largest foreign market for U.S. logs and lumber, accounting for around 5% of exports since 2010. The data indicate that Vietnam has become increasingly more important to the United States since the trade war. In years prior, Vietnam accounted for less than 5% of U.S. export sales. Since 2019, Vietnam has, on average, accounted for more than 7% (Figure 1).

Yellow poplar lumber is the leading U.S. timber export to Vietnam ($61 million in 2022). Other noted exports included white oak lumber ($54 million), walnut lumber ($46 million), red oak lumber ($35 million), and white oak logs ($27 million) (Table 1). For major species and products, such as poplar lumber and oak lumber, Vietnam has ranked first and third, respectively, among countries that import from the United States (USDA, 2023).

Table 1. Top U.S. Exports to Vietnam by Species and Product, 2022

Species, Products	Value ($ million)	Share (%)
Yellow poplar, lumber	61.0	17.6
White oak, lumber	54.3	15.7
Walnut, lumber	46.4	13.4
Red oak, lumber	34.6	10.0
White oak, logs	26.7	7.7
Southern yellow pine, logs	25.6	7.4
Red oak, logs	15.4	4.5
Western red alder, lumber	13.3	3.8
Walnut, logs	11.6	3.3
Other poplar, lumber	10.8	3.1
Other hardwood, logs	6.7	1.9
Ash, lumber	5.8	1.7
Hickory, lumber	4.9	1.4

Source: USDA (2023).

Vietnam's Imports and U.S. Competitiveness

Vietnam has experienced significant growth in its demand for imported logs and lumber. Since 2012, imports have increased from around $900 million to over $1.6 billion by 2022, with some fluctuations over the intervening years. Imports from the United States have also increased over this period: $188 million in 2012 to around $350 million in 2022. Overall, the U.S. share of log and lumber imports in Vietnam has varied from about 20% (2012), decreasing to a low of 14% (2015), and then reaching a peak of 25% (2020). In 2022, the U.S. share was around 22%. Despite these fluctuations, the growth in log and lumber imports from the United States exceeded the growth in Vietnam's total imports (United Nations, 2023).

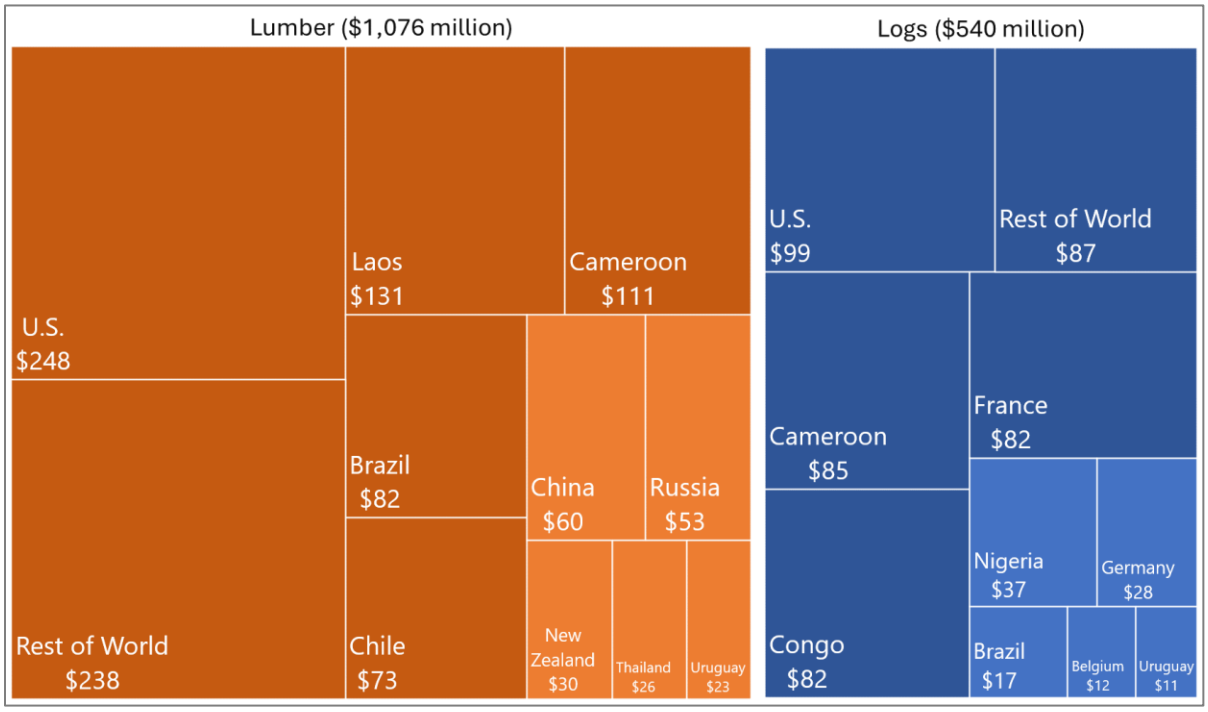
Currently, the United States is the largest exporter of logs and lumber to Vietnam (Figure 2). For lumber, the United States exported $248 million in 2022, accounting for 23% of total imports that year ($1.1 billion). The next two largest exporters were significantly smaller by comparison: Laos ($131 million) and Cameroon ($111 million). Other noted suppliers include Brazil ($82 million) and Chile ($73 million). Logs account for a smaller share of timber product imports in Vietnam ($540 million in 2022). While the United States is the leading log exporter to Vietnam ($99 million), it is followed closely by Cameroon ($85 million), Congo ($82 million), and France ($82 million). Imports from other competing exporters like Nigeria, Germany, Brazil, Belgium, and Uruguay ranged from $11 million to $37 million in 2022.

Investigation of Illegal Timber Trade in Vietnam

Illegal timber trade is the purchase of timber, including imports and exports, that has been harvested in violation of domestic or international law. Illegal timber imports in Vietnam have been a significant concern for the United States for both environmental and economic reasons. In October 2020, USTR initiated an investigation into illegal timber practices in Vietnam under Section 301 of the Trade Act. At the time, USTR indicated that evidence suggested that a significant portion of Vietnam's timber imports was harvested or traded in violation of U.S. and international rules that protect forests and global timber resources. This issue is not solely about the environment. It has also been argued that products derived from illegally harvested timber constitutes "unfair competition" for U.S. companies (USTR, 2021).

U.S. policy, such as the Lacey Act, combats illegal trafficking of wildlife, fish, and plants (including timber), making it unlawful for the United States to import products from illegally harvested timber. Similar policies

Figure 2. Vietnam Log and Lumber Imports, 2022



Note: Country values are in $ millions. Logs and lumber are defined by the following Harmonized System (HS) Classifications: HS 4403 (logs) *wood in the rough, whether stripped of bark or sapwood, or roughly squared* and HS 4407 (lumber) *wood sawn or chipped lengthwise, sliced, or peeled, whether planed, sanded or end-jointed, of a thickness exceeding 6 mm.*

Source: United Nations (2023).

have been implemented in Australia and the European Union (Kim et al., 2023). As mentioned, Vietnam has emerged as a major supplier of wooden furniture and is a significant player in global wood products trade, exporting over $8.0 billion in wood products such as furniture and flooring to the U.S. annually (Jiang and Muhammad, 2024). A negative ruling would have resulted in the United States restricting or banning imports from Vietnam. This could have decreased Vietnam's demand for imported logs and lumber, indirectly affecting U.S. exports.

After a year of discussions, the two countries were able to reach an agreement. The United States agreed not to impose tariffs or other restrictions, while Vietnam committed to improving its timber legality assurance system and enforcing laws to ensure that only legally harvested timber entered the supply chain. In addition, Vietnam promised to collaborate with high-risk countries to improve enforcement and coordination among law enforcement agencies (USTR, 2021).

This issue could be revisited by the United States if Vietnam does not remain vigilant. To prevent issues in the future, continued monitoring and collaboration between the United States and Vietnam are crucial. Vietnam has pledged to require sufficient documentation from source countries to ensure compliance and to collaborate with high-risk countries to investigate illegal activities and improve forest governance. Interestingly, China is among the high-risk source countries. Despite new regulations to clean up Vietnam's timber sector, importers continue to bring large volumes of tropical hardwood into the country from deforestation hotspots in Africa and Asia for use in products sold domestically (Cowan, 2022).

TPP, CPTPP and Illegal Timber Trade

The Trans-Pacific Partnership (TPP) negotiations started during the Bush administration. However, new countries joined, and negotiation efforts were intensified during the Obama administration. The TPP was to set economic policy in the Asia-Pacific region. Member countries included the United States and 11 Pacific Rim countries, and major U.S. trading partners such as Canada, Japan, and Mexico as well as emerging markets like Vietnam. President Obama signed the agreement in 2016, but less than a year later President Trump officially withdrew the United States from the agreement. The remaining 11 countries completed a revised agreement in 2018, renamed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) (Muhammad and Grant, 2021).

As part of the TPP negotiations in 2010, the United States insisted on language requiring signatories to adopt policies restricting the trade of illegally harvested timber consistent with the Lacey Act. It was understood that strong language on environmental issues was needed for the TPP to garner Democratic Party support in the United States. Interestingly, Vietnam, as well others (e.g., Malaysia, Chile), opposed the inclusion of Lacey Act provisions in the TPP. However, these countries could not override the United States. While the CPTPP provides a framework for addressing the challenges of illegal timber trade, the U.S. withdrawal allowed for the remaining countries to revise key language resulting in far less restrictive provisions on illegal logging. The most notable change is that countries are only bound by their own, less restrictive provisions and not by the Lacey Act. The TPP would have included the very rules that the United States was forced to negotiate on a bilateral basis with Vietnam. In comparing the TPP to the CPTPP, it has been argued that the change and deletion of key language was the difference between severely restricting illegal timber trade and allowing it to "flourish" (Barber and Li, 2018).

Closing

Vietnam's role as a major importer of U.S. timber products has been solidified, driven by its expanding manufacturing base and increased demand for high-quality timber from the United States. The growth in timber trade not only benefits U.S. exporters but also supports Vietnam's economic development goals. U.S. timber trade with Vietnam is shaped by geopolitical tensions, environmental concerns, and international agreements as they relate to Vietnam's commitment to forest sustainability and legal timber-trade practices. As both nations navigate these challenges, the focus on sustainable development and environmental protections will be crucial for fostering a resilient and responsible wood-products trading partnership. However, addressing these challenges might have been more effective through agreements like the CPTPP.

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U.S. Soy Exports Could Crush it in the Association of Southeast Asian Nations

Kelsey Story, Scott Gerlt, and Amanda M. Countryman

JEL Classifications: F10, F13, Q10, Q13, Q17, Q18
Keywords: ASEAN, Free trade agreement, International trade, Soybeans, Soybean meal, U.S.

The Southeast Asian market has largely eluded U.S. soy products due to the presence of Argentina and Brazil in the region, but that could change with a free trade agreement (FTA) between the United States and the Association of Southeast Asian Nations (ASEAN), a group of Southeast Asian countries that works to benefit each of its members through community and free trade.[1] The ten member countries have few or no tariffs on trade among themselves and make up what is referred to as the ASEAN Free Trade Area (AFTA). ASEAN members can also negotiate with outside countries to establish individual FTAs, such as the 2004 FTA between the United States and Singapore that eliminated tariffs on all U.S. exports to Singapore (USTR, 2003).

The United States have existing instances of market access to countries within ASEAN, such as the Philippines and Singapore. An FTA agreement with the region as a whole would help facilitate more trade and a stable relationship between the United States and ASEAN. An agreement to eliminate tariffs on U.S. goods traded with ASEAN would grant more market access for the U.S. soybean industry and increase whole bean and meal exports when U.S. soy becomes more affordable. Open market access for U.S. soybean meal is beneficial when considering the increase in demand for feed inputs for the expanding pork and poultry industries in ASEAN countries such as the Philippines and Vietnam (Lee and Hansen, 2019). ASEAN imported 38.5% of total soybean meal imports from Argentina, 41.5% from Brazil, and only 13.5% from the United States in the 2022/2023 marketing year (Trade Data Monitor, 2023). Given the supply volatility and export taxes on soybean meal and oil in Argentina, there is potential U.S. soybean meal to displace Argentina soybean products in ASEAN, which presents an excellent opportunity for the expanding U.S. soybean industry.

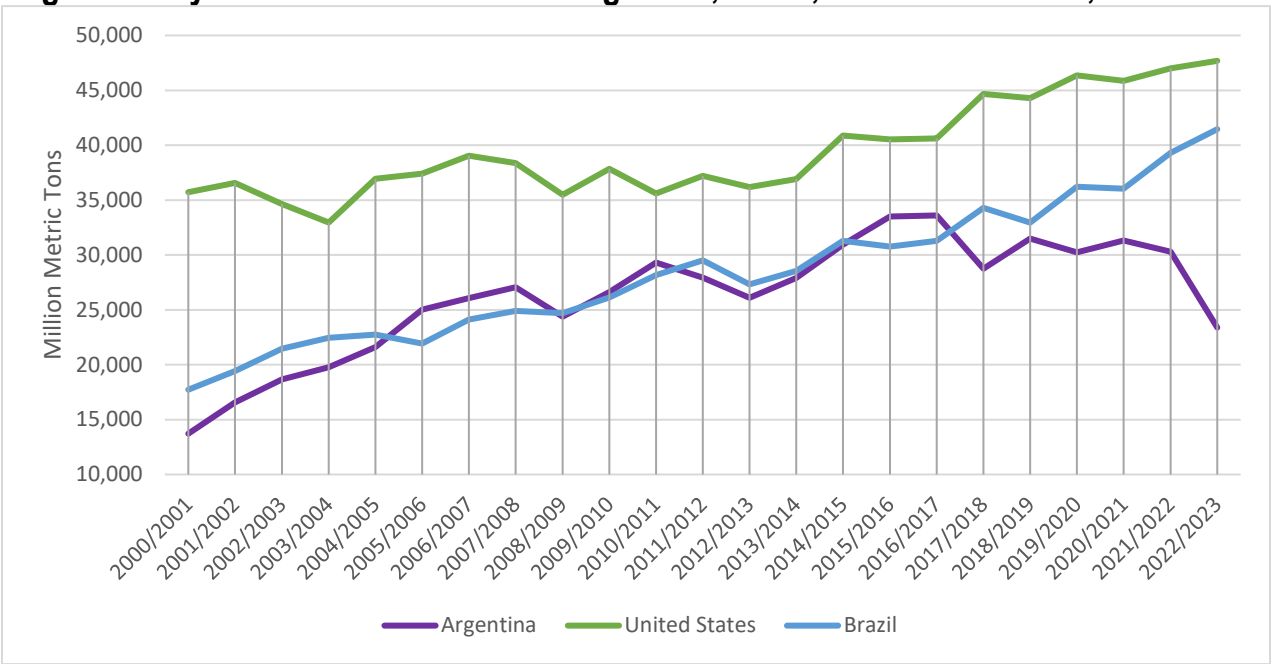
U.S. soy product exports to ASEAN currently face tariff and nontariff barriers that prevent the United States from exporting more agricultural products to Southeast Asian countries. Some ASEAN countries, such as Brunei, have agriculture tariffs as low as 0%, while others, such as Vietnam, have tariffs as high as 16.5% (USTR, 2022). As of 2015, 5,975 nontariff measures (NTMs) restrict U.S. exports to ASEAN countries (UNCTAD, 2016).

ASEAN has numerous FTAs with other countries, including Australia, New Zealand, China, India, Japan, the Republic of Korea, and Hong Kong (ASEAN, 2020). A common denominator among all these agreements is the gradual elimination of tariffs and nontariff measures, including licensing requirements, quantity restrictions, technical barriers to trade, and sanitary and phytosanitary measures (ASEAN, 2020). The United States has FTAs with 20 countries, all with the goal of limiting the impacts of nontariff measures (USTR, N.D.b). One of the most recent and significant trade agreements the United States has negotiated is the United Stares–Mexico–Canada Agreement (USMCA), which has language very similar to the ASEAN–Australia–New Zealand FTA in regard to sanitary and phytosanitary measures. Both of these agreements have goals to protect life and health and increase transparency while eliminating trade barriers (USTR, N.D.b). Using past FTAs that both countries are currently a part of will provide a template for a potential FTA between the United States and ASEAN.

This paper discusses the export potential for U.S. soybean products to ASEAN under the terms of a potential FTA. We consider how significant soybean competitors' products in the world market, such as Argentina and Brazil, will affect the supply of whole soybeans and the demand for soybean meal from the United States by ASEAN. We use an existing FTA

[1] The ten ASEAN member countries are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam (USTR, 2003).

Figure 1. Soybean Meal Production in Argentina, Brazil, and United States, 2000–2023



Source: USDA (2023c).

between the United States and ASEAN member Singapore to compare and discuss how a comprehensive FTA might operate between the United States and ASEAN.

Soybean Products Supply from Argentina, Brazil, and the United States

Brazil began increasing soybean production in 2012/2013 to meet import demand in China and overtook the United States as the largest producer of soybeans in the 2017/2018 marketing year (USDA, 2023c). Argentina is the world's third largest soybean producer but produces a fraction of what the United States and Brazil produce. However, Argentina crushed a larger portion of soybean production and was the world's top exporter of soybean meal except in 2023, when the country experienced extensive drought.

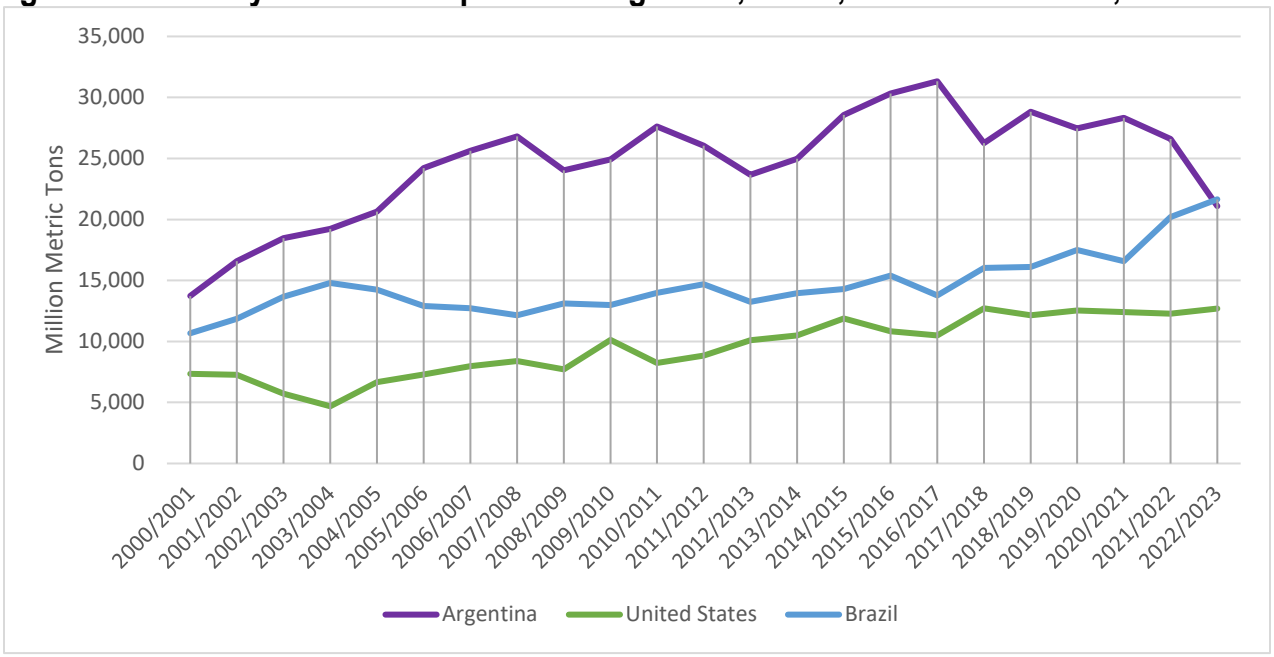
The government in Argentina previously encouraged soybean meal and oil exports through a differential export tax, which historically included higher export taxes on whole beans but lower export taxes on meal and oil. Argentina's government changed the tax rates on exports in 2020, which resulted in soybean meal and oil being taxed an additional 3% (United Soybean Board, 2020). The other export taxes led to lower crush margins and production, which decreased meal and oil exports from Argentina. Due to economic crises in Argentina, a bill was proposed to raise export taxes on soybean meal and oil from 30% to 33%, which could potentially decrease exports (Boroughs, 2020).

Along with increased export taxes, Argentina faced a drought that heavily affected the 2022/2023 soybean crop. Production is estimated to be 23.4 million metric tons (MMT) in 2022/2023, the lowest production in Argentina in 24 years (USDA, 2023a). Due to its small soybean crop, Argentina had to increase whole bean imports to satisfy domestic crush demand and decreased soybean meal exports by 21.10 MMT (USDA, 2023a). The United States produces more soybean meal than both Argentina and Brazil (Figure 1). The U.S. domestic animal feed industry consumes 74% of soybean meal (USDA, 2023c). However, U.S. soybean meal production increased by 33% from 2000/2001 to 2022/2023, and this upward trend will continue due to increased domestic crushing capacity (USDA, 2023c). An increase in soybean meal supply in the United States allows a larger portion of soybean meal to be exported to ASEAN.

Between the new export taxes and decreased production in Argentina, exports have dropped 26.77% since the 2019/2020 marketing year (USDA,2023c). Meal exports from Brazil and the United States increased by 7.14% and 3.52%, respectively, in the 2022/2023 marketing year to compensate for the decrease in exports from Argentina. The recent increase in meal exports resulted in Brazil barely passing Argentina as the world's largest exporter of soybean meal in the 2022/2023 marketing year (Figure 2).

The United States is primarily a whole soybean exporter. Over the last three complete marketing years (2019/2020–2021/2022), an average of 50% of U.S. soybean production was exported as whole soybeans, while 11% was exported as soybean meal and 1% was exported as soybean oil (USDA, 2023c). The rise of renewable diesel can shift some of these historical

Figure 2. Total Soybean Meal Exports for Argentina, Brazil, and United States, 2000–2023



Source: USDA (2023c).

patterns. Biofuel has seen tremendous growth in the United States and worldwide, with more expected (Troderman and Shi, 2023). Soybean oil will likely be a primary feedstock for the growing demand for biofuel (Gerlt, 2022).

The U.S. soybean crush industry is expanding to provide the soybean oil needed for the oncoming renewable diesel plants (Figure 3). More than 22 announcements for new or expanding crush facilities have been announced in response, which would increase domestic crushing capacity from a little over 2.2 billion bushels of practical capacity per year before the start of the announcements to about 2.8 billion bushels per year if all the plants are built over the next several years (excluding the Cargill plant in Southeast Missouri, which has been put on hold) (American Soybean Association, 2023). The USDA's projected soybean meal yields for 2023/2024 bring practical soybean meal capacity from 57 MMT before the rise of renewable diesel to a potential of 74 MMT (USDA, 2023a).

The increase in domestic crush capacity will be met with increased domestic soybean production through yield growth, acreage changes, and exports. While the increased quantities of soybean oil are destined for the biofuel market, the additional soybean meal will find domestic and foreign consumers. The properties of soybean meal make it more challenging to handle in facilities than soybeans, which can be a challenge for exporting soybean meal (Dry Cargo International, 2013). The soybean industry announced investments to increase the ability to export soybean meal from the Pacific Northwest by increasing shipping and storage capacity at the Port of Grays Harbor (Dunlap, 2022).

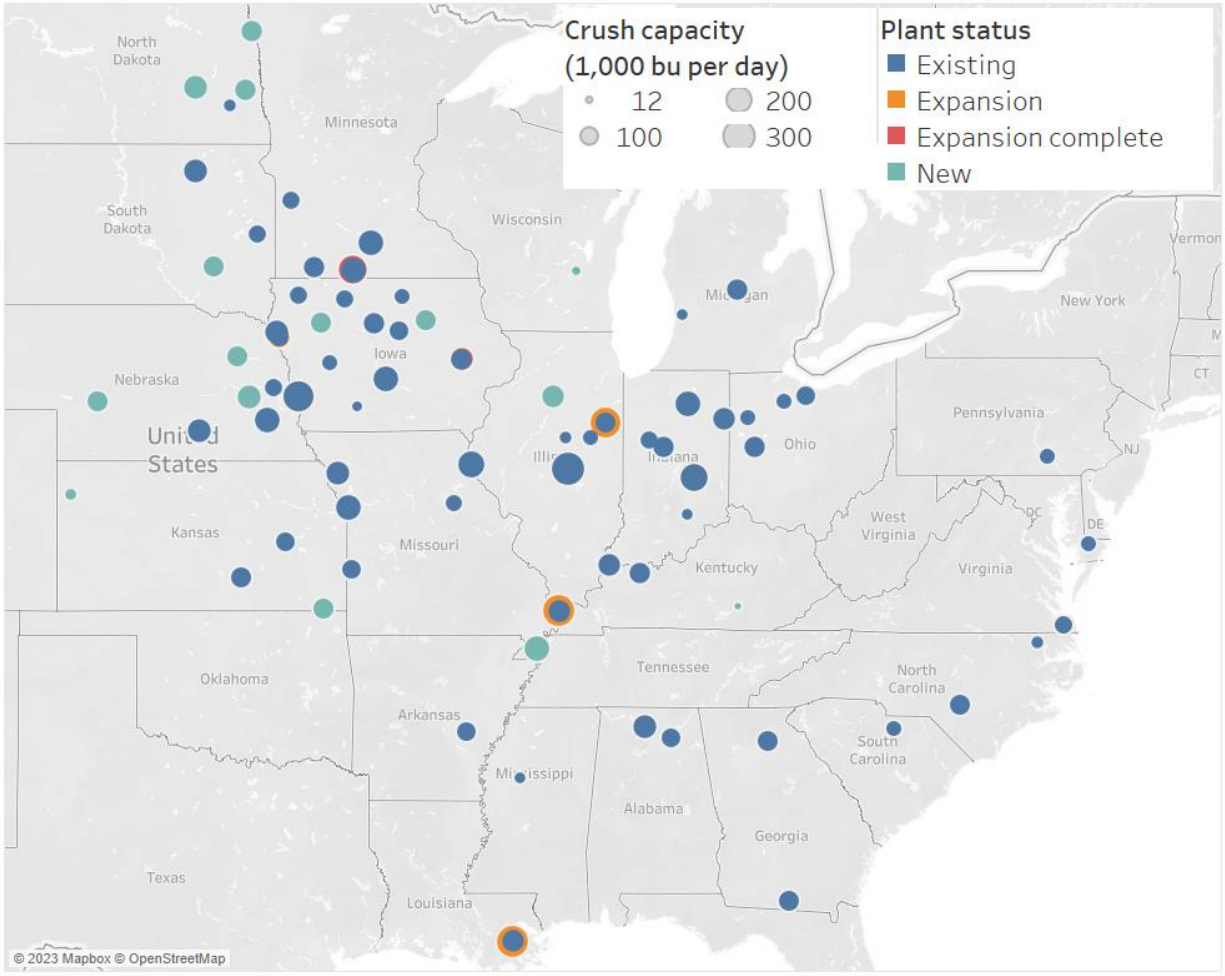
Given the increased number of crushing plants in the Northern Plains, the region is well suited to export soybean meal through the Pacific Northwest to Asian markets. A major transportation method for soybean meal is the railway system, and BNSF Railway is the Class I Carrier for the Northern Plains with lines into the Pacific Northwest. BNSF completed the Sandpoint Bridge project in Idaho in 2023 to help decrease congestion and provide a more efficient rail system to transport agricultural commodities, such as soy products, through the Pacific Northwest region (BNSF Railway, 2023b). The changing structure of the soybean products market in the United States in the near future provides an excellent opportunity to meet growing demand in ASEAN.

ASEAN Demand for Soybean Products

ASEAN has been one of the fastest-growing regions in the last decade, with no signs of slowing growth, given a projected annual real GDP growth rate of 4.6% from 2023 to 2032 (USDA, 2023b). Cambodia and Vietnam make the largest contribution to this relatively large GDP growth, both with expected annual real GDP growth of more than 6% over the next decade (USDA, 2023b) , and every other ASEAN country has expected annual real GDP growth of at least 2%.

GDP growth is often paired with increased demand for proteins due to increased purchasing power (Whitton et al., 2021). The most common type of proteins consumed in Southeast Asia are pork and poultry, both of which use soybean meal as inputs. In Southeast Asia, pork consumption is projected to increase 21.4% from 2023

Figure 3. Current and Expected U.S. Soybean Crush Plants, 2022



Source: American Soybean Association (2023).

to 2032 (USDA, 2023b). In Vietnam, the government controls pork prices closely because of its importance in consumer diets and to protect local meat producers (Euromonitor International, 2022). Vietnam is among the top 10 pork producers in the world and is the second largest producer of pork in Asia, only behind China (Lee and Hansen, 2019). Thailand is the fourth largest poultry producer and is estimated to increase exports by 59% by 2028 due to plans to improve facilities (Lee and Hansen, 2019). Over the last decade, pork and poultry production increased by 14% and 41%, respectively (USDA, 2023c). Pork and poultry production has increased almost yearly in ASEAN, excluding years of substantial disease outbreaks such as African Swine Fever in 2019 and 2020. While ASEAN already produces large amounts of proteins, meat production is expected to increase by 2.4% annually through 2028 (USDA, 2019).

The aquaculture industry in ASEAN is also growing to satisfy the increased demand for protein in the region. Because of its high protein content, soybean meal is a major feed input for aquaculture (United Soybean Board, 2019). Indonesia and Vietnam are among the top aquaculture producers in the world: Indonesia's aquaculture feed consumption demand is projected to be 5.8 MMT in 2023/2024 (Rahmanulloh, 2023). Production in Vietnam was 5.16 million tons in 2022 (Linh, 2023).

ASEAN countries produce large quantities of pork and poultry to satisfy domestic demand, but they cannot grow and crush enough soybeans to meet the demand for protein feed requirements. The USDA projects that Southeast Asia will account for 42.3% of world soybean meal imports by 2032/33 (USDA, 2023b). ASEAN lacks crushing capacity, necessitating higher import demand for soybean meal than whole soybeans. One reason for the lack of soybean crush in this region is their use of palm oil negates the need for soybean oil. Figure 4 shows that soybean meal is the largest portion of soy product imports in ASEAN. Some of the larger pork and poultry producers in ASEAN—including Indonesia, Vietnam, and the Philippines—are expected to increase imports of soybean meal from 14.4 MMT in 2023/2024 to 17.3 MMT in 2032/33 (USDA, 2023b). By 2028, ASEAN will account for one-third of global soybean meal imports (Lee and Hansen, 2019).

In the 2022/2023 marketing year, ASEAN imported 18.3 MMT of soybean meal. Argentina, Brazil, and the United States comprised 93.5% of the total soybean meal

imported into ASEAN. Figure 5 illustrates the breakdown of soybean meal imports by country and the total number of imports into ASEAN. Brazil represented the highest portion of imports at 41.5%, Argentina at 38.5%, and the United States at 13.5% (USDA,2023c). Only 6.5% of soybean meal imports did not come from the top three soybean meal exporters.

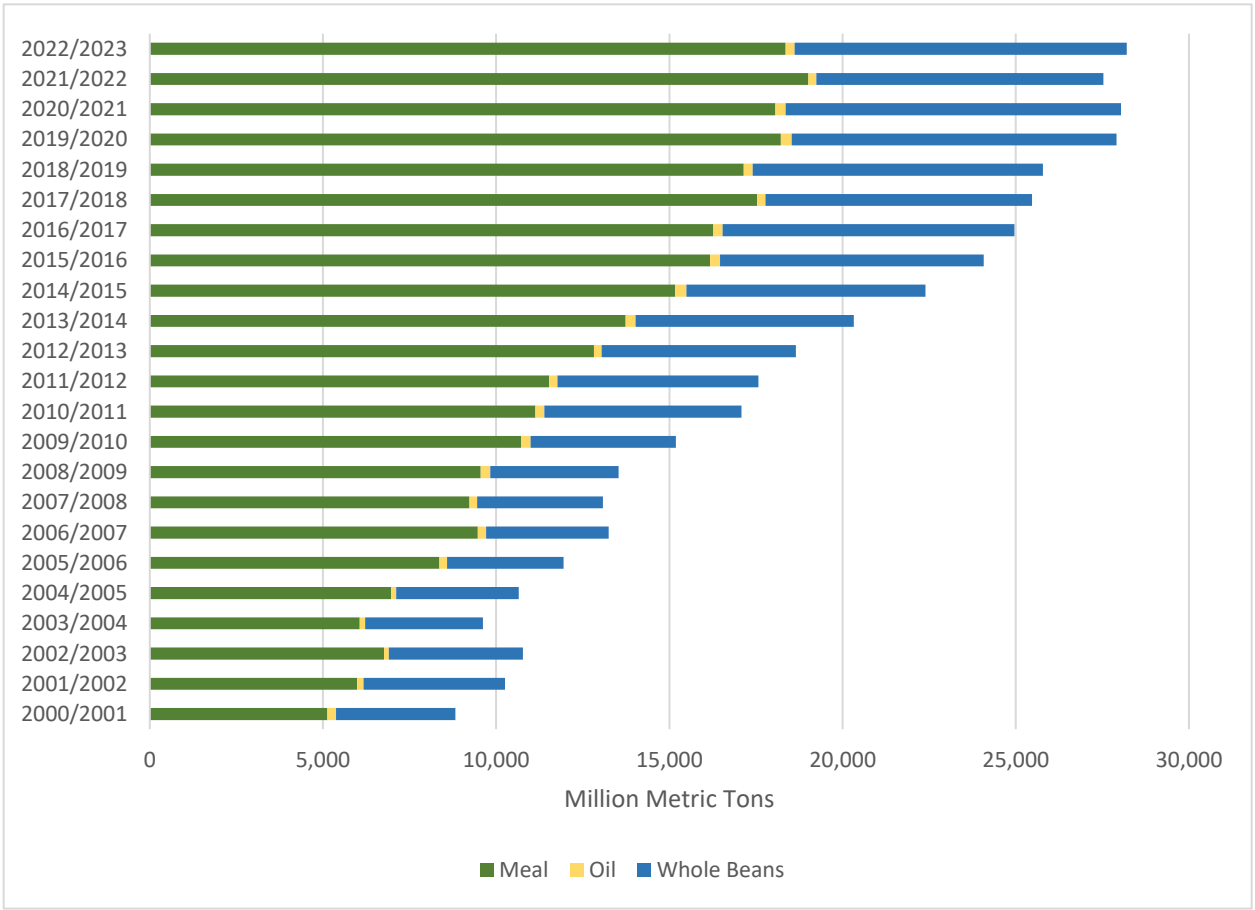
United States Soybean Meal Export Potential in ASEAN

Rising demand for soybean products, specifically soybean meal, in ASEAN, paired with a decrease in supply from Argentina, provides an opportunity for the United States to increase soybean meal exports to ASEAN. There is also potential for Brazil to become the top exporter of soybean meal to ASEAN. While Brazil could have an advantage over the United States because of its relatively cheaper soybean meal prices, neither the United States nor Brazil has an FTA with ASEAN. If the United States were to establish an FTA with ASEAN, soy products exported to ASEAN would be more affordable with increased market access.

Table 1 shows ASEAN import tariff rates for soybean meal and whole soybeans (World Trade Organization, 2021). Most favored nation (MFN) tariffs are applied to countries that are World Trade Organization (WTO) members. Argentina, Brazil, the United States, and ASEAN countries are members of the WTO and fall under the MFN category. Bound tariffs are agreed upon when a country becomes a member of the WTO and represent the maximum tariff rate that can be applied to other members. Bound tariffs typically provide countries with leeway when adjusting trade policy. Countries with a large gap between MFN rates and bound rates tend to be developing countries, which often have unpredictable trade policies (World Bank, 2010).

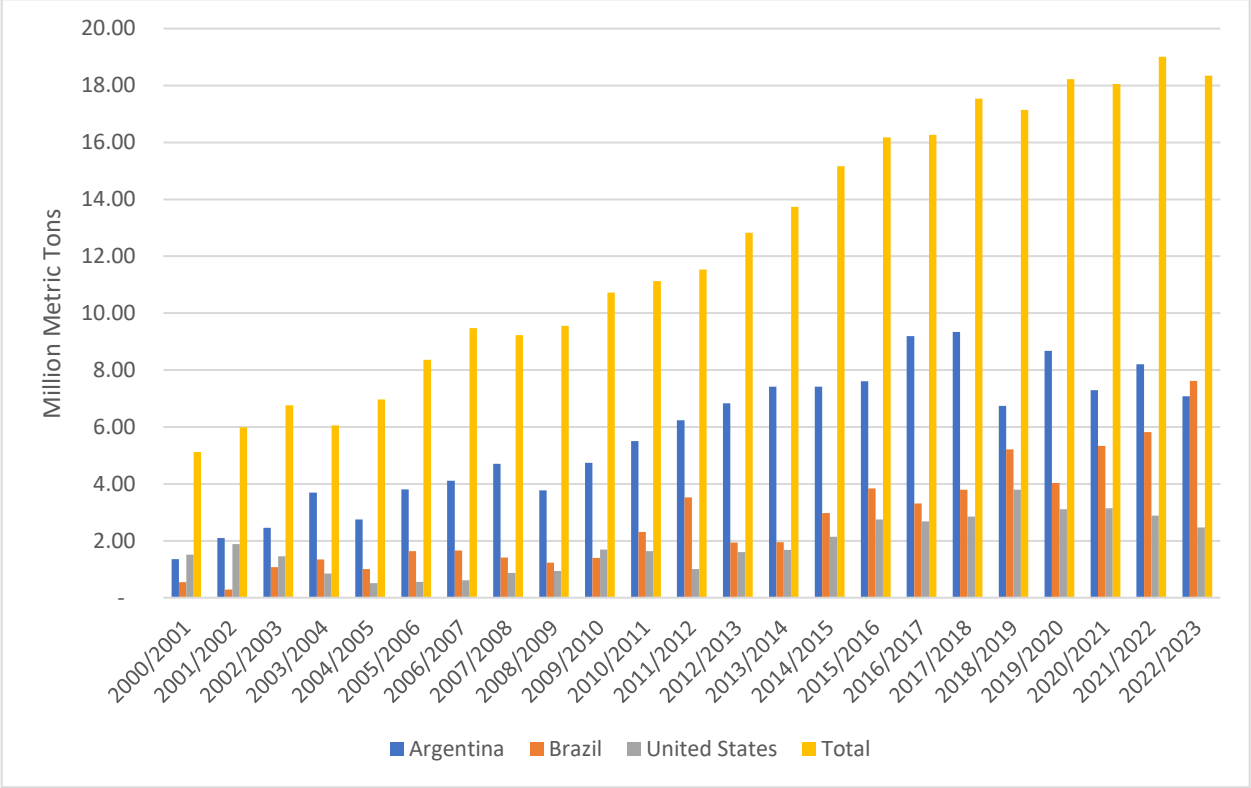
MFN tariff rates for soybeans range from 0% to 80%, while MFN tariff rates for soybean meal in ASEAN range from 0% to 20%. Thailand imposes the highest MFN import tariffs on soybeans and soybean meal (80% and 20%), followed by Cambodia (15% and 7%). The bound tariff rates for soybean meal are 55% in Myanmar, 40% in the Philippines, 40% in Cambodia, and 40% in Indonesia, which are much higher than MFN rates. This represents the potential for countries to increase tariff

Figure 4. ASEAN Soy Products Imports, 2000–2023



Source: USDA (2023c).

Figure 5. Soybean Meal Exports to ASEAN from Argentina, Brazil, and the United States, 2000–2023



Source: Trade Data Monitor (2023).

levels without an FTA that goes beyond WTO commitments. Since Argentina, Brazil, and the United States are MFN countries and none have an FTA with ASEAN, each country faces the same tariffs when exporting soybean products to ASEAN. While the United States does not have an FTA with ASEAN, the United States and Singapore established an FTA in 2004. This agreement eliminated tariffs on exported and imported agricultural goods between the United States and Singapore. A similar deal with ASEAN that eliminates tariffs would place U.S. soybean products at a price advantage relative to Argentina and Brazil.

The Brazilian crush outperformed expectations in the 2022/2023 marketing year, resulting in excess supply and decreased prices for Brazilian soybean meal in the global market. Accordingly, Brazil could supply soybean meal at a discount compared to Argentina and the United States (Kingsbury, 2023). The Brazilian real is also going through a revaluation period, pushing

Table 1. ASEAN Soybean Product Import Tariffs, 2021

ASEAN Country	MFN Applied Tariff on Soybeans (excluding seed)	MFN Applied Tariff on Soybean Meal	Bound Tariff on Soybeans (excluding seed)	Bound Tariff on Soybean Meal
Brunei	0%	0%	20%	20%
Cambodia	15%	7%	15%	40%
Indonesia	0%	5%	27%	40%
Laos	0%	0%	0%	0%
Malaysia	0%	0%	10%	10%
Myanmar	3%	5%	11%	55%
Philippines	1%	3%	9%	40%
Singapore[a]	0%	0%	10%	10%
Thailand	80%	20%	80%	--
Vietnam	0%	8%	5%	8%

Note: MFN-applied tariffs are applied to members of the WTO. Bound tariffs are the maximum tariff rate that a member of the WTO can use.

[a] Represents a U.S. Free Trade Agreement with that country.
Source: World Trade Organization (2021).

commodity prices down and making Brazilian exports relatively cheaper (Degreenia, 2023). Establishing an FTA between the United States and ASEAN would remove tariffs for the United States and close the price gap on the world market, making U.S. soybean meal more affordable.

Conclusion

ASEAN has been growing faster than many other regions worldwide and will continue to grow in the foreseeable future. Incomes in the region grow in tandem with increased demand for animal protein. ASEAN has strong and growing pork and poultry production but relies on soybean meal imports for feed. Accordingly, ASEAN must increase soybean meal imports to meet the needs of expanded domestic pork and poultry production. Growing soybean meal import demand in ASEAN, increased soybean meal supply in the United States and policy uncertainty in Argentina presents an opportunity for the United States to export more soybean products to ASEAN. Given the importance of price for competitiveness in the global soybean meal market, a free trade agreement between the United States and ASEAN that eliminates import tariffs on U.S. soybean products is needed for the United States to compete with Brazil in this critical region.

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