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Potential Wheat Demand in China: Applicants for Import Quota

Fred Gale

Abstract

This report examines lists of applicants for wheat tariff-rate quota (TRQ) for the years 2015 to 2021 to characterize the potential demand for imported wheat in China. More than 900 companies in China applied for quota from 2015 to 2021, and 171 applied 7 years in a row. Although most applicants are private companies in major flour-producing provinces, they account for few wheat imports; customs data indicate that Beijing-based companies—comprising fewer than 2 percent of TRQ applicants each year—are the predominant wheat importers. When China's wheat imports doubled in 2020, Beijing-based companies accounted for 85 percent of the imports.

Keywords: wheat, China, imports, tariff-rate quota, TRQ, flour industry

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Potential Wheat Demand in China: Applicants for Import Quota

Fred Gale

Summary

What Is the Issue?

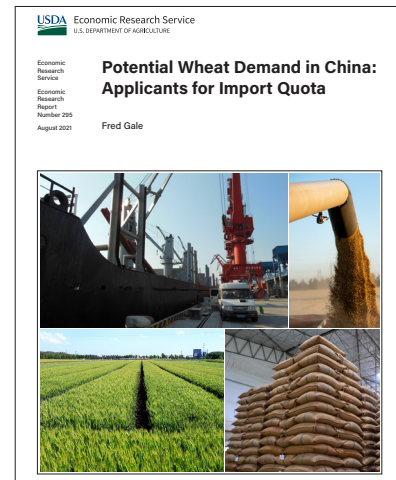
China is the world's largest wheat market, but its wheat imports are constrained by a tariff rate quota (TRQ) system. The process for distributing quotas to applicants is opaque. Moreover, a more commercialized flour-milling industry—the source of most demand for imported wheat—has emerged since the quota system was adopted in 2001. This study analyzes lists of companies applying for quotas in order to better understand the operation of the TRQ system and China's potential demand for wheat imports.

What Did the Study Find?

Wheat imports at the 1-percent in-quota tariff appeared to be profitable, while imports outside the quota system were unprofitable. Correspondingly, more than 900 Chinese companies applied for TRQs during the 7 years of applications examined, including 177 companies that applied every year. However, the wheat TRQ never filled during those years.

Applicants for wheat TRQ were predominantly wheat-milling companies, but food processing, trading companies, and feed-milling companies also applied. Applicants appeared to be larger in scale than most flour-milling companies. Applicants were predominantly private sector companies, but state-owned and multinational applicants were also common—largely reflecting the composition of firms in the industry. China reserves 90 percent of the wheat TRQ for importation through one state-designated trading enterprise (STE). Besides the STE, 45 other state-owned companies comprised about 5 percent of TRQ applicants. China revised application procedures in 2020, but it remains unclear whether privately owned applicants can import through the STE.

Wheat-growing provinces consistently accounted for about three-fourths of TRQ applicants, reflecting the geographic concentration of flour-milling in those regions. However, customs statistics indicate that companies in those provinces together accounted for only 10 percent of wheat imports. About 80 percent of wheat imports were



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attributed to companies headquartered in Beijing and Guangdong Province—regions that have relatively few flour mills and few applicants for TRQ. The geographic disparity between applicants and imports implies that applicants located in wheat-growing regions have a lower chance of obtaining a share of the import quota.

How Was the Study Conducted?

The study describes China's tariff rate quota system for wheat and analyzes features of potential wheat importers revealed in lists of TRQ applicants posted on the National Development and Reform Commission (NDRC) website from 2015 to 2021. The number of applicants, their locations, products, and processing volume/capacity were analyzed. The lists do not reveal quota allocated to applicants, nor the applicants' actual volume of wheat imported. The geographic distribution of TRQ applicants was compared to the geographic distribution of wheat imports tabulated from customs data to infer patterns of quota allocation to applicants in various regions.

Potential Wheat Demand in China: Applicants for Import Quota

Introduction

China's wheat imports doubled between 2019 and 2020, evidence of the country's robust demand for imported wheat. The large number of flour mills and other agribusinesses in China that apply for the right to import wheat suggests demand could grow even larger.

China's wheat imports are managed by a tariff-rate quota (TRQ) system that allows up to 9.64 million metric tons (Mt) of wheat to be imported at a 1-percent tariff—much lower than the country's 65-percent most-favored-nation tariff for wheat. The quota equals about 7 to 8 percent of China's wheat market, but the volume of imports never reached the quota in any year from 2001 to 2019.

A World Trade Organization (WTO) dispute initiated by the United States in December 2016 challenged China's administration of the quotas, citing low fill rates for wheat, rice, and corn TRQs. A 2019 report by a WTO panel concluded, among other things, China's wheat, rice, and corn TRQ administration as a whole was inconsistent with its WTO obligations to administer TRQs on a transparent, predictable, and fair basis, using clearly specified requirements and administrative procedures in a manner that would not inhibit the filling of each TRQ (WTO, 2019; Orden et al., 2019).

China revised its application notice for wheat, rice, and corn TRQs in 2019. A U.S. Wheat Associates newsletter was optimistic that the 2019 application revision might result in the wheat TRQ filling its quota for the first time by allowing more enterprises to apply (Dalton, 2019). The January 2020 Phase One U.S.-China trade agreement called for China to ensure its wheat, rice, and corn TRQ management conformed with its WTO commitments.

China's wheat imports doubled to 8.37 Mt for 2020. While this was the largest import quantity since the TRQ was established, it did not fill the quota. (The TRQ is operated on a calendar year basis.¹) The U.S. Department of Agriculture (USDA) projected strong imports for the 2020/21 (June–May) market year, raising the possibility that the quota could be filled for the first time in calendar year 2021.

This study examines lists of applicants for wheat TRQ for the years 2015 to 2021 to characterize the potential demand for imported wheat in China. The study begins by reviewing China's role in the global wheat market and describing the provisions of the wheat TRQ. This includes trends in the number of TRQ applicants, their products, their private or state ownership, and their production capacity. The analysis of the data identifies a disparity between the geographic distribution of TRQ applicants and wheat importers. Most applicants are privately owned flour-milling companies in wheat-growing provinces, while state-owned companies comprise a minority of applicants. Customs data indicate that companies in wheat-growing provinces import little wheat, while companies based in Beijing—presumably including one or more state-owned companies—account for most wheat imports. This pattern intensified in 2020 when Beijing-based companies were responsible for doubling wheat imports from previous years.

¹This total includes imports in categories covered by the TRQ: 8.15 Mt of wheat and 221,000 t of flour.

China's Role in the Global Wheat Market

China is the world's largest market for wheat, accounting for 19 percent of global wheat consumption in 2020/21 (figure 1). China's share of consumption exceeds the shares of the European Union (15 percent), India (13 percent), and Russia (5 percent); its share of global wheat consumption is more than four times the U.S. share (4 percent).

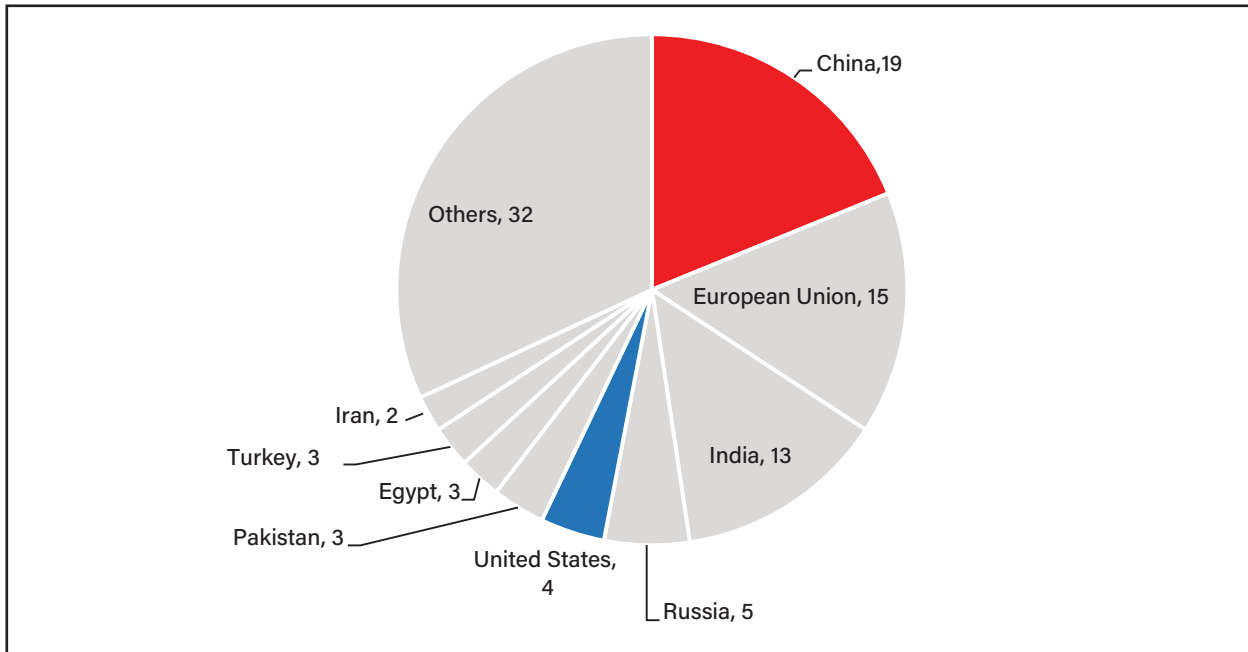
China, along with the European Union, is also one of the world's top two wheat producers, each accounting for over 17 percent of world production. According to USDA, Foreign Agricultural Service Production, Supply, and Distribution (PS&D) estimates, China's production of wheat exceeded its domestic consumption each year from 2013/14 to 2019/20, and its ending stocks grew to more than a year's production. China's National Grain and Oils Information Center (2021) also estimated the country's wheat output would exceed its domestic consumption through 2020/21. China does not reveal to the public its amount of grain reserves, but its Administration of Food and Commodity Reserves stated during 2020 that wheat reserves exceeded a year's consumption.

Despite its plentiful supplies of domestic wheat, China is a leading importer. Demand for imports is stimulated by the lower price of imported wheat and the need for wheat classes with high and low levels of gluten that are not widely produced in China.² China's wheat imports totaled from 3 to 5 Mt in most years during 2011/12 to 2019/20, up from 1 Mt or less in most years the previous decade (figure 2).³ The potential for China's imports to grow further is signaled by the surge during 2020. China imported 8.3 Mt of wheat in the first 9 months of the 2020/21 market year (June to November), more than a threefold increase from the same period a year earlier. Factors that may have contributed to the surge in 2020/21 include strong demand for wheat use in animal feed, replenishment of Government reserves with high-quality wheat, efforts to meet import commitments in the U.S.-China Phase One trade agreement. In March 2021, USDA projected that the country's 2020/21 imports would reach 10.5 Mt, China's highest wheat import total since the 1990s. While the projection is for the June–May market year, it raises the possibility that China might fill the TRQ for the first time if imports continue at a rapid pace through December 2021. The United States is one of the suppliers of China's wheat imports. Purchases of U.S. wheat peaked at nearly 4 Mt in 2013/14, but they were less than 1 Mt from 2014/15 to 2019/20. Chinese customs data indicated that China imported 2 Mt of U.S. wheat during the first 9 months of 2020/21—approximately a 24-percent share of imports.

²A support price for wheat in China encourages output, and Government purchases to maintain the program led to large stockpiles (Gale, 2013). Hu et al. (2016) attributed the low adoption of high-quality wheat varieties to their vulnerability to disease and lodging and high labor requirements.

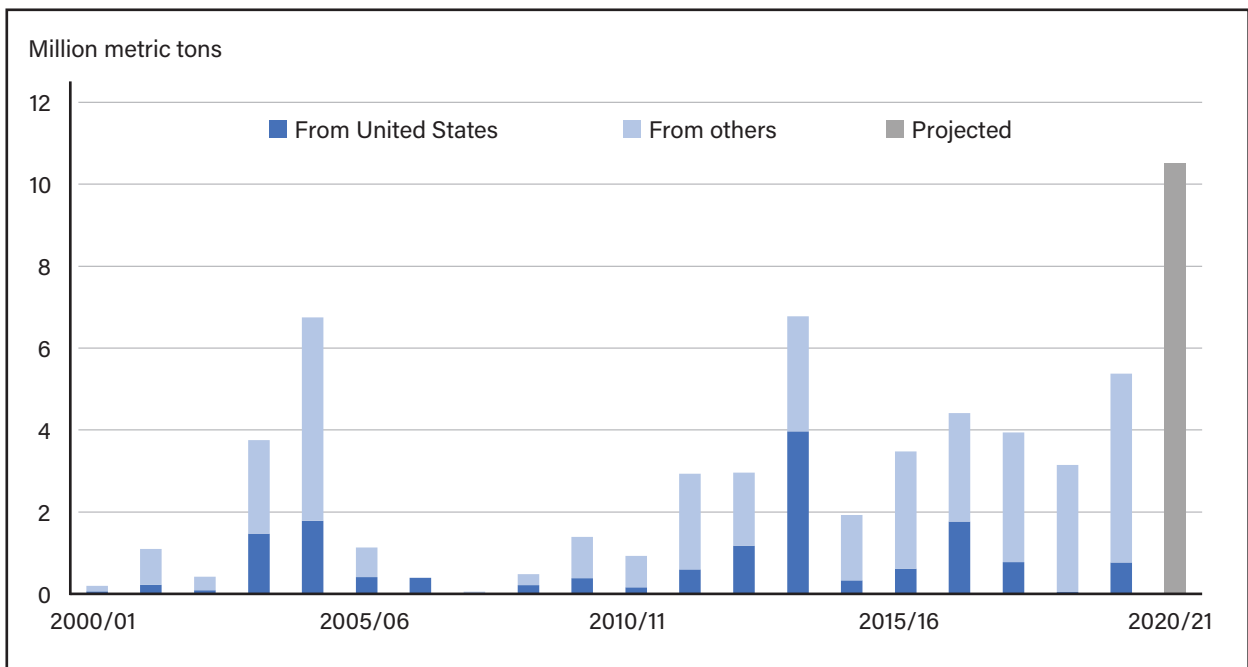
³China imported from 8 to 15 Mt of wheat in most years from 1977/78 to 1995/96.

Figure 1
Shares of world wheat consumption, 2020/21



Note: Market year (June–May) data as of March 2021.
 Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

Figure 2
China's wheat imports, 2000-21



Note: Market year (June–May) data as of March 2021. There is no projection of imports from the United States for 2020/21.
 Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

China's Wheat TRQ

China adopted a TRQ system for wheat and several other sensitive commodities when it joined the WTO in 2001. A TRQ is a two-tier tariff used by many WTO members designed to open markets for sensitive commodities to a limited volume of imports at low tariffs (Beckman et al., 2021). While China's tariff for wheat imports was set at a relatively high 65 percent, the TRQ allows up to 9.64 Mt of wheat to be imported at a low tariff of 1 percent. Ninety percent of the quota is reserved for allocations to end users for importation through state-designated trading enterprises (STE). The remaining 10 percent is reserved for importation through entities other than STEs.

Each year prospective wheat importers can apply to the National Development and Reform Commission (NDRC) for a share of the TRQ for imports to take place in the upcoming year.⁴ Applications are submitted to local development and reform department offices during October 15–30. Lists of applicants are transmitted to China's NDRC by November 30 and posted on the NDRC website.

The NDRC allocates the quota shares to applicants by January 1, but little is known about this process. In an analysis of unpublished customs data, Xie et al. (2019) found that only 96 Chinese companies imported wheat while 450 companies applied for TRQ, an indication that only a minority of applicants receive quotas. Local Chinese news media indicated that city governments in China lobbied NDRC officials to gain more import quota for local flour mills (Weihai Daily, 2016; Puyang Daily, 2020),⁵ and they reported that small amounts were allocated to applicants (two flour mill applicants in a Henan Province city received 500 metric tons (Mt) each, and a Shandong Province city received 2,000 Mt). Unused quotas must be returned to the NDRC by September 15 each year to be reallocated to other applicants, but little is known about how this process operates.

Wheat imports at the in-quota tariff appear to be consistently profitable while out-of-quota imports are not. Calculations shown in table 1 indicate that wheat imported at the 1-percent tariff had an estimated profit margin (versus purchases of domestic wheat) that rose from 12 percent to 37 percent during 2013–17; the margin narrowed to 22 percent during 2020. Imports at the 65-percent out-of-quota tariff were more expensive than domestic wheat during those years. China's wheat imports never reached the 9.64-Mt quota, despite the profitability of in-quota imports.

A cross-country comparison by Beckman et al. (2021) cited the quota's low fill rate and profitability of imports as indicators that China's wheat TRQ was “underutilized.” Xie et al. (2019) found evidence that China's TRQ management steered grain imports to state-owned companies, and Chen et al. (2020) concluded that administrative procedures prevented quotas from filling. Li et al. (2018) estimated that China's imports of wheat could rise 8.9 to 26.8 Mt if the country removed all tariffs and import barriers.

⁴China's WTO accession protocol specified that applications be submitted to the State Development and Planning Commission, the predecessor of the NDRC.

⁵These and several other articles about cotton TRQ said local governments “fought” (争取) to get more quota for local firms.

Table 1

Comparison of domestic and imported wheat prices in southern China, 2013–20

		Value-added tax	Cost of imported wheat		Domestic wheat	Imported-to-domestic price comparison	
Year	Imported wheat		In quota	Out of quota		In quota	Out of quota
	Yuan/t	Percent	Yuan/t	Yuan/t	Yuan/t	Percent	Percent
2013	2,095	13	2,391	3,906	2,729	-12	43
2014	2,003	13	2,286	3,735	2,942	-22	27
2015	1,889	13	2,156	3,522	2,972	-27	19
2016	1,562	13	1,782	2,912	2,843	-37	2
2017	1,657	11	1,857	3,034	2,947	-37	3
2018	1,728	10	1,920	3,137	2,887	-33	9
2019	1,927	9	2,121	3,466	2,763	-23	25
2020	1,913	9	2,106	3,440	2,707	-22	27

Notes: t = metric ton. Data are for calendar years. Domestic and imported wheat prices are monthly averages at ports in south China. Tariffs: in-quota 1 percent, out-of-quota 65 percent. Imported wheat is assessed a value-added tax (VAT) on its landed value plus tariff, while domestic wheat sold by farmers is exempt from VAT at its point of first sale. China reduced VAT rates as of April 1 in 2017, 2018, and 2019.

Source: USDA, Economic Research Service calculations based on Chinese customs data accessed by Trade Data Monitor; China Ministry of Agriculture.

China's TRQs were established by its 2001 WTO accession protocol and implemented through the 2003 regulation "Provisional Measures on the Administration of Import Tariff-Rate Quotas for Agricultural Products" issued by China's Ministry of Commerce and the NDRC. The 2003 measure establishes that quotas are distributed to applicants based on the quantity they request, previous import performance, and production capacity. Annual announcements set dates and other provisions for applying for each year's quota.

A report by the panel established by the WTO's Dispute Settlement Body to hear the case challenging China's TRQ administration practices found, among other things, that some of China's procedures for allocating quota were not transparent, predictable, or fair to potential applicants. These included a lack of clear procedures that would allow non-STE end-users to access the 90 percent of the import quota set aside for importation through the STE (WTO, 2019).⁶

In 2019, China issued revised guidelines for 2020 TRQ applications that allowed companies to apply for STE and non-STE quotas. The revised application form requested that applicants report production capacity instead of past use of wheat. It also asked applicants to report quota allocations in the previous 2 years, the amounts they had imported, and the amounts of unused quota they returned. The guidelines also set a relatively high 200,000-Mt processing capacity requirement for applicants. The guidelines did not explain how quotas would be distributed to applicants.

⁶A summary of the case and its current status is available in the "dispute settlements" section of the WTO website under the heading, "DS517: China—Tariff Rate Quotas for Certain Agricultural Products."

Characteristics of TRQ Applicants

The study describes features of potential wheat importers by compiling and analyzing lists of TRQ applicants posted on the NDRC website, including names, addresses, products, and processing volume/capacity of applicants from 2015 to 2021. Analysis by Xie et al. (2019) indicated that only a fraction of applicants were able to import wheat, and most were state-owned companies. The lists do not reveal the quantity of quota requested or which applicants are awarded quota, but they indicate the potential demand for imported wheat in China.

TRQ applicant lists showed that more than 400 Chinese companies applied for the wheat TRQ each year from 2015 to 2019 (table 2). The number of applicants for 2020 (following revisions in the application guidelines) fell to 347 and rebounded to 362 for 2021. The peak number of applicants was 475 for 2017, the same year that wheat imports were most profitable (see table 1). The decline in applicants during 2019 and 2020 corresponded to the narrowing of the profit margin between imported and domestic wheat. Despite the narrower margin and stricter production capacity requirements for 2020 applications, there were still 347 applicants with a total of 101 Mt of production capacity, and 362 applicants with 108 Mt of capacity applied for the 2021 TRQ.

Matching the applicant lists for the 7 years revealed that a total of 926 companies applied for wheat TRQ during 2015–21, about twice the number that applied in a single year. More than half the applicants appeared on lists in just 1 or 2 years (figure 3). Among the remaining applicants, 171 companies applied in each of the 7 years, 47 applied in 6 years, and 54 applied in 5 years.

Table 2
Summary of China wheat tariff-rate quota (TRQ) applications, 2015-21

Item	Year of TRQ						
	2015	2016	2017	2018	2019	2020	2021
Total applicants	Number of applicants						
	463	429	475	437	409	347	362
Applicants' processing capacity	Million metric tons						
	110	105	116	106	100	101	108
Applicants by main product:	Number of applicants						
Flour	409	393	409	388	362	313	323
Noodles	7	8	7	7	7	7	6
Baking products, other foods	3	3	6	8	3	8	4
Starch	0	2	1	1	0	1	0
Liquor	0	0	1	1	2	1	1
Feed	31	13	16	9	7	2	8
Wheat	3	3	13	5	9	3	3
Not specified	10	7	22	18	19	12	17

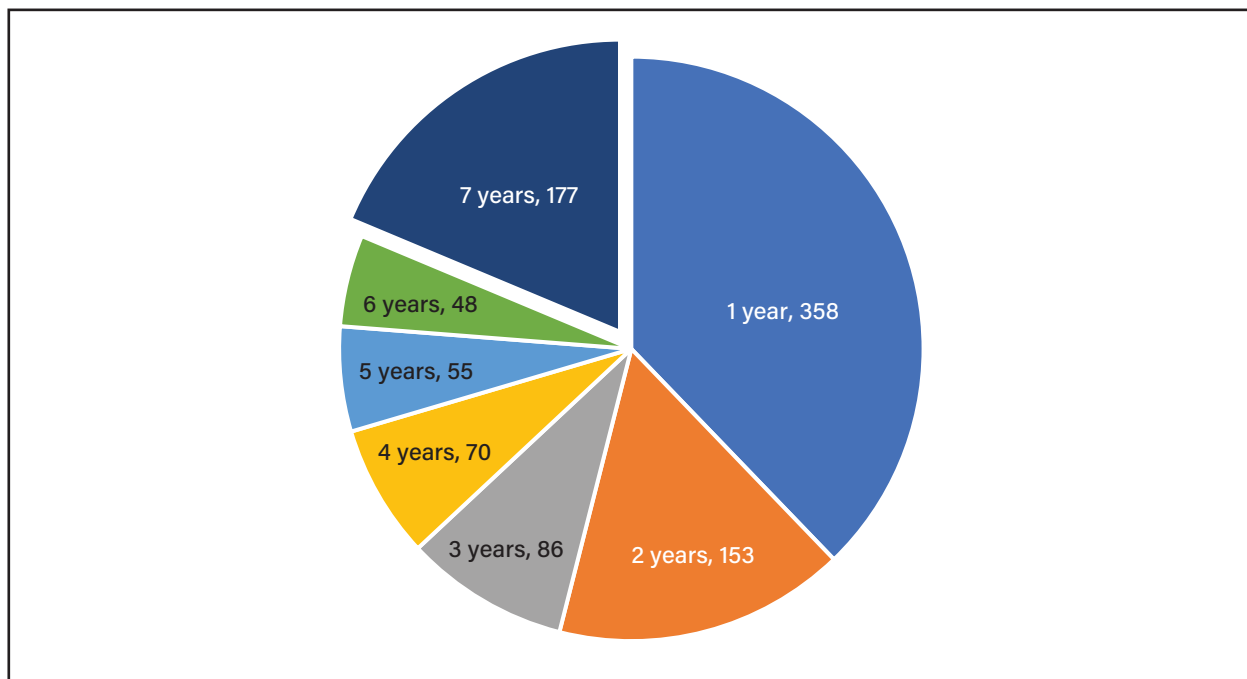
Note: The table excludes 17 duplicate applicants that appeared on the 2021 list.

Source: USDA, Economic Research Service analysis of applicant lists posted by China's National Development and Reform Commission.

In the WTO dispute, Chinese officials revealed that past wheat imports were the primary criteria for awarding the non-STE share of the TRQ (WTO, 2019, p. 37).⁷ This practice implies that new applicants had little chance of receiving quota, but the lists show large numbers of new applicants. Applicants were not informed of this criterion, so these new companies—as well as some that submitted applications year after year—may have been unaware that their odds of success were low.

Products identified on TRQ applications (table 2) revealed that flour-milling companies constitute most of the applicants for wheat TRQ. The number of flour-mill applicants peaked at 409 in 2015 and 2017, then fell to 313 in 2020 and 323 in 2021. Flour mills also accounted for 103 Mt of the 108 Mt processing capacity reported by applicants for 2021 TRQ. Another 12 to 19 applications were submitted by manufacturers of noodles, baking products, liquor, and starch. Some animal feed companies also applied, although the guidelines for wheat TRQ only specified qualifications for flour and food companies.

Figure 3
Number of applicants for China's wheat tariff-rate quota, by number of years applied during 2015–21



Source: USDA, Economic Research Service analysis of applicant lists posted by China's National Development and Reform Commission.

According to statistics from China's National Administration of Grain reported by Zou (2011), China had 2,819 flour-milling enterprises in 2008. If their number in the industry remained steady after 2008 (the latest year of this data), TRQ applicants could represent 10 to 15 percent of firms in the flour industry.

Animal feed companies are also potential buyers of imported wheat since feed mills use wheat as a substitute for corn when the corn price is high. Wheat TRQ announcements appear to exclude feed companies by setting processing capacity requirements only for flour- and food-processing firms. However, the China National Grain and Oils Information Center (2021) reported that wheat imports diversified during 2020 to include more feed-quality and moderate-gluten wheat due to a rise in corn prices during the year, suggesting that some feed companies were granted quota. The number of TRQ applications from animal feed companies fell from 31 in 2015 to 2 in 2020, then rose to 8 in 2021. USDA's Economic Research Service (ERS)

⁷Chinese officials revealed in WTO (2019, p. 17), "[n]ew applicants are only considered in the event that the entire non-STE portion of the TRQs is not fully allocated to applicants with historic import performance."

found a total of 41 companies whose names contained the Chinese word for “feed” among the 926 applicants that appeared at least once during 2015–21. These included branches of several of China’s largest feed companies (Chinese authorities require each local branch of a company to apply for TRQ separately), as well as some local feed mills. Most feed applicants appeared on TRQ lists in only 1 or 2 years, but several applied in all 7 years.

Some TRQ applicants identified their product simply as “wheat” or did not specify a product. Inspection of the names of these firms indicated some were trading companies, such as Zhongshang International Trading Company, Shaanxi Province Foreign Trade Group, Xiamen City Canliang Trading Company, and Dalian Nongken Beidahuang Trading Company. Trading companies could be eligible to receive TRQ if they imported in past years. Some companies with names indicating they are trading companies reported flour-processing capacity. For example, the Xiamen City Mingsui Trading company applied in all 7 years and reported processing 200,000 Mt of wheat for flour manufacturing.

State-Owned Companies Applying for TRQ

The study examined the prevalence of state-owned companies among TRQ applicants. Xie et al. (2019) confirmed that state-owned enterprises (SOE) conducted a disproportionately large, 60-percent share of cereal grain imports in 2017 (much larger than their 20-percent SOE share for all agricultural products). They found that private-company wheat imports filled or exceeded the non-STE share, while the SOE imports fell short of the STE quota.

China's WTO accession protocol reserves 90 percent of the wheat TRQ for import through the STE, while the remaining 10 percent can be imported by any enterprise with the right to import.⁸ Regulations did not clarify which companies were entitled to import wheat through an STE. There is a distinction between STEs and SOEs. China has many companies designated as SOEs—owned entirely or partly by the State—that use wheat, but only one state-owned company is an STE for wheat (see box, “What is a State-trading Enterprise?”).

In the 2016 WTO dispute proceedings (WTO, 2019, p. 19), China revealed:

- China Oil and Foodstuffs Corporation (COFCO) was the only company designated as the STE for grain, and the entire STE share was set aside for COFCO each year.
- The STE share was not subject to application criteria, nor was it subject to distribution principles used for the non-STE portion of quota.
- The unused portion of the STE quota was not made available to other potential importers.

Only the core entity of COFCO is the STE—its headquarters trading unit, COFCO Group. COFCO has many provincial subsidiaries engaged in milling and processing that are not trading companies.

TRQ applicant lists do not reveal the ownership of applicants, but some companies were identified as state-owned based on their names. Table 3 lists companies for which state ownership was confirmed from company websites or other commercial sites that profile Chinese companies. This is not an exhaustive list, but it shows that 18 to 22 SOEs applied for TRQ annually. A total of 45 SOEs—about 5 percent of all applicants—applied for TRQ in at least 1 calendar year from 2015 to 2021. Xie et al. (2019) found that 19 SOEs imported wheat in 2017 (out of 96 wheat importers that year), but SOEs imported much larger volumes of wheat per firm (138,000 Mt) than private firms (23,100 Mt).

⁸Schedule CLII – Peoples Republic of China, Part I, Section IB, “Tariff Quotas”.

What is a State-trading Enterprise?

According to the WTO (2019, p.18), a state-trading enterprise (STE) is an “enterprise conferred by the Government with privileges in the exclusive import business of certain products.” The distinctive feature of an STE may be its mission to import on behalf of Government authorities to stock Government reserves or accomplish other policy functions. Chinese Academy of Agricultural Sciences economists recommended using state trading to control the volume of grain imports, using TRQs to replenish national reserves, enforcing processing capacity qualifications for quota recipients to regulate import flows, and allocating quota to state-owned companies to facilitate imports from strategic trading partners (CAAS, 2017).

A COFCO official once explained to a USDA team that his company was an STE that imported wheat for national reserves on behalf of the Government (Lohmar et al., 2005). More recently, Guangdong South China Grain Exchange (2019) revealed that grain reserves in southern China included substantial volumes of imported wheat. Public auctions of wheat from Government reserves sometimes offer imported wheat for sale. In another example, official news media described COFCO’s imports of wheat from Kazakhstan as an implementation of the national “One Belt One Road” initiative (Xinhua News Service, 2017). The State Council’s Development Research Center identified Central Asian wheat imports as part of a strategy to diversify import sources (Ye, 2020).

COFCO’s flour-milling subsidiaries appeared on TRQ applicant lists each year (as discussed below), but the COFCO Group did not appear on the lists until 2020 and 2021. COFCO Group’s appearance on the applicant list for the first time coincided with a revision of the 2020 application form that allowed applicants to request both STE and non-STE quotas. COFCO Group did not report a product or processing capacity.

Several other SOEs owned by the Central Government (that are not STEs) appeared as TRQ applicants:

- China National Agricultural Development Group Co. (applied 2018–20), a state-owned company engaged in foreign agricultural development projects, mainly as a supplier of seeds and inputs. No product was reported.
- The Supply and Marketing Cooperatives Group (applied 2020–21), a state-owned entity responsible for marketing products of China’s farmers. It reported flour as its product, with a capacity of 300,000 Mt.
- The New Silk Road Energy Holding Group (applied 2020–21), a subsidiary of the Supply and Marketing Cooperative Co. that includes trading of bulk commodities in its scope of business. It reported wheat as its product but did not report processing capacity.
- Beijing Zhongkenlu (applied 2015–21), an entity affiliated with China’s system of state farms. No product was reported.

While Beijing Zhongkenlu first applied in 2015, others on the above list did not apply before 2018. Five applications were submitted by these centrally controlled SOEs in 2020 and 2021.⁹

⁹ According to China’s state-owned Assets Supervision Commission, less than 100 companies (including COFCO) are fully owned by the central Government (known as “央企”). Many other companies have partial stakes held by the central Government or are owned by provincial or municipal governments.

Applications from local and provincial SOEs were more numerous. Eighteen provincial and local branches of COFCO located in 13 provinces (none in Beijing) represented the company’s flour- and feed-milling subsidiaries. The number of local COFCO applicants ranged from 7 in 2015, 12 in 2016, and 9 to 11 in 2017–21. The lists do not reveal whether COFCO branches applied for STE or non-STE TRQ.

Table 3
State-owned companies that applied for wheat tariff-rate quota, 2015–21

Type of state-owned company	Year of TRQ						
	2015	2016	2017	2018	2019	2020	2021
	Number of applicants						
COFCO Group (state-trading enterprise)						1	1
COFCO provincial local branches	7	12	9	9	12	11	12
Other national state-owned companies	1	1	1	2	2	4	4
Other provincial/local state-owned companies	8	5	9	7	7	7	4
Total	16	18	19	18	21	23	21

Note: State-owned companies were identified by names; this is not an exhaustive list. COFCO = China Oil and Foodstuffs Corporation.

Source: USDA, Economic Research Service analysis of tariff-rate quota applicant lists.

Other SOEs with ownership and administrative connections to provincial and local governments are identified by company names with “grain group” and “reserve management” in their names. Many of the local grain SOEs were created in the early 2000s by converting portions of Government grain marketing and storage departments to commercial enterprises while retaining their access to Government financing and policy responsibilities (Bai, 2015). Examples are Foshan City Grain Group (applied for quota in 2020 and 2021), Guangzhou Grain Group (applied each year from 2015–21), Zhejiang Grain Group (applied 2017–19), Shanxi Grain and Oils Group (applied 2017–18), and Shandong Luliang Group (its subsidiaries submitted eight applications).

Bai (2015) described the founding of Guangdong Grain Reserve Management company to illustrate the role of local state-owned grain companies. The company was established in 2001 as a provincial SOE to manage grain supplies in several prefectures of Guangdong Province. The company’s grain storage facilities were financed by provincial funds. According to Bai, the company is overseen by the provincial Development and Reform Commission—the same agency that administers the TRQ—suggesting that such companies may be prioritized for access to imported grain to stock provincial grain reserves. While Guangdong Grain Reserve Management Company was not listed as a TRQ applicant, similar companies operating in large cities in Guangdong Province were listed (Guangzhou City and Foshan City Grain Groups). These companies named flour as their product.

Other state-owned grain companies appearing on wheat TRQ applicant lists are associated with Heilongjiang Province’s state farm system (Beidahuang and Jiusan companies), military-run “production corps” farms in Xinjiang Autonomous Region (identified by the name August 1), and local branches of the Government’s supply and marketing cooperative system. Most of these entities listed flour as their product.

Private Sector Applicants

Xie et al. (2019) found that wheat imports by private companies equaled or exceeded the non-STE quota in most years, suggesting that private companies might import even more if a greater share of the quota was available to them. Most applications for TRQ were submitted by private companies, indicating that the private sector is the predominant source of China's potential demand for imported wheat. According to Zou (2011), China had 2,454 private flour mills, 328 state-owned or state-controlled companies, and 37 foreign-owned mills. Private companies also appear to be the most numerous TRQ applicants.

Descriptions of China's flour industry identify privately-owned Wudeli, multinational Yihai Kerry, and state-owned COFCO as the most prominent players. These three companies together accounted for 30 to 40 TRQ applications annually, with most submitted by Wudeli and Yihai Kerry (table 4). Branches of Yihai Kerry, part of Singapore-based multinational food conglomerate Wilmar International Ltd., submitted the largest number of applications: 106 over 7 years. Applicants included their Shanghai-based trading company and 19 other branches. Privately-owned Wudeli Group submitted 81 applications over 7 years. Wudeli applicants included its headquarters in Hebei Province and 14 of its branches and subsidiaries. In comparison, COFCO and its branches submitted 72 applications from 20 entities.

Several other companies with multiple branches submitted 10 to 11 applications over 7 years. Four branches of Luwang Group submitted 22 applications, Guchuan Food Co. submitted 19 applications, three branches of Fada Flour submitted 12 applications, and two branches of Dacheng Liangyou Food submitted 14 applications. Most applications were submitted by small companies with a single location, consistent with Research Center for Rural Economy's 2017 report that such mills accounted for half of the flour industry's production capacity. Ownership of single-location applicants could not be established, but most were probably privately owned. Little information is available about imports by these companies, but China National Grain and Oils Information Center (2021) reported that large flour-milling companies in northern China were using some imported wheat to produce consumer flour products.

Table 4

Companies with the largest number of applications for China's wheat import TRQ, 2015–21

Item	COFCO	Wudeli	Yihai Kerry
Applicant's ownership	State	Private	Multinational
Applications by TRQ year:	Number of applications for TRQ		
2015	7	13	11
2016	12	12	15
2017	9	12	13
2018	9	11	16
2019	12	9	17
2020	11	12	16
2021	12	12	18
Total applications, 2015–21	72	81	106
Number of company branches that applied	20	25	20

Notes: TRQ = tariff-rate quota. Applications were submitted in October of the preceding year.

Source: USDA, Economic Research Service analysis of TRQ applicant lists.

Scale of Applicants

Requirements for TRQ applicants appear to favor large companies. Application guidelines for 2020 and 2021 set a requirement that flour- and food-processing enterprise applicants have capacity to process at least 200,000 Mt of wheat.¹⁰ RCRE (2017) reported that most companies in the flour industry had processing capacity under 60,000 Mt, so the requirement for TRQ application seems to exclude most flour-milling companies.

TRQ applicants appear to be larger in scale than most flour-milling enterprises. Flour applicants for 2021 had a total processing capacity of 105 Mt of wheat, equal to nearly half of the flour industry's 220-Mt total milling capacity reported by RCRE (2017). With applicants accounting for 10 to 15 percent of enterprises in the flour industry and nearly half of processing capacity, it seems clear they are disproportionately large-scale firms.

Most applicants for 2020 and 2021 met the 200,000-Mt minimum processing capacity for flour-milling and food-processing companies (table 5); 254 applicants for 2020 and 271 applicants for 2021 reported processing capacity of at least 200,000 Mt. Most of the applicants were in the 200,000–490,000 Mt category, and they also had most of the processing capacity. Fifteen applicants for 2021 TRQ with a capacity of 1 Mt or more included mills owned by nine private companies. The lists included 80 flour- and food-processing applicants for 2020 and 74 for 2021 that were below the 200,000-Mt processing capacity threshold, and 25 applicants listed “wheat” as their product or did not list a product.

Table 5

Applicants for China 2020–21 wheat tariff-rate quota, by product and capacity

Product	Wheat processing capacity	Number of applicants		Total capacity in category (1,000 metric tons)	
		2020	2021	2020	2021
Flour and food	1 million metric tons	14	15	17.4	19.1
	500,000 to 980,000 metric tons	24	26	15.9	17.1
	200,000 to 490,000 metric tons	216	230	58.2	61.6
	Less than 200,000 metric tons	80	74	9.1	9.5
Wheat or no product specified	None specified	25	20	<0.1	2.2

Source: USDA, Economic Research Service compilation of data from China National Development and Reform Commission

China's industrial development plans encourage consolidation of the flour-milling sector into fewer, larger companies. Zou (2011) and RCRE (2017) attributed chronic excess capacity, price wars, and financial insolvency to the continued operation of small flour mills with old technology alongside newer and larger up-to-date plants. The National Development and Reform Commission's 5-year plan (2016–20) for grain and oil processing called for creating large flour-milling companies with 1 Mt of processing capacity. A 2017 “China Good Grain and Oil” action plan issued by China's State Administration of Grain (2016) sought to nurture strong Chinese grain-milling companies with recognized brands. The plan encouraged investment in temperature-controlled grain storage, flour-themed industrial parks, and logistics facilities.

¹⁰ The application for years prior to 2020 requested past use of wheat instead of capacity.

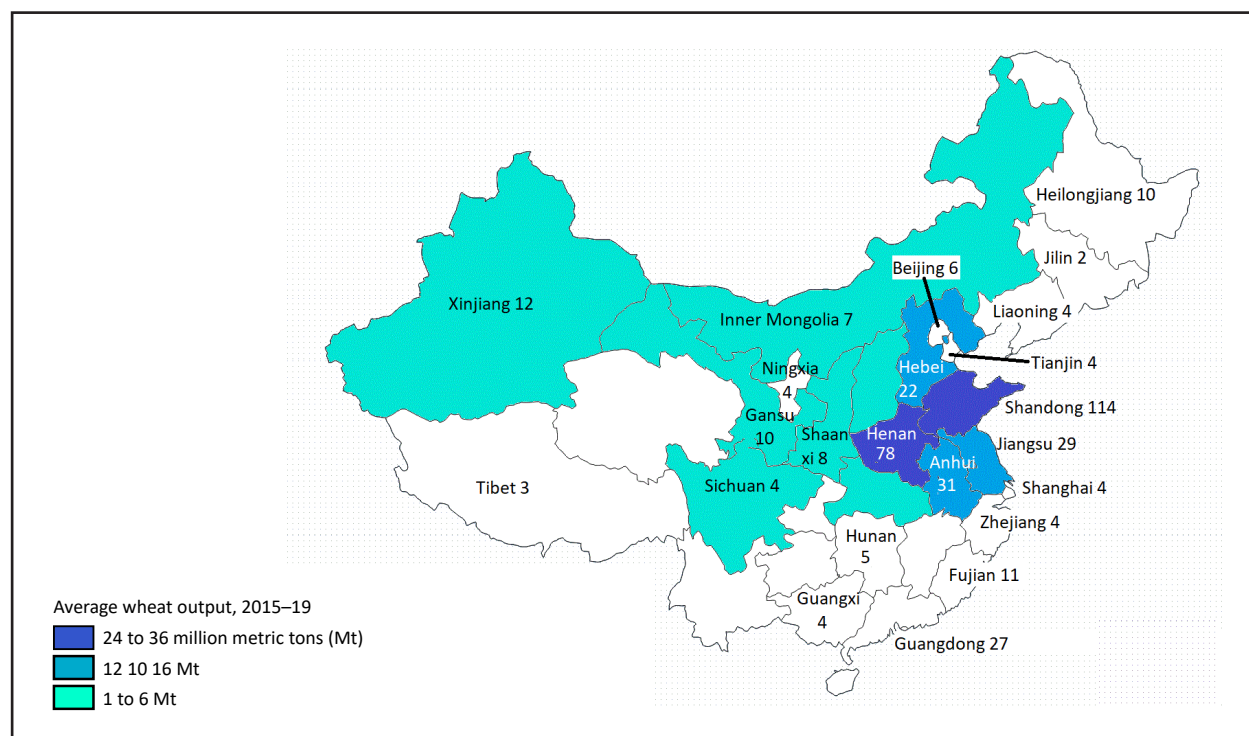
Geographic Distribution of TRQ Applicants and Wheat Imports

The disparity between the geographic distributions of TRQ applicants and wheat imports indicates that quotas are disproportionately allocated to applicants in non-wheat-growing provinces of southern China and to one or more state-owned companies headquartered in Beijing.

Companies applying for China’s wheat TRQ are predominantly located in wheat-producing provinces of northern and western China, reflecting the geographic distribution of wheat production and flour-milling described by Zou (2011). Twelve of the country’s 31 provinces/regions account for 97 percent of the country’s wheat output, and these wheat-producing provinces also account for most of the TRQ applications (figure 4). The two largest wheat-producing provinces had the highest number of applicants: Shandong (114) and Henan (78). Other provinces producing 12 Mt or more of wheat also had large numbers of TRQ applicants: Anhui (31), Jiangsu (29), and Hebei (22). Guangdong Province (27) was the only non-wheat-producing Province with more than 20 applicants per year. Beijing had an average of six applications, and Shanghai had four.

According to Zou’s 2011 presentation of data collected by China’s State Administration of Grain, major wheat-growing provinces had 88 percent of China’s flour-milling capacity in 2008. More recent estimates of flour output from the China National Bureau of Statistics (NBS) indicated that these provinces accounted for 93 percent of flour (presented by *China Food Industry Yearbook 2017*). The largest flour-milling capacity outside wheat-growing provinces was in Guangdong and Fujian, but they accounted for only 4 percent of capacity in 2008.

Figure 4
Average number of tariff-rate quota (TRQ) applicants and wheat production by Province, 2015–19



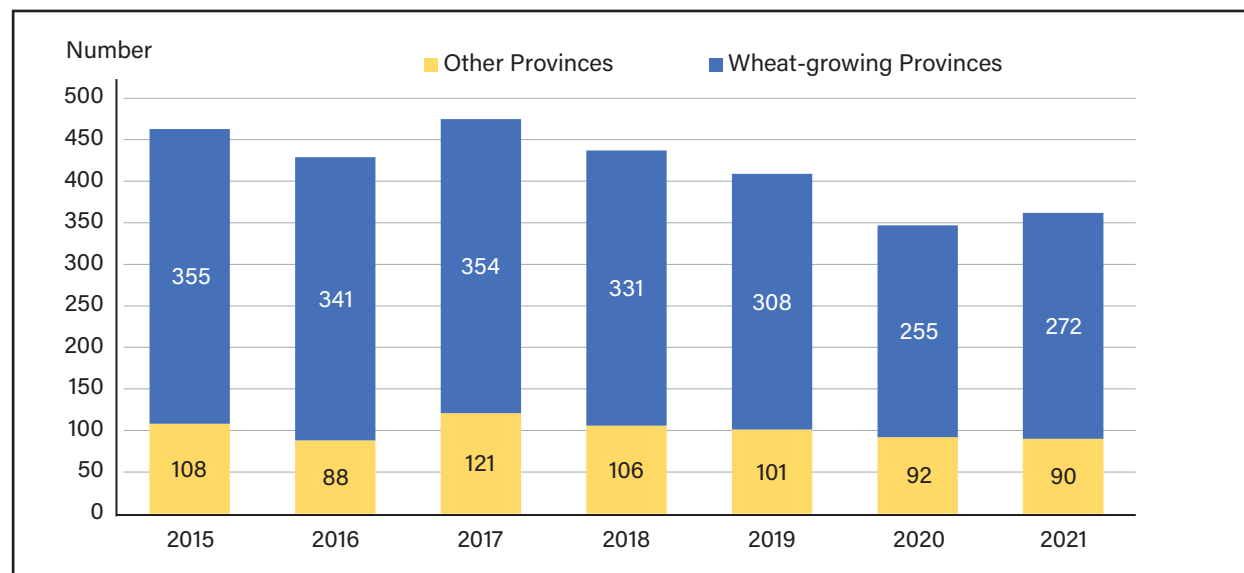
Note: Chart shows Province names and the average number of TRQ applicants for 2015–21; shading indicates average wheat output for 2015–19.

Source: USDA, Economic Research Service calculations using data from China National Bureau of Statistics and China National Development and Reform Commission.

Wheat-growing provinces consistently accounted for about three-fourths of TRQ applications during 2015–21. The absolute number of applications from wheat-growing provinces declined from 355 in 2015 to a low of 255 in 2020 and rose to 272 in 2021 (figure 5). The number of applications from non-wheat-growing provinces peaked at 121 in 2017 and fell to 90 in 2021. The share of applications from wheat-growing provinces declined marginally from 77 percent in 2015 to 75 percent in 2021.

Figure 5

TRQ applications from wheat growing Provinces and other regions of China, 2015–21.



Note: TRQ = tariff-rate quota. Wheat-growing provinces include Henan, Hebei, Shandong, Anhui, Jiangsu, Hubei, Gansu, Xinjiang, Shaanxi, and Inner Mongolia.

Source: USDA, Economic Research Service calculations using data from China National Development and Reform Commission.

Customs data show that companies in wheat-growing regions that accounted for most of the TRQ applications imported little wheat. China’s publicly released customs data can be tabulated by two geographic indicators:

- The customs district where wheat physically entered China. Most imported grain arrives at districts that have coastal ports, but some imports officially pass customs in central and western provinces.
- The Province where the importing company is legally registered as a business.

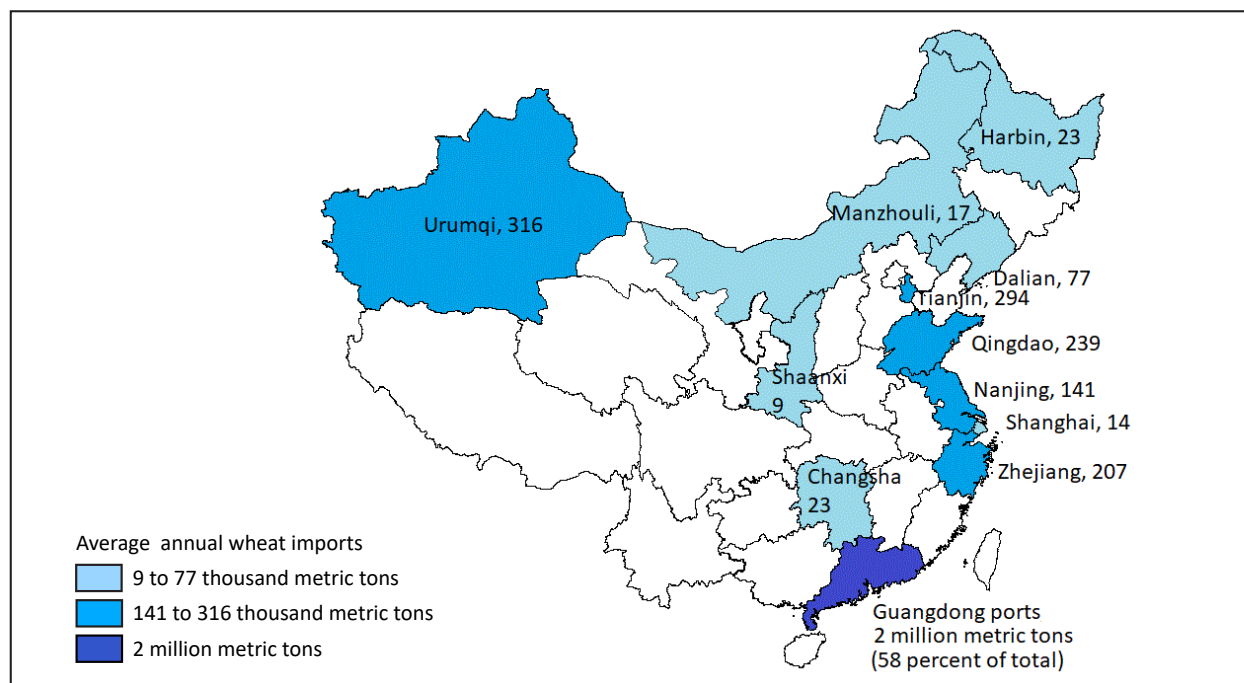
A tabulation of average annual wheat imports by customs district for 2015–18 (data were no longer publicly available for this indicator after 2018) shows that districts in Guangdong Province were the predominant point of entry for imported wheat (figure 6).¹¹ On average, more than 2 Mt of wheat imports arrived at Guangdong ports annually, accounting for 58 percent of the yearly total. Other southern districts in Zhejiang Province (207,000 Mt), Xiamen in Fujian Province (62,000 Mt), and Changsha in Hunan Province (23,000 Mt) accounted for an additional 9 percent of imports combined. The Harbin (Heilongjiang Province) and Dalian (Liaoning Province) districts in non-wheat regions of northeastern provinces accounted for about 3 percent of wheat imports. Thus, non-wheat-growing areas combined accounted for about 70 percent of wheat imports.

Ports in proximity to leading wheat- and flour-producing regions of northern China accounted for about 30 percent of wheat imports. The largest wheat-producing import districts were Urumqi in the Xinjiang

¹¹This is the sum of imports by the Shenzhen, Guangzhou, and Shantou customs districts.

Autonomous Region (a northwestern region that borders Kazakhstan, producing 316,000 Mt), Tianjin (294,000 Mt), Qingdao in Shandong Province (239,000 Mt), Nanjing in Jiangsu Province (141,000 Mt), and Shanghai (41,000 Mt). Customs districts in major inland wheat-producing provinces Henan, Hebei, Anhui, and Hubei received insignificant amounts of wheat imports. The Beijing district had no wheat imports. Wheat imported by companies in inland provinces may have been shipped through coastal customs districts or those with border crossings such as Urumqi, but some inland districts in Shanxi Province, Manzhouli in Inner Mongolia, and Changsha in Hunan Province reported small amounts of imports.

Figure 6
Wheat imports by customs district, 2015–18



Notes: Chart shows average imports in thousands of metric tons by customs district, 2015–18. Customs district was not reported in public data after 2018.

Source: USDA, Economic Research Service analysis of China customs data.

A tabulation of China’s wheat imports by the Province where the importer is registered as a business reveals that Beijing-based companies are the dominant importers, accounting for an average 69-percent share of imports (figure 7). On average, only six TRQ applications—less than 2 percent of applications—were submitted by Beijing-based companies. No wheat was physically imported to the Beijing customs district during 2015–18. Companies registered in two other non-wheat-growing provinces—Guangdong and Fujian—accounted for 713,000 Mt of imports annually (18 percent of the national total). Other provinces outside the major wheat-growing regions each accounted for 1 percent or less of imports, including Hunan and Heilongjiang. Other non-wheat-growing provinces Zhejiang, Yunnan, Hainan, Gansu, Chongqing, and Jilin also had very small import volumes.

Companies based in the major wheat-growing provinces accounted for 10 percent of wheat imports. Shandong, Jiangsu, and Xinjiang accounted for 2–3 percent each. Tianjin accounted for just 1 percent.¹² Hebei and Henan Provinces averaged less than 20,000 Mt, Anhui averaged 4,000 Mt, and Hubei had insignificant

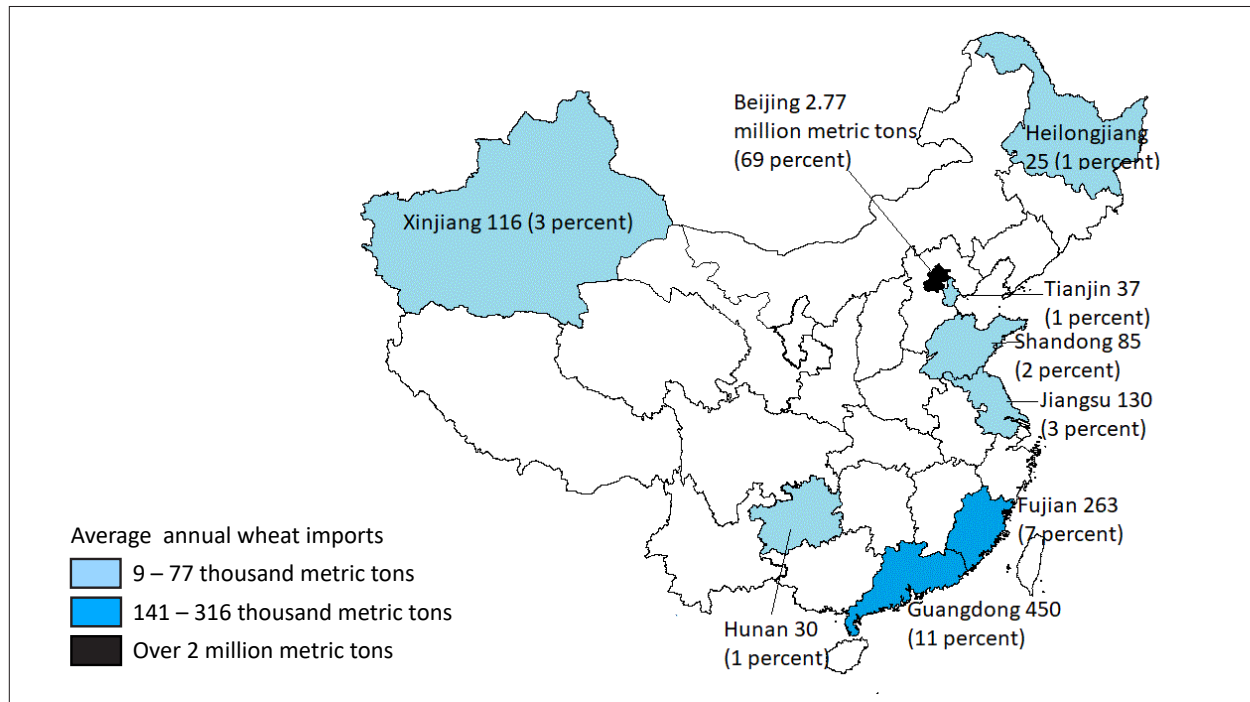
¹²Tianjin is not a major wheat-growing region, but it was included here since it is the main port of entry serving Hebei Province and other major wheat-growing areas.

nificant amounts. Imports by companies in wheat-growing provinces peaked at 427,000 Mt (a 15-percent share of China’s wheat imports) in 2018. Imports by these companies were less than 200,000 Mt in 2015 and 2016 (a 4-percent share) and less than 250,000 Mt in 2020. The small share of wheat imported by companies in wheat-growing provinces contrasts with their average 76-percent share of TRQ applications.

Beijing-based companies accounted for 50 to 70 percent of wheat imports in most years from 2015 to 2019 (figure 8). Notably, Beijing companies accounted for 87 percent of imports in 2020, although they accounted for just 6 of the 362 TRQ applications for 2020. Companies in wheat-growing provinces accounted for less than 10 percent of wheat imports in most years and just 3 percent in 2020. Other non-wheat-growing provinces accounted for most of the remaining imports. Imports by Beijing-based companies more than doubled in 2020, while imports by companies in other regions changed little that year.

Figure 7

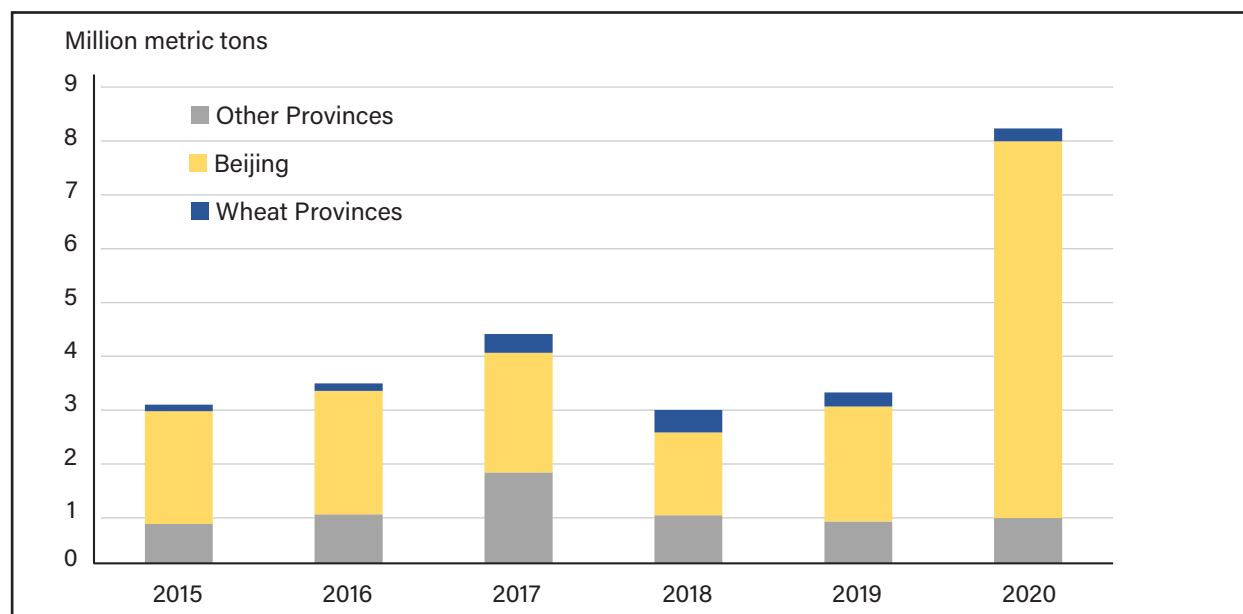
Average annual wheat imports in thousand metric tons, by Province where importing company is registered, 2015-20



Note: Chart shows average annual imports (thousand metric tons) and share of the national total (percent).

Source: USDA, Economic Research Service analysis of China customs administration data.

Figure 8
China wheat imports by Province of importer, 2015–20



Notes: Data are for calendar years. Importers are classified based on the Province where the company is registered.

Source: USDA, Economic Research Service analysis of China customs data.

Table 6 presents correlation coefficients that demonstrate the geographic disparity between wheat imports and TRQ applications shown in the charts above. High correlations between provincial flour output and wheat output (correlation coefficient of 0.96) show that China’s flour industry is highly concentrated in wheat-producing provinces. The high correlation of provincial TRQ applications with flour and wheat output (correlation coefficients exceed 0.8) shows that TRQ applications also come predominantly from wheat-growing regions, an indicator of strong demand for imports by flour-milling companies in those regions. However, the geographic distribution of wheat imports is not at all correlated with the number of TRQ applications (coefficient of -0.02) or with flour output (-0.06) or wheat output (-0.09). This lack of correlation reflects the predominance of companies registered in non-wheat-growing regions Beijing, Guangdong, and Fujian as wheat importers. These geographic patterns suggest that shares of the quota are disproportionately allocated to applicants in non-wheat-growing southern provinces to bolster supplies and reserves in those regions. The large number of TRQ applications from companies in wheat-growing regions and the small volume of imports in those regions indicate a large latent demand for imported wheat that may be constrained by lack of access to quotas.

Table 6
Correlation coefficients for provincial averages

	TRQ applications	Flour output	Wheat output	Wheat imports
TRQ applications	1	0.83	0.87	-0.02
Flour output		1	0.96	-0.06
Wheat output			1	-0.09
Wheat imports				1

Notes: Perfect positive correlation = 1; no correlation = 0; perfect negative correlation = -1. N=31 provinces. TRQ = tariff-rate quota. Data include the provincial average number of TRQ applications (2015–21), average flour output (2014), average wheat output (2015–19), and average wheat imports (2015–20).

Source: USDA, Economic Research Service analysis of data from China’s National Development and Reform Commission, National Bureau of Statistics, and Customs Administration.

Conclusion

This study found that hundreds of Chinese companies applied for a share of the country's 9.64 Mt TRQ for wheat during 2015–21, indicating robust potential demand for imported wheat. More than 900 Chinese companies applied for TRQs during the 7 years of applications examined, including 177 companies that applied every year.

The low price of imported wheat compared with domestic Chinese wheat makes imports attractive. The number of applicants peaked at 475 in 2017 when imported wheat was an estimated 37 percent less expensive than domestic wheat at the low 1-percent in-quota tariff. By 2020 the margin had narrowed, but imported wheat was still 20 percent less expensive than domestic wheat. The number of TRQ applicants fell to its lowest number (347) in 2020, yet imports soared to their largest volume since the 1990s. The number of applicants for the 2021 quota increased to 362.

Most applicants are privately owned flour-milling companies, but feed mills and some food-processing companies also applied for TRQ. Rising corn prices in China during 2020 spurred widespread substitution of wheat for corn in animal feed rations, but application announcements specified capacity requirements only for flour and food-processing enterprises.

The TRQ system reserves 90 percent of the quota for import through STEs. China revealed in the WTO dispute that NDRC, in practice, allocated the entire STE portions of the wheat, rice, and corn TRQs to COFCO and that non-STE applicants received only non-STE portions of the TRQs. Although a new application form introduced in 2020 allowed companies to apply for both STE and non-STE quotas, it is unclear which companies are eligible to import through an STE. Other state-owned flour-milling and trading companies also applied for quota, but most applicants were privately owned.

A 200,000-Mt wheat-processing-capacity requirement for TRQ applicants appears to exclude most companies in the flour industry, but 254 applicants reported capacity above the threshold for 2020. The applicants with the largest reported processing capacity (exceeding 1 Mt) were privately owned.

The study found geographic disparities between the location of TRQ applicants and the volume of wheat imports. About three-fourths of TRQ applications came from flour mills in wheat-growing provinces of northern and western China, where more than 90 percent of China's flour-milling industry is located. However, customs data show these regions accounted for very few wheat imports, suggesting large latent demand for imported wheat in those regions. Shipments of wheat arrived predominantly in southern coastal regions where wheat is not produced in significant quantities. Districts in Guangdong Province alone accounted for more than half of wheat import arrivals. Customs data tabulated by location of the importer's headquarters show that companies registered in Beijing made 60 to 70 percent of wheat imports during 2015–20, although Beijing companies submitted an average of just six applications per year. In 2020, Beijing companies' share of wheat imports rose to 85 percent.

The predominance of Beijing-based importers appears to reflect the dominance of the STE COFCO. The combined dominance of Beijing-based companies and physical arrivals of wheat in southern coastal provinces suggests that the STE imports wheat to bolster supplies in wheat-deficit regions of southern China. The dominance of Beijing importers increased in 2020 despite revisions of TRQ application guidelines.

References

- Bai, Meiqing (ed.). 2015. *China's Grain Reserve Reform and Innovation (1978–2013)*. Beijing: Economic Science Press.
- Beckman, J., T. Lee, and F. Gale. 2021. *Agricultural Market Access Under Tariff Rate Quotas*, ERR-279, U.S. Department of Agriculture, Economic Research Service.
- Chen, B., N. Villoria, and T. Xia. 2020. “Tariff quota administration in China’s grain markets: An empirical assessment,” *Agricultural Economics* 51:191–206.
- CAAS (Chinese Academy of Agricultural Sciences). 2017, July 3. 优化粮食配额管理放大政策杠杆作用 [Optimize grain quota management to enlarge its role as a policy lever]. *Farmers Daily*.
- CAAS (Chinese Academy of Agricultural Sciences). 2018, June 26. *China Agricultural Sector Development Report (summary)*.
- China National Grain and Oils Information Center. 2021, February 4. *Food Grain Monthly Supply and Demand Report*.
- Dalton, H. 2019, October 16. “Revised China Tariff Quota Rules Could Have a Significant Impact on U.S. Wheat Exports.” U.S. Wheat Associates Wheat Letter.
- Gale, F. 2013. *Growth and Evolution in China’s Agricultural Support Policies*, ERR-153, U.S. Department of Agriculture, Economic Research Service.
- Guangdong South China Grain Exchange. 2019. 苏、皖、豫小麦产区调研报告 [Survey report on wheat production regions in Jiangsu, Anhui, and Henan].
- Hu, X., S. Li, G. Zhou, L. Wu, W. Lu, W. Li, S. Wang, X. Yang, J. Song, B. Wang. 2016. “Variations of Wheat Quality in China from 2006 to 2015.” *Scientia Agricultura Sinica* 49(16):3063–72.
- Li, M., W. Zhang, and D. Hayes. 2018. *China’s Agricultural Import Potential*. Iowa State University, CARD Policy Briefs, 18 PB-23.
- Lohmar, B., F. Crook, V. Smith, T. Wahl, and W. Wilson. 2005. “On Commercialization of Wheat Production and Marketing.” U.S. Department of Agriculture, unpublished USDA-Ministry of Agriculture Scientific Exchange trip report.
- Orden, D., C. Chen, B. Chen, L. Brink, and C. Zulauf. 2019. “WTO Dispute Panel Report on China’s Administration of Tariff Rate Quotas (TRQs) for Certain Agricultural Products.” *Illinois farmdoc daily* (9):84.
- Puyang Daily. 2020, May 20. 我市获批粮食进口关税配额数量再创新高[Our city’s grain import tariff-rate quota quantity is another record amount].
- RCRE (Research Center for Rural Economy, Ministry of Agriculture and Rural Affairs China). 2017. 农业供给侧结构性改革：难点与对策 [Agricultural supply-side structural reform: difficulties and countermeasures]. Beijing: China Agricultural Press.
- State Administration of Grain. 2016. 粮油加工业“十三五”发展规划 [13th 5- year development plan for grain and oils processing industry].

- U.S. Department of Agriculture, Foreign Agricultural Service (USDA, FAS). 2020. Production, Supply and Distribution. Online database.
- Weihai Daily. 2016, February 16. 山东威海获粮食和棉花进口关税配额 [“Shandong Weihai Received Grain and Cotton Import Tariff-Rate Quota”].
- World Trade Organization (WTO). 2019. China—Tariff-Rate Quotas for Certain Agricultural Products. Report of the Panel, Wt/Ds517/R.
- Xie C., J. Grant, and K. Boys. 2019. “Do state-owned enterprises benefit more from China’s cereal grain tariff-rate quota regime?” *Canadian Journal of Agricultural Economics* 67: 397–416.
- Xinhua News Service. 2017, March 28. “助力‘一带一路’倡议 中粮进口首批哈萨克斯坦小麦散粮集装箱运抵西安 [“Aiding the ‘One Belt One Road’ initiative; COFCO’s first shipment of imported bulk wheat from Kazakhstan was transported to Xi’an”].
- Ye, Xingqing. 2020, May 25. 加入WTO以来中国农业的发展态势与战略性调整 [China’s agricultural development situation and strategic adjustment since entering WTO]. China State Council Development Research Center, *Reform*, issue 5. Zou, F. (ed.). 2011. *Economic Geography of Grain*. Beijing: China Materials Publishing.