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India's Pulse Policy Landscape and Its Implications for Trade

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Abstract

The paper attempts to fill a knowledge gap by examining India's pulse complex, consisting of production, consumption, and trade policies. India's pulse policies are anchored in a cereal-centric farming system and prioritize national self-sufficiency as well as the mitigation of relative price increases in food. On the farmer side, government policy includes price support (a minimum support price [MSP]) for different pulses initially without procurement, but later backed by public procurement. The MSP plus procurement elicited a comparatively high supply response. Without procurement, the MSP worked only to anchor prices and benefit traders at the farmers' expense. By not accounting for the needed risk premium (for a supply response) the MSP kept domestic production low.

Even as the world's largest importer of pulses, the scale of pulse imports in India have generally not been large enough to cool its markets and bring down domestic prices. Instantaneous supply adjustments by exporters in response to trade policy changes are difficult.

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Introduction

Pulses have long been important to India's food and nutrition security. They constitute an affordable, protein-providing food group in a population where the majority of people live on less than US$2 a day.[1] Especially given that about 30 percent of Indians are vegetarian (Census of India 2011), pulses can meet a large part of the country's everyday protein requirement. However, only 13 percent of India's protein requirements are now met by pulses, and for a large population that requirement is not met at all. Despite sustained economic growth, India continues to be home to about 38 percent and 35 percent of the world's stunted and underweight children, respectively. Wasting among children increased from 19.8 percent to 21 percent between 2005/06 and 2015/16. Importantly, during that same period, the per capita availability of pulses declined. In 1961, per capita availability of pulses was about 69 grams per day; by 2017 that figure had fallen to about 52.9 grams per day (Tiwari and Shivhare 2017).

Apart from their nutritional importance, pulses also benefit soil health and farming sustainability. Pulses reduce soil pathogens, enhance soil productivity by nitrogen fixation, and help increase the productivity of rotation crops (Rampal 2017). Compared with other crops, such as cereals and commercial crops, pulses require less quantities of pesticides, fertilizers, and irrigation. This makes them sustainable and environmentally friendly.

Given that context, pulses occupy a unique place in the government of India's policies and programs. They are being positioned as an integral food source to address India's growing nutritional challenges and as a sustainable crop that can help diversify agricultural production.

Yet despite their well-known advantages, pulses in India have lagged in terms of area, production, and yield in comparison with staples like wheat and rice and in relation to global pulse productivity. From 1960 to 1970, in the years leading up to the Green Revolution, India endured recurring food insecurity. The government was largely focused on wheat and rice to meet the demand for food grains. With the aim of making India self-sufficient in food grains, the government introduced high-yielding varieties of wheat and rice in the 1970s. It was during this time that production and productivity of pulses declined. Even now, in both domestic and trade policies related to food, the paradigm of achieving food security through self-reliance and lower dependence on international trade and centrality of cereals forms the core of food policy making in India.

[1] All dollars referred to in the paper are US dollars.

The post–Green Revolution period, from 1971 to 1990, saw an increase in the production and yield of wheat and rice but a drastic decline in the area devoted to and the production of pulses, especially in the northern and the eastern zones. Over time, pulses have been crowded out by cereals, and by the late 2000s about 87 percent of pulses' cultivation had been pushed out from irrigated to rainfed areas, making them a high-risk crop for farmers (Roy, Joshi, and Chandra 2017). Despite various government programs such as the Pulses Development Scheme (1969–1974); the National Pulses Development Project (1985–1989); the Special Food Grain Production Program (1988–1989); the Integrated Scheme of Oilseeds, Pulses, Oil Palm, and Maize; and the National Food Security Mission; production and availability of pulses have continued to remain subpar. Policies have targeted increases in domestic production in all pulses; reliance on imports of pulses based on comparative advantage for greater availability has never been a focus in the government's policies.

The Directorate of Pulses Development, one of the eight commodity development directorates (the others being the directorates of jute, cotton, wheat, millet, rice, sugarcane, and oilseeds), under the crops division of the Department of Agriculture, Cooperation, and Farmers Welfare (DAC&FW)—one of the departments of the Ministry of Agriculture and Farmers Welfare—is mandated to coordinate and monitor the implementation of all pulse-related, centrally sponsored/central-sector schemes on crop development and research across India.

To achieve self-sufficiency in pulses, the DAC&FW formulated its Five-Year Roadmap and accompanying strategy in 2015/16. The government created the Committee for Monitoring of Actions for Increasing Pulse Production, chaired by the additional secretary and comprising the Indian Council of Agricultural Research's (ICAR's) Ergonomics and Safety in Agriculture project and various joint secretaries of the DAC&FW (Crops/ Pradhan Mantri Krishi Sinchai Yojna (PMKSY)/ Plant Protection (PP)/ Seed/ Marketing) (India, DAC&FW 2018). Overall monitoring of progress in implementing pulse programs occurs at the DAC&FW secretary level. The Monitoring Committee is mandated to design long-term strategy and annual action plans for the monitoring of implementation of initiatives, including production incentives, price supports and minimum support price–related issues, critical irrigation for pulses under the Prime Minister's Farmer Irrigation Scheme (PMKSY), and seed production through the ICAR institutes and KVKs (agricultural science centers) (India, DAC&FW 2018).

Notwithstanding large increases in the production of pulses—to around 23 and 25 million metric tons[2] in 2019/2020 and 2020/2021—India remains globally uncompetitive in pulses, and productivity in all pulses has been far below that of the global frontier. Government policy does not highlight that aspect in relative terms, but only in absolute terms; hence, policy design ignores the perspective of comparative advantage. The world average yield for overall pulses in 2013 was 904 kilograms per hectare (kg/ha), whereas the yield in India was a mere 739 kg/ha, an 18 percent gap. France (3,637 kg/ha) followed by Canada (2,031 kg/ha), the United States (1,943 kg/ha), China (1,550 kg/ha), and Russia (1,448 kg/ha) all registered significantly higher average yields (FAO 2016).

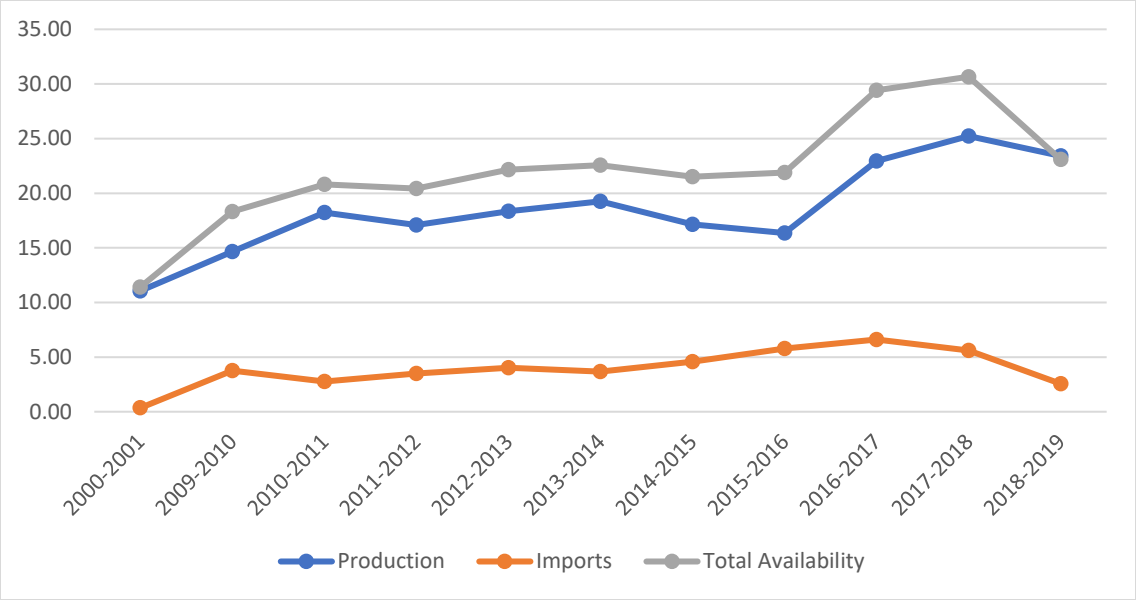
Given that India lacks a comparative advantage, efficiency implies that a strong rationale exists for India's importation of a wide range of pulses, whereupon it could realize gains from trade in pulses rather than producing them domestically. Yet for political economy reasons, self-sufficiency in pulses, as in other staples, has been paramount. The Indian government has always striven to increase domestic production of all pulses, aiming to attain self-sufficiency and to reduce imports to the largest extent possible. An argument has been made that pulses are not only domestically scarce in India but also globally scarce, and hence reliance on trade is impractical.

Figure 1 shows the total availability of pulses as constituted by domestic production and imports. Until 2015, domestic production was flat, coinciding with high overall growth in pulse imports. After 2017/18, even though production declined a little, the government's continued restrictive trade policy and its cumulative effects over time resulted in a decline in imports.

The years 2014/15 and 2015/16 were drought years with erratic rainfall across the major pulse-growing states, but the government's policies led to enhanced imports and ensured that availability and supply were maintained. Between 2014/15 and 2016/17, imports of 5 to 6 million tons per year helped maintain supply. Yet, as part of the objective of self-reliance, the steep decline in imports after 2017/18 is lauded in policy.

[2] All references to tons are to metric tons.

Figure 1 Domestic production, imports, and total availability of pulses (in million tons)



Source: Compilation of data (2000 through 2019) from Directorate of Economics and Statistics, DAC&FW, Ministry of Agriculture and Farmers Welfare and the Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce and Industry.

The Ministry of Agriculture in a report on the turnaround in domestic pulses titled "Pulses Revolution: From Food to Nutrition Security" states, "Farmer-friendly policy measures have helped to reduce import of pulses. Import of pulses during 2017/18 has declined by about 3 million tons from previous year, resulting in saving of foreign exchange amounting to nearly 1 billion dollars. It is expected that pulses production will be sustained in the country and India's import dependence on pulses will come down substantially" (India, DAC&FW 2018).

As a major step, in 2017 India's Cabinet Committee on Economic Affairs empowered a committee headed by the secretary of the Department of Food and Public Distribution to review the country's export and import policies on pulses and to consider measures such as quantitative restrictions, prior registration, and changes in pulse import duties depending on domestic production and demand, local and international prices, and global trade volumes. The committee comprises the secretaries of the DAC&FW and the Department of Consumer Affairs as members ostensibly to bring a balanced approach to managing the interests of producers and consumers.

Due to back-to-back record production years, in policy it was argued that imports needed to be checked. Hence, in 2017 import duties were fixed at 30 percent (increasing to 60 percent in 2018) on chickpeas, 50 percent on yellow peas, 30 percent on lentils, and 10 percent on pigeon pea.[3] Peas,

[3] The yellow pea is not preferred by Indian consumers and there is hardly any consumption of this legume, but it is imported to be mixed with pigeon pea.

which had accounted for a major share in India's pulses imports, consequently, saw a decline. The government also imposed a quantitative cap of 0.2 million tons per year on pigeon pea (Mozambique) and 0.3 million tons on black matpe and green gram (Myanmar). According to the policy statements, "quantitative restrictions have been imposed to check import of cheap pulses and thereby induce market buoyancy domestically" (India, DAC&FW 2018).

During 2019, pea imports were subjected to a 50 percent tariff—the maximum allowed under World Trade Organization (WTO) rules.[4] Lentil imports from countries other than the United States faced a 33 percent tariff, while non-US-produced chickpeas faced a 66 percent tariff, within the bound tariff of 100 percent.[5] Pea imports were further capped through quantitative restrictions with a quota of 100,000 tons. The quota was initially in effect until June 30, 2018, and was subsequently extended until March 31, 2019. On March 29, 2019, India revised the quantitative restrictions for peas to allow for 150,000 tons during the period of April 1, 2019, to March 31, 2020, along with a minimum import price of 200 Indian rupees (Rs) per kilogram and a requirement that all imports be sourced through the Port of Kolkata. On March 28, 2020, India extended this policy on peas (including the minimum import price and single-port restriction) until March 31, 2021. In September 2020, India increased tariff on American lentils from 30 percent to 50 percent, while tariff levied on other countries such as Canada, and Australia's lentils was increased to 30 percent (Flammini 2020). In addition, a 10 percent surtax was also applied. India's restrictive trade policies tend to have significant impacts. For example, in December 2019 Canadian pea exports fell by 73 percent while lentil exports dropped by 79 percent. During 2021/2022, India again moved the imports of green gram, pigeon peas, black matpe and peas (yellow, green and dunn peas) from free to restricted imports (Singh 2022).

Further, the government lifted the ban on the export of pigeon pea, black matpe, and green gram, although shipments of these varieties were allowed only through permission of the agriculture export promotion body Agricultural and Processed Food Products Export Development Authority. All varieties of pulses, including organic pulses, have been made "free" for export. Kabuli chana (a variety of chickpea) has also been permitted in limited quantity. Gram (peas), which accounted for major share in India's pulse exports, increased. Note that while India actively promoted exports, it

[4] 'India Imposes Additional Tariffs on U.S. Pulses.' Published in Pulse Pod on 24th June 2019. https://pulsepod.globalpulses.com/pod-feed/post/india-imposes-additional-tariffs-on-us-pulses

[5] Bound tariffs are specific commitments made by individual WTO member governments. The bound tariff is the maximum Most Favored Nation (MFN) tariff level for a given commodity line.

also simultaneously provided domestic support to growers to incentivize greater production, reflected in rising minimum support prices (MSPs) for pulses (in real terms).

Whenever domestic production has been high and prices have been low, imports have adjusted, although that was not the case in the latest period, that is, 2018/19. The trade restrictions seem to be having prolonged effects on agricultural commodities —the continual tariffs and quantitative restrictions affect exporters' cropping decisions. India's restrictive import policies create the potential for greater instability in the global pulse supply as planting decisions in most pulse-producing countries are based on the global demand for pulses, in which India plays a primary role. Therefore, a production shortfall in India (for example, due to poor rainfall) has the potential to create dramatic increases in pulse prices without ample pulse supply in the global marketplace.

India's pulse imports are currently estimated to fall to a record low of only 1 million tons, whereas on average the amount imported has ranged between 3.5 million and 6 million tons. For specific pulses, such as pigeon pea, India's trade stance significantly influences overseas planting, which is likely to have dynamic effects, but those effects on exporters are not internalized in India's policies. Policy uncertainty and inconsistency are probably the reasons for the limited cooling effect of imports on India's domestic prices of pulses during the country's extremely high pulse price episodes prior to 2016.[6]

Whereas for some pulses like black gram and pigeon pea there are few suppliers to India. In this regard, two facts are important here. First, the set of suppliers of pulses to India is endogenously determined in relation to trade policy (please see the discussion on the extensive margin in trade below) and unmet demand from domestic production. Indeed, this was the case for pigeon pea, where several suppliers, such as Tanzania, Ethiopia, and Mozambique, entered the fray. Second, the nature of India's trade in pulses has significantly altered with changes happening more on the extensive margin after the food price crisis in 2008. The number of exporters to India, the types of pulses, the number of varieties, and price differentiation (higher prices) all go into making up the extensive margin in trade.

To understand trade and trade policy in pulses in India, it is thus imperative to understand the whole pulse policy complex, made up of the following:

(i) Supply-side policies containing support prices and public procurement

(ii) Demand-side policies inclusive of the food-based safety net program

[6] The cooling effect refers to pulse imports reducing short-term upward price pressure in India's domestic market, or bringing prices down (Negi and Roy 2015).

(iii) Political economy of pulses in India

a. There is low tolerance for relative price increases in food, and even though they are inefficient, trade measures are principally used to cool markets.
b. Self-sufficiency in all commodities including pulses is salient, and unless extreme cost differences obtain, as in edible oils, the policy push is for self-sufficiency in pulses.
c. Trade restrictiveness is politically expedient in food, and trade liberalization is only by compulsion. In most pulses, India's negotiated bound tariffs equal 100 percent, and often in times of high production there is significant uncertainty in tariffs—that is, the binding overhang. The applied tariffs are also often high and quite variable over time creating significant policy uncertainty. India's Foreign Trade (Development and Regulation) Act and India's export–import policy govern import tariffs. The Director General of Foreign Trade mandates registration for all importers before engaging in import and export activities.

In summary, the government has introduced a variety of interventionist policy measures to manage pulse production, marketing, and prices in India. These measures vary from increasing MSPs for pulses to government procurement to measures like export controls, export subsidies, and import restrictions—such as tariff hikes and quantitative restrictions. Government restrictions along with a domestic pulse scenario in which production is subject to monsoon rains and weather conditions make pulses a highly volatile crop in India's food system.

Declining Consumption of Pulses: The Case for Trade

The per capita net consumption of pulses in India has continued to decline over the years, from 40 grams per day in 1988/89 to 35 grams per day in 2009/10, which is less than the average 47 grams per capita per day the Indian Council of Medical Research recommends. From 1988 to 2011, urban India saw a greater decline of about 16 percent in pulse consumption (in kilograms per capita per year) compared with a 14 percent decline in rural India. In 2011/12, pulses' contribution to protein intake was substantially low—making up 10 percent in rural areas and 11 percent in urban areas (Rampal 2017).

Consumption has been affected by rising incomes, volatile prices due to a supply–demand mismatch, changing consumer diets and preferences, urbanization, and variability in trade. With the

rise in incomes, a higher percentage of rich (24.7 percent) and middle-income (20.9 percent) households have shifted away from pulse consumption to higher-value food items such as dairy and meat. However, that has not necessarily translated into improved nutritional outcomes for most Indians. Between 1988 and 2011, the per capita consumption of pulses dropped by 10 percent among lower-income households (Kumar, Joshi, and Parappurathu 2017).

Moreover, pulses comprise several different varieties and given the heterogeneous regional preferences in India, there is very little substitution among the different types. This is one reason the demand for pulses differs according to variety even though they are nutritionally similar. Hence, increasing overall availability of pulses will not result in an increase in the consumption of pulses. Availability of different varieties of pulses through trade is required for overall availability of pulses.

Further, it is important to understand the role food-based safety net programs play in determining the demand for different pulses. The provision of pulses through India's Public Distribution System (PDS) at highly subsidized prices can have a significant effect on pulse demand and does have implications for domestic supply as well as sourcing through trade. The states determine policy regarding inclusion of pulses, and because of the overall scarcity of pulses and region-specific preferences only inframarginal units have been included (usually 1 kilogram of specific pulses per household per month, whereas average demand equals 5 kilograms).

The PDS since inception has focused largely on providing subsidized wheat and rice to poor households. It was only recently that the Indian government decided to introduce pulses into the PDS under the National Food Security Act of 2013, the policy change that brought under coverage more than 800 million people. Before that, only a few states had started distributing a kilogram per month of a specific pulse per household through the PDS. With this policy move, the government attempted to diversify the food basket to increase pulse consumption among poorer households. Some states have included pulses as part of the Mid-Day Meal Scheme and at *anganwadi* centers at the village and block level to improve protein uptake among children and pregnant and lactating women.

The consumption subsidy in the PDS, however, has largely worked as an income transfer program. Households used the kilogram of pulses through the PDS to replace market purchases, and it only marginally increased households' pulse consumption by 250 grams per month (Chakrabarti, Kishore, and Roy 2016). Indeed, there have been demands to increase the quantity of pulses provided through the PDS. The policy of providing large quantities of pulses through the PDS, however, has its own complications.

To meet the growing demand if pulses were introduced in safety net programs on a comparatively large scale, India would have to depend on pulse imports as domestic production would be insufficient. An extended subsidy would also mean greater overall demand in pulses. Unless supported through imports, the policy of subsidizing larger quantities of pulses is not feasible.

To summarize, the provision of non-inframarginal units in the PDS would be possible only through increased imports. Political economy dictates that the demand for inclusion of larger quantities is only going to strengthen in the future, particularly in post-COVID-19 times. The government's COVID-19 response, which provisioned for 1 kilogram of pulses for each household free of cost, translates to effective demand of more than 1 kilogram as it is being provided free. As the need for pulses rises also through income effects of free pulses, more pulses would be required by the system. According to government figures, to feed a population of 1.51 billion, the projected demand for pulses by 2030 is likely to be 35 million tons (consumption of 28.70 million tons plus postharvest seed losses of 5.72 million tons). This necessitates an annual growth rate of 3.57 percent, which is many times greater than the rate at which agriculture has been growing (Tiwari et al. 2020).

The Connection between Policy and Domestic Pulse Production

As India's trade policy and the magnitude of India's pulse trade are foremost a function of domestic production, it is important to ascertain the policies determining India's domestic pulse supply. India is the world's largest producer of pulses, accounting for about 25 percent of the world's production in 2017/18. However, that is a drastic decline from 45 percent in the 1960s. Over the same period, the total area under pulse cultivation also witnessed a sharp decline. Adding to that, India's average pulse yields are at levels much lower than the world average (FAO 2019a).

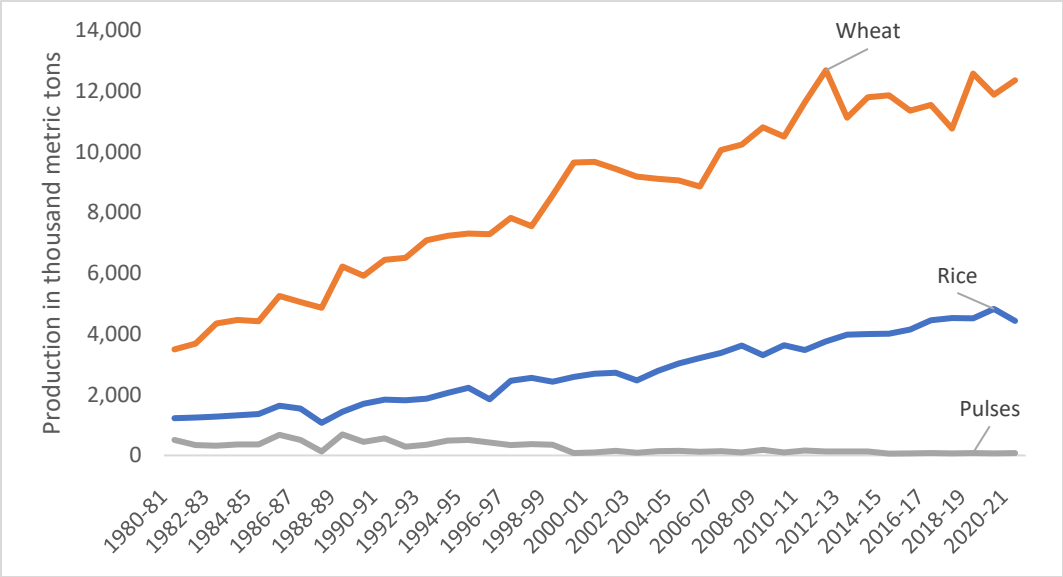
Compared with India's staple crops, pulses have undergone a substantial slowdown. Over a span of five decades, the total production of pulses increased by 47 percent, from around 12.5 million tons in 1960/61 to about 18.5 million tons by 2013/14. In contrast, staples such as wheat and rice saw a 225 percent increase over the same period.

According to the National Bank for Agriculture and Rural Development, between 1950/51 and 2013/14, the area under pulse production grew at around 0.08 percent (compounded annually), a lower figure than that for total food grains (0.21 percent), rice (0.58 percent), and wheat (1.7 percent) (Mohanty and Satyasai 2015). Pulses were replaced with high-yielding varieties of cereals

(especially wheat) in states such as Punjab, Haryana, and western Uttar Pradesh, following the Green Revolution technologies introduced in the 1960s.

Besides loss in area under cultivation, growth in pulse production lags behind that of the food grains. The productivity of pulses in India has grown by 0.6 percent (compounded annually) whereas for food grains, rice, and wheat, productivity has grown around 2.2 percent, 1.9 percent, and 2.7 percent, respectively, between 1950/51 and 2013/14. Figure 2 shows rice, wheat, and pulse production in Haryana over the years. The trends are similar in Punjab and Uttar Pradesh as well, where rice and wheat production has increased, and pulse production has fallen or remained stagnant.

Figure 2 Rice, wheat, and pulse production in Haryana from the 1980s



Source: Ministry of Agriculture and Farmers Welfare, Government of India, 2020-21

In 2019-20, the government of India announced a price support in the form of an MSP (discussed in next subsection) for 23 agricultural commodities; however, it procures primarily rice (43 percent of the total crop production) and wheat (36 percent of the total crop production), and, to a limited extent, pulses (12 percent of the total crop production) (Tiwari 2020). This skewed procurement also creates incentives for farmers to cultivate more rice and wheat. Further, a comparative analysis reveals that net returns to farmers from pulses are lower than those from rice and wheat, and only chickpea and pigeon pea will become the alternative pulse crops provided that the government of India takes a focused approach toward productivity enhancement with substantial price supports (Tiwari and Shivhare 2017).

According to recent data, production of chickpea saw an increase from 7 million tons in 2015/16 to about 11 million tons in 2017/18 and then declined to 9 million tons in 2018/19 (India, DAC&FW 2019). India is the world's largest producer of chickpea and has the largest area under its cultivation. Yet yields are significantly lower in India than in other parts of the world for most pulses. For example, the average yield of dry beans (comprising black and green gram) is 4189 hg/ha in 2019 in India, as compared to the world average of 7747 hg/ha (FAO 2019b). Similar trends are witnessed in the case of pigeon pea—it recorded an increase in production from 2.5 million tons in 2015/16 to 4.8 million tons in 2016/17 but saw a decline in the following years, coming down to 3.3 million tons in 2018/19 (India, DAC&FW 2019). Falling production may lead to a wider gap between demand for pulses and supply, just as Roy and colleagues (2017) earlier estimated an annual shortage in pulse production of 2 to 3 million tons for the period between 2000 and 2012. The shortfall highlights a greater role for imports in the future.

In recent years, such as in 2015/16, the decline in production and productivity of pulses has been largely due to successive droughts. Recall that pulses in India are overwhelmingly grown under rainfed conditions. To stabilize the volatility in prices, the government changed some of its policies to increase the supply of pulses. It allowed free imports, imposed export restrictions, enforced stock limits under the Essential Commodities Act, and promoted pulses to increase the acreage under pulse cultivation ("Unending Woes of Pulse Farmers" 2018).

The following years witnessed an increase in production—from 16.53 million tons in 2015/16 to 22.95 million tons in 2016/17. In this period, imports also increased from 5.79 million tons to 6.61 million tons. In 2017/18, production further increased to 25 million tons and productivity increased to 853 kg/ha. This led to a substantial decline in prices, which affected farmers' income and disincentivized them to cultivate pulses in the subsequent seasons. Hence, in 2018/19, pulses recorded a fall in production by about 3 million tons to 22 million tons (DAC&FW 2019). The volatility of pulse prices has been a major policy concern in India. In the recent past, pulse prices have witnessed sudden spikes, as for example in 2014/15. The wholesale price index has been higher for pulses than for cereals and oilseeds in the past two decades. Pulse prices have witnessed a consistent increasing trend from 2005 (Roy, Joshi, and Chandra 2017).

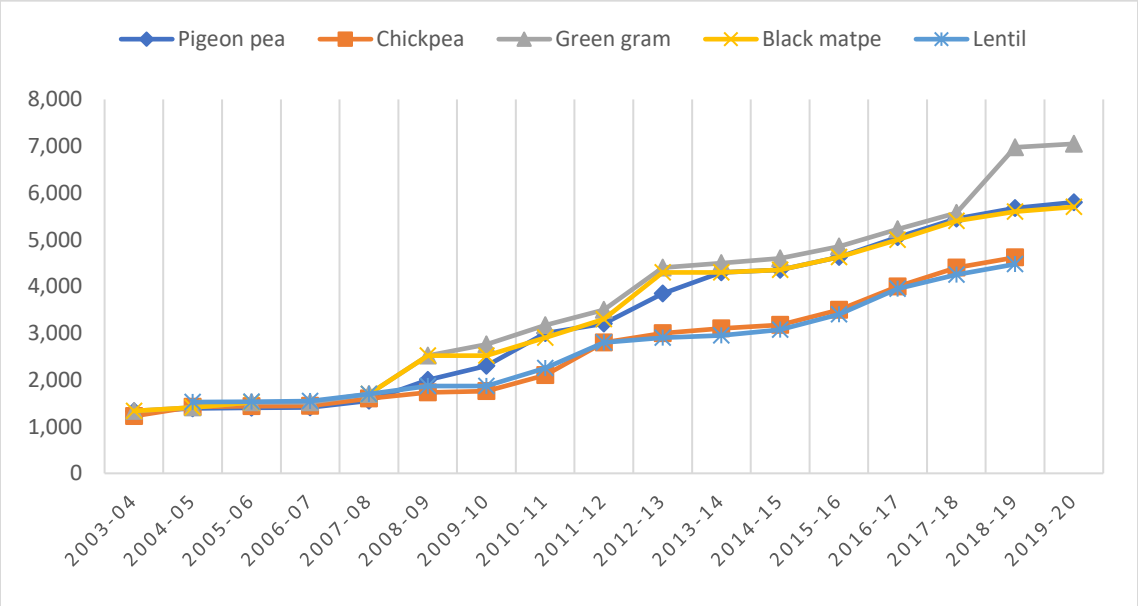
India frequently experiences a supply–demand mismatch in pulses. This has created a vicious cycle of low growth and high volatility of prices. In the areas of domestic production and prices, India has responded immediately with trade policy. The quickness and magnitude of that response has resulted in significant policy uncertainty.

How do domestic production and trade policy interact in India? Since the Green Revolution period, MSPs have played a vital role in increasing acreage under food grains and production of food grains, both of which have been leading factors influencing import demand and trade policy stance. About 30 percent of the total quantity of cereal produced in India is procured by the government at the MSP (FAO 2019b). In pulses, that procurement has been limited and has been conducted only in the recent years after 2015.

Minimum Support Prices and Procurement: Implications for Domestic Availability

To boost domestic production of pulses and to keep pulse prices from falling due to excess supply with increased imports, India has through policy increased the MSP for pulses over the years. As Figure 3 shows, the MSP for most pulses has increased consistently (in real terms) over the 2003–2019 period. For instance, the MSP for black matpe increased from Rs 3,300 per quintal in 2011/12 to Rs 4,300 per quintal in 2012/13. Similarly, the MSP for green gram increased from Rs 5,575 per quintal in 2017/18 to Rs 6,975 per quintal in 2018/19.

Figure 3 MSP of pulses (2003–2019) in Indian rupees



Source: Commission for Agricultural Costs and Prices.

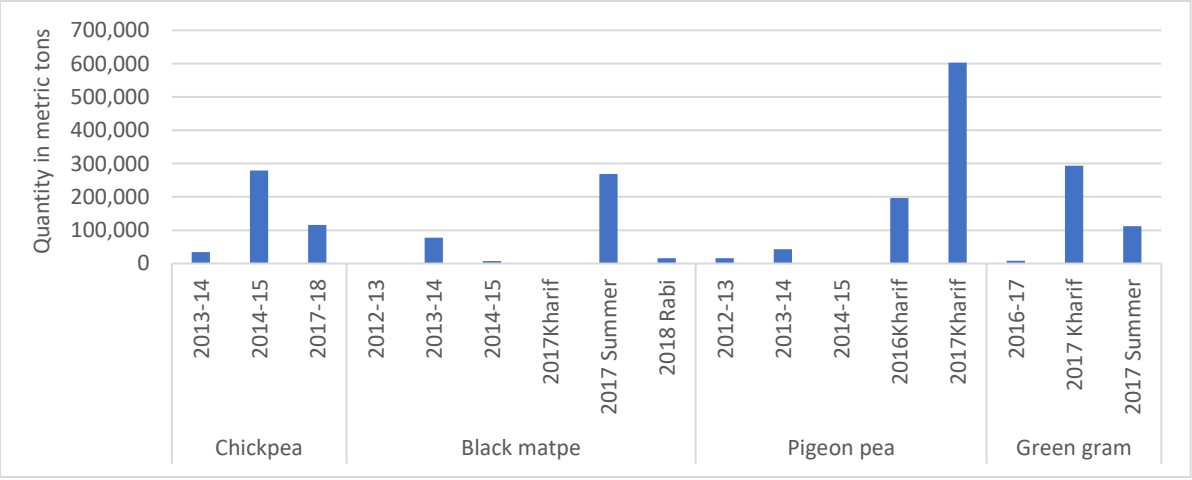
The policy of raising MSPs has moreover been combined with procurement beginning in 2015. The National Agricultural Cooperative Marketing Federation of India (NAFED) procures pulses at the MSP under India's Price Support Scheme whenever a glut occurs in the market due to excessive

production, during which prices tend to crash. It procures stocks directly from farmers in regulated *mandis* (wholesale markets) in open auction. The idea is to provide farmers with a ready market and a fair price and to do away with private traders.

In 2013/14, as pulse production increased to nearly 19 million tons, the government further increased MSPs for pulses to incentivize production, which has significant fiscal costs. Yet, to meet the growing demand, 3.7 million tons of pulses were imported from approximately 45 countries. In that year, the government banned the export of all pulses except the Kabuli variety of chickpea, organic pulses, lentils, and pulses that were imported and domestically processed for re-export. Import duties were removed and no quantitative restrictions were imposed. The government adhered to that policy up to March 2015 (Klein 2018).

In 2016, NAFED created a buffer of 2 million tons of pulses under the Price Stabilization Fund by way of domestic procurement and imports to ensure price stability and availability of stocks to consumers at a reasonable price (NAFED 2018). NAFED has also been designated to supply pulses to the army and central paramilitary forces, as well as to states under different welfare schemes such as the PDS, the Mid-Day Meal Scheme, and Integrated Child Development Services out of the national buffer. In March 2020, NAFED held a stock of more than 2.2 million tons. Beginning with 2013/14, the procurement of pulses has fluctuated for most pulses except pigeon pea, in which we see a sustained increase (Figure 4). The implementation of MSPs with procurement has often resulted in a situation of oversupply and declining prices and a restrictive stance in international trade. Moreover, the disposal of procured pulses by a large player such as NAFED can be subject to losses as market sentiment can lead to price depression in the open market (NAFED 2018).

Figure 4 Quantities of pulses procured by NAFED



Source: NAFED Annual Report 2018–19.

Increases in the MSP and good rainfall affect acreage devoted to pulses. Area under chickpea increased in the Rabi season in 2020. The net sown area under chickpea increased by 11 percent from 9.6 million hectares in Rabi 2019 to 10.7 million hectares in Rabi 2020. The price fell to Rs 2,900–4,000, about 20 percent below the MSP of Rs 4,875 per quintal. With the fresh harvest leading to additional supply in 2020, the government, already struggling to manage overflowing granaries, faces an added challenge, as NAFED will have to procure gram under the Price Support Scheme.

In most years since the 2000s, pulses have followed a different trajectory from cereals in terms of supply and price. During these years, the demand for pulses has been higher than the supply and the MSP for pulses has been much lower than the market price. In such a scenario, farmers prefer selling their produce on the open market. In many cases, farmers are unaware of the MSP prior to sowing or at any time throughout the season. Hence, only about 1 to 5 percent of the total quantity of pulses produced is procured via NAFED (India, CACP 2015). The low level of procurement and the low MSP ends up hurting the farmgate price for pulse growers. It acts as a focal point of tacit collusion among traders, who end up offering much lower prices to farmers. This might not be the case if MSPs for pulses were not announced and the farmgate price could effectively rise breaking the tacit collusion among traders.

Given the low level of pulse procurement or its complete absence in many regions, farmers largely rely on private markets and traders. The pulse markets in India are fragmented and involve several intermediaries. Farmers usually sell their produce to village-level traders, aggregators, millers, or large farmers who then aggregate the produce at the block level before transporting it to larger wholesale markets. Most pulse farmers in India operate on small and marginal landholdings and lack the resources to invest in postharvest technologies. This reduces their bargaining power and forces them to sell their produce at weekly *haats* or within the village at prices set by the traders or buyers.

Hence, even higher market prices for pulses do not necessarily benefit farmers because the traders take a large share of the value. Since levels of trade and trade policy response depend on the domestic supply response in pulses, the difference between an MSP with procurement of pulses and an MSP without procurement is of material significance for the supply of pulses and the demand–supply gap leading to import demand.

To get an indication of the extent of margins in the pulses value chain, one can look at the extent of appreciation in the market value of black gram in 2013. In 2013, the median retail price of black gram was lower than the median cost of production (FAO 2019b). A study on the supply response of pulses to a rise in price shows that production of pulses in India has not been very

responsive to small increases in the MSP or the market price. Small increases in price usually get absorbed as traders' margin or get annulled by high risks of pulse production. Only a substantial rise in pulse prices can motivate farmers to increase the area under pulse cultivation to cover the risk premium (Joshi, Kishore, and Roy 2016).

In assessing the supply situation and prospects for trade, apart from pricing policy, knowledge and recognition of factors other than price that affect the production of pulses in India is important. Such factors include rainfall, drought, availability of improved seeds, pesticides, fertilizers, irrigation facilities, prices of alternative crops, an assured market, credit, and availability of extension services. For most pulses, such nonprice factors dominate price factors in determining the area and production of pulses in India (Tuteja 2006). Moreover, research shows that provision of irrigation does not lead to an increase in the production of pulses. Paradoxically, it pushes pulse cultivation out to make space for other crops (Joshi, Kishore, and Roy 2016; Boss and Pradhan 2020). Hence, pulses are generally produced in poor soil that is unsuited for other crops, using minimal resources and an inadequately applied recommended package of practices. The majority of the farmers with small or marginal landholdings in India cultivate pulses as a residual crop meant mostly for home consumption.

As discussed earlier, when production drops substantially mainly due to poor rainfall and weather vagaries, to reduce the demand–supply gap, the government has depended on large import flows. In 2016, for example, to meet the domestic pigeon pea demand, the government signed a memorandum of understanding with Mozambique for importing pigeon pea over a five-year span from 2016 to 2021, a deal leading to the doubling of imports from Mozambique from 100,000 tons to 200,000 tons by 2020/21 (Klein 2018).

India sought a similar agreement that would apply to different pulses with Myanmar; however, the quantity proposed was larger, given Myanmar's supply capacity. Also, the import price (MSP plus transportation cost) offered in the agreement was lower than the market price between 2014 and 2016 (Boughton, Haggblade, and Dorosh 2018). The two countries could not agree on the procurement price, or the import volumes and the agreement never materialized (Thiha 2016, 2018).

In 2021, as India was struck with an intense second wave of COVID-19, pulses prices started soaring again. Faced with inflationary pressures, the two countries signed an MOU in June 2021 to import pigeon pea and black matpe from Myanmar to stem the rise in prices.[7] However,

[7] Public Notice No. 9/2015-20 (issued on June 24, 2021) issued by Directorate General of Foreign Trade (DGFT) [https://content.dgft.gov.in/Website/dgftprod/b217d403-d544-4e41-bd27-ef8aea81cbaf/PN%209%20dt%2024-06-21%20Eng.pdf])

unlike India's MOU with Mozambique, imports from Myanmar are restricted to private imports with certain conditions, and do not go through the G2G procurement channel.[8]

The implications of such advance purchase agreements in pulses at predetermined prices with selected suppliers within the most-favored-nation (MFN)–based WTO system will be clearer in the future (see below for discussion on the advance purchase agreement with Myanmar).

In India, how do these MSP-related domestic policies interact with the trade outlook? The increase in the MSP for major pulses beginning in 2014/15, high market prices, and a stable monsoon led to production increases—for example, from around 23 million tons in 2016/17 to 24.5 million tons in 2017/18. Given the government's policy and the political premium on self-reliance in pulses, it introduced steep trade restrictions in mid-2017, leading to a drastic reduction in pulse imports.

In November 2017, the government changed the decade-long export policies. It lifted the export ban to reduce price instability in the domestic market. As a part of this, it introduced a 7 percent export subsidy on chickpea for three months (DAC&FW 2019). However, the increased production did not translate into increased availability of pulses due to inadequate storage and ineffective procurement by the government. In the absence of effective procurement policies for pulses, the increase in the MSP and production depressed the prices farmers encountered.

In 2018, to balance prices for both farmers and consumers, the government allowed all dal millers and traders to import pulses. Previously only registered agricultural traders could import pulses. Following this, in the year 2019–20 pulse imports increased (especially of black gram) due to crop damage (by incessant unseasonal rainfall) in major pulse-growing states like Madhya Pradesh.

Pulse Trade Policy in India

During 1970s and 1980s, pulses were on the special list, and imports were permitted subject to licensing.[9] Between 1988 and 1995/96, pulses were subject to an import duty of around 10 percent, which was reduced to 5 percent in 1996/97 and was removed entirely in November 1998. In 1999/2000, the government withdrew the quantitative restrictions on pulses, and regulated pulse imports only through tariff rates. In March 2001, the government imposed an import duty of 5 percent, which it lifted soon, only to reinstate it in February 2002. Again, the import duty was

[8] Public Notice No. 22/2015-20 (issued on September 6, 2021) issued by Directorate General of Foreign Trade (DGFT) [https://content.dgft.gov.in/Website/dgftprod/ea4edc0f-1923-4f8b-9669-8c5d057ed447/PN%2022%20dt%2006-09-21%20Eng.pdf]

[9] The special list, formerly the canalized list, includes items whose imports are restricted by Indian state agencies.

increased to 10 percent from 2002/03 onward (Sathe and Agarwal 2004). Between 2007 and 2009—the food price crisis period—the government reinstated duty-free imports of pulses (DAC&FW 2012). Low import duties and the removal of trade restrictions for more than a decade (between June 2006 and February 2017) can explain the increased imports of pulses.

Table 1 Trade policy timeline

Timeline	Pulse policy stance
During 1970s and 1980s	India follows a protectionist trade policy: the government restricts imports; imposes quantitative restrictions, quotas, tariffs, and a variety of other equally prohibitive trade mechanism; puts pulses on a "special list."
1979	Pulses are placed under open general license, making it possible for any public- or private-sector entity to import without approval or any restriction.
1980–1990	Import duties on pulses decline.
In the 1990s, India undertook structural reforms and adopted a more liberal outlook on international trade.	
1989–1994	Imposed a 10% import duty on pulses
1995	Imposed a 5% import duty on pulses
2000	Eliminated import duty on pulses
2001	Reinstated 5% import duty on pulses
2001–2003	Increased import duty to 10%
2007–2016	Duty-free (till February 2017)
2008 food price crisis	Food prices crash: import price of pigeon pea and domestic price rise significantly.

According to the WTO, in 2018 India's simple average MFN applied tariff rate was 17.1 percent, with an average agricultural tariff of 38.8 percent and a nonagricultural tariff of 13.6 percent. The comparable tariffs for Indonesia were 8.1 percent, 8.6 percent (agriculture), and 8 percent (nonagricultural) and for Brazil, 13.4 percent, 10.1 percent (agriculture), and 13.9 percent (nonagricultural), respectively. Going by simple averages, Indian tariffs faced by other WTO members are higher than those faced in Indonesia and Brazil. The higher overall Indian tariffs are primarily a result of the high agricultural tariffs. Both Indonesia and Brazil have much lower applied agricultural tariffs than India. On the other hand, India's average applied nonagricultural tariffs are slightly lower than Brazil's, while being higher than Indonesia's.

Moreover, the structure of India's customs tariff and fees system is complex and characterized by a lack of transparency in determining net effective rates of customs tariffs, excise duties, and other duties and charges. The tariff structure of general application is composed of a basic customs duty, an additional duty, a special additional duty, and an education assessment ("cess") (Klein 2018).

India's tariff regime is also characterized by pronounced disparities between WTO bound rates and the MFN applied rates charged at the border. According to the latest WTO data, in 2020, India's average bound tariff rate is 50.8 percent, while its simple MFN average applied tariff is 15 percent. Many of India's bound tariff rates on agricultural products are among the highest in the world, ranging from 100 percent to 300 percent.

Given the large disparity between the bound and applied rates, exporters face tremendous uncertainty because India has considerable flexibility to change tariff rates at any time. India's average WTO bound tariff on agricultural products is 113.1 percent. For example, from November 2017 through March 2018, India raised import duties from zero percent to 60 percent on chickpeas, 50 percent on peas, 40 percent on large chickpeas, and 30 percent on lentils, severely affecting pulse exports to India (Klein 2018).

India's applied rates are also relatively high and are set on a trade-weighted basis, with the average agricultural tariff being 32.8 percent. In addition, while India has bound all agricultural tariff lines in the WTO, more than 30 percent of India's nonagricultural tariffs remain unbound (that is, there is no WTO ceiling on the rate).

Despite its goal of moving toward the Association of Southeast Asian Nations (ASEAN) tariff rates (approximately 5 percent on average), India has not systematically reduced the basic customs duty. India maintains high tariffs on several goods and operates several complicated duty drawbacks, duty exemption, and duty remission schemes for imports.

The government of India exercised its tariff flexibility in the 2018 budget when, with no warning, it increased tariffs on 52 separate line items, including key US exports in the agricultural sector. In addition, it instituted a new 10 percent tariff on imports, labeled the "social welfare surcharge," without public notice or consultation. The social welfare surcharge is applied to the aggregate of duties, taxes, and cess assessed on imports.

Earlier, in July 2017, India implemented the goods and services tax (GST) system to unify Indian states into a single market and improve the ease of doing business. The GST is designed to simplify the movement of goods within India, but it also applies to imports. Before the GST implementation, imports could be subject to an "additional duty," a "special additional duty," an education cess (tax), state-level value-added or sales taxes, the central sales tax, and/or various other local taxes and charges. The new GST system subsumed a number of those charges, including the additional duty and the special additional duty, previously levied on imports into the single GST. The tariff (or "basic customs duty") continues to be assessed on imports separately and has not been incorporated into the GST (Office of the United States Trade Representative 2018).

India's Central Board of Indirect Taxes and Customs functioning under the Ministry of Finance's Department of Revenue deals with the formulation of policy concerning the levy and collection of customs. The classification of imported and exported goods is governed by the Customs Act of 1962 and the Customs Tariff Act of 1975.[10] The Custom Tariff Act 1975 contains two schedules and specifies nomenclature based on the Harmonized Commodity Description and Coding System (HS) and contains a description of goods that are chargeable with export duty. Excise authorities use HS codes for classifying goods to levy excise duties (manufacturing taxes) on goods produced in India. All goods imported into India are subject to a duty. Several factors go into calculating the customs duty, including the following (Office of the United States Trade Representative 2018):

1. *Basic customs duty.* This duty is levied as either (a) a specific rate based on the unit of the item (weight, number), or, more commonly (b) ad valorem. In some cases, a combination of the two is used.
2. *Social welfare surcharge.* This 10 percent surcharge was introduced in the 2018 budget in place of the education cess.
3. *Integrated goods and services tax (IGST).* A goods and services tax is applicable on all imports into India in the form of an IGST levy. Value of imported goods + basic customs duty + social welfare surcharge = value on which the IGST is calculated.
4. *Safeguard duty.* The Indian government by notification may impose a safeguard duty on articles after concluding that increased imported quantities and under current conditions will cause or threaten to cause serious injury to domestic industry.
5. *Customs handling fee.* The Indian government assesses a 1 percent customs handling fee on all imports in addition to the applied customs duty.
6. *Duty exemption plan.* The duty exemption plan enables duty-free import of inputs required for export production. An advance license is issued under the duty exemption plan.

Notwithstanding that India's trade policies lack predictability and transparency, what is predictable is that the loosening of trade policies in pulses is countercyclical: high production and low domestic prices are associated with greater restrictiveness, and a good monsoon and other favorable conditions are also associated with tariffs and quantitative restrictions. Moreover, trade policy in pulses has been leveraged in service of broader objectives—for example, India imposed

[10] More information on "India's import tariffs" at https://www.privacyshield.gov/article?id=India-Import-Tariffs

tariffs on US chickpeas and lentils in retaliation for US-imposed tariffs on Indian exports of steel and aluminum.[11]

Further, relieving downward pressure on the rupee is also part of a generic trade policy response including agricultural trade policy.

Within the multilateral trading system, India was the first country to invoke a peace clause for surpassing the food subsidy ceilings of 10 percent of the value of food production for developing countries.[12] India provided subsidies worth $5 billion to rice farmers for rice production worth $43.67 billion. WTO members, including Australia, Canada, and the United States, have raised issues related to pulses.

Compatibility with WTO rules related to tariffication, and the MFN clause is of significance in this context.[13] Nontariff barriers related to pulses have also become common, such as a fumigation requirement put on pulse imports. In 2018, India extended an order requiring international exporters to pay a pest-treatment fee on pulse products being imported into the country. The exporters had to pay fees many times higher than the domestic rate, notwithstanding the national treatment clause under the WTO.[14] Canada has insisted India's pest-treatment policy is unnecessary because pest risks are low, and it argues that the chemical methyl bromide is not environmentally friendly and not effective in cold weather. Under the current policy, US exporters are charged a fumigation fee that is only double the standard rate. Until 2017, Canada had been exempted from the fumigation order on a temporary basis.

Between 2000 and 2016, the Indian government imposed no significant import duties on pulses, but once trade restrictions were imposed, they were sudden and of a large magnitude. From November 2017 through March 2018, India raised import duties from zero to 60 percent on chickpea, 50 percent on peas, 40 percent on large chickpea, and 30 percent on lentils (Figure 5 and 6). A shortfall in pulse production in India drives up world prices—as witnessed in 2015/2016. At that time, two pulses, pigeon pea and black matpe, were unavailable for import in the world market even at inflated prices.

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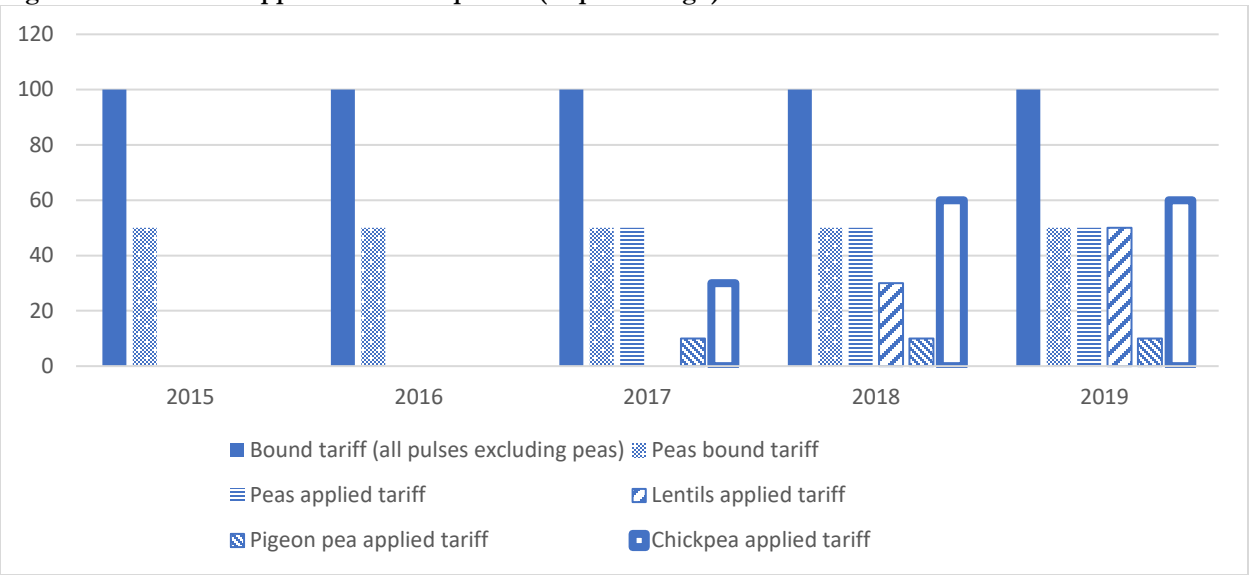
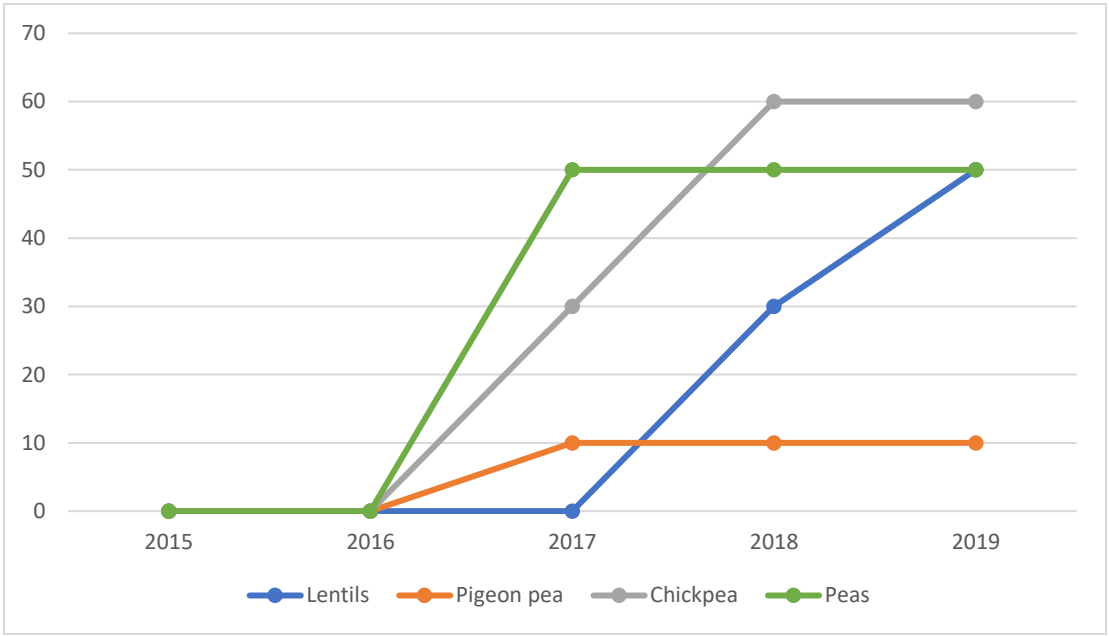
[11] Though in a different commodity, that is, edible oils, trade restrictions were imposed on Malaysia for political reasons.
[12] Adopted at the Bali ministerial meeting in December 2013, a peace clause protects developing countries in case of breach of food subsidy ceilings, but it has conditions such as food security needs, which India has invoked.
[13] Tariffication means converting all agricultural non-tariff barriers (NTBs) to trade into bound tariffs and reducing them over the period.
[14] India requires all pulse shipments to be treated with the chemical methyl bromide prior to export. Methyl bromide is not used in Canada because it is not effective in cold weather. Many Western nations have phased out its use because it is known to cause depletion of the ozone layer. Canada was exempted earlier but that was repealed in 2017.

Figure 5 Bound and applied tariffs in pulses (in percentage)



Source: Directorate General of Foreign Trade, Department of Revenue and World Trade Organization
Note: Applied tariffs on green gram and black matpe were zero between 2015 and 2019.

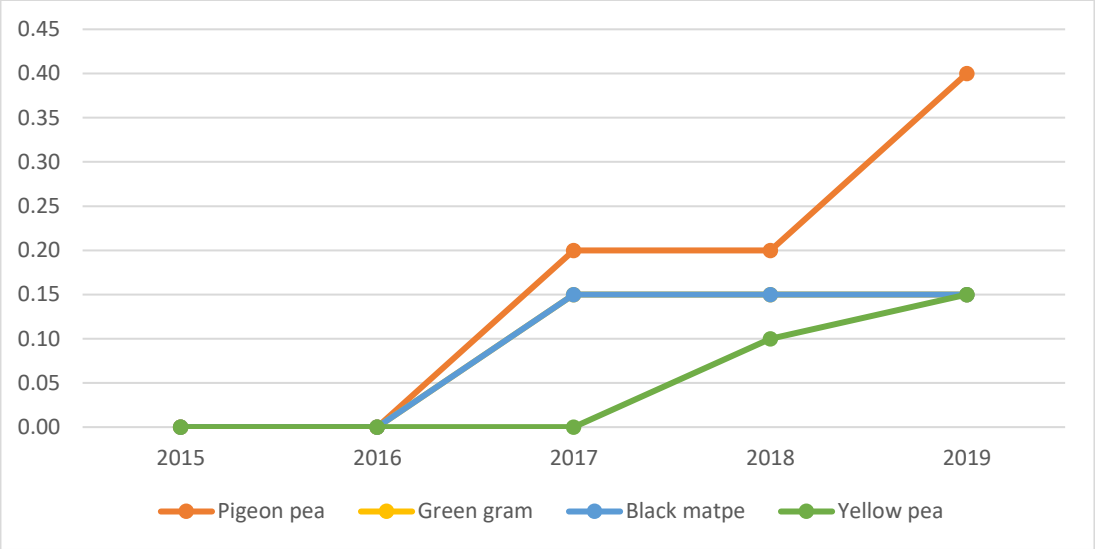
Figure 6 Applied import tariffs in pulses, post-2015 (in percentage)



Source: Directorate General of Foreign Trade, Department of Revenue and World Trade Organization.
Note: Applied tariffs on green gram and black matpe were zero between 2015 and 2019.

Pulse imports have been subject to quantitative restrictions (QRs) as well as tariffs (Figure 7).

Figure 7 Quantitative restrictions (annual fiscal year quotas) on pulses (in million metric tons)



Source: Directorate General of Foreign Trade, Department of Revenue and World Trade Organization.

Importantly, the QRs imposed are pulse and country specific. Till about mid-2017, all pulses were largely free of QRs. In August 2017, the Indian government imposed annual fiscal year quota restrictions of 200,000 tons for pigeon pea, which continued in 2018/19 and increased to 400,000 tons in 2019/20. In August 2017, it imposed QRs of 300,000 tons on imports of green gram and black matpe (150,000 tons each), which continued in 2018/19 and 2019/20. In April 2018, the government imposed a QR of 100,000 tons on peas that was initially for a three-month period but was further extended in 2019. From 2017 onwards, due to increase in domestic pulse production structural breaks (in reference to import duties and QRs) are being witnessed in India's trade policy for pulses.

Pea imports came to a halt after June 2018 as imports from April to June had already exceeded the 10,0000-ton-quota limit. The quota has been applicable for all countries except Mozambique under the Indian government import commitments. In March 2020, the government of India fixed an import quota of 400,000 tons on black matpe, which was increased to 550000 tons, between April 2020 and April 2021. The quotas were also introduced for pigeon pea of 400,000 tons and 150,000 tons on green gram (USDA 2021). Similarly, in March 2021, the quotas for black matpe, pigeon pea and green gram of 400000, 400000, and 150000 tons, respectively, were introduced for the year 2021/2022.

Australia, Canada, Russia, and the United States raised objections against India at the WTO for restrictions on pulse imports. India eventually increased restrictions several times depending on demand and supply (Aray 2019).

Earlier, in January 2019, the government had announced that only dal millers would be allowed to import pulses. No pulse traders had permission to import pulses in India. Estimated pulse imports for fiscal year 2019–20 stood at 825,000 tons, a 65 percent decrease from the previous year. However, the government issued additional pulse import licenses for 650,000 tons. There has been no clarity on how and whether QRs on pulses will continue given that temporary quotas have continued for more than three years for some varieties. The WTO basis for the application of the QRs in pulses remains unclear (Sen 2021).

The use of QRs is prohibited under the WTO Agreement on Agriculture. Under the General Agreement on Tariffs and Trade (GATT), QRs are strictly limited to specific circumstances. The government of India has not made clear under which WTO or GATT provisions it has instated the QRs on pulses. It is not clear whether these restrictions fall under the special safeguard provisions under Article 5 in the WTO's Agreement on Agriculture.

The fluctuating and increasing import duty and QRs on varieties of pulses post-2016/17 has affected overall pulse imports to India. Aggregate pulse imports from April 2018 to March 2019 amounted to about 2 million tons—a significant drop from the 5.6 million tons in the previous year. On the other hand, Indian pulse exports have not increased considerably as was envisaged. The restrictions reduced imports of several major global pulse exporters to India including Canada, Tanzania, Myanmar, and the United States for several pulse varieties. The restrictions also adversely affected the domestic price of pigeon pea in Tanzania and Myanmar, affecting farmers in those countries (Klein 2018). Moreover, the fluctuations in the quantities imported have exacerbated the volatility of domestic prices of pulses in India. For instance, whereas yellow pea prices in India have risen sharply since the introduction of import duties, prices charged for desi chickpeas and red lentils have remained low (Saskatchewan Pulse Growers 2020).

India, being the largest importer of pulses in the world, may also use its leverage in trade disputes. Consider the imposition in 2019 of new tariffs on 28 US products, including chickpeas and lentils. Those measures were originally conceived in retaliation for US tariffs on Indian steel and aluminum. When the United States revoked India's preferential trade status earlier, India let these tariffs take effect. The fact that India has extremely high bound tariffs (100 percent) in most pulses allows the government to set high tariffs whenever production is high or domestic prices are low.

Another trade policy instrument the government has used is granting import licenses and fixing the date of the last day to import. Pulse processors in India recently objected to changes in the import policy for black matpe, whereby the government advanced the last day to import by six months to August 2020 from March 2021. The Indian buyers, mostly bulk buyers, were left with a very small window for imports that affected import demand significantly (Economic Times 2020).

The notified quota in black matpe had been 400,000 tons. The government had issued a notification on March 19, 2020, allowing 400,000 tons of black matpe to be imported by March 2021, and importers had applied to get an import quota and license based on conditions of that notification. However, on May 12, 2020, the government changed the last date to August 31, 2020, and the majority of millers were left with no license to import. Shortening the import window is aimed at receiving imports before the domestic harvests, at which time farm prices would be expected to fall (Chandrashekar 2020). There is a need to enact measures that would allow for grace periods for shipments enroute and for contract commitments to be concluded. This policy uncertainty affects trade and investment related to pulses.

Predictability in Trade: Advance Purchase Agreements in Pulses

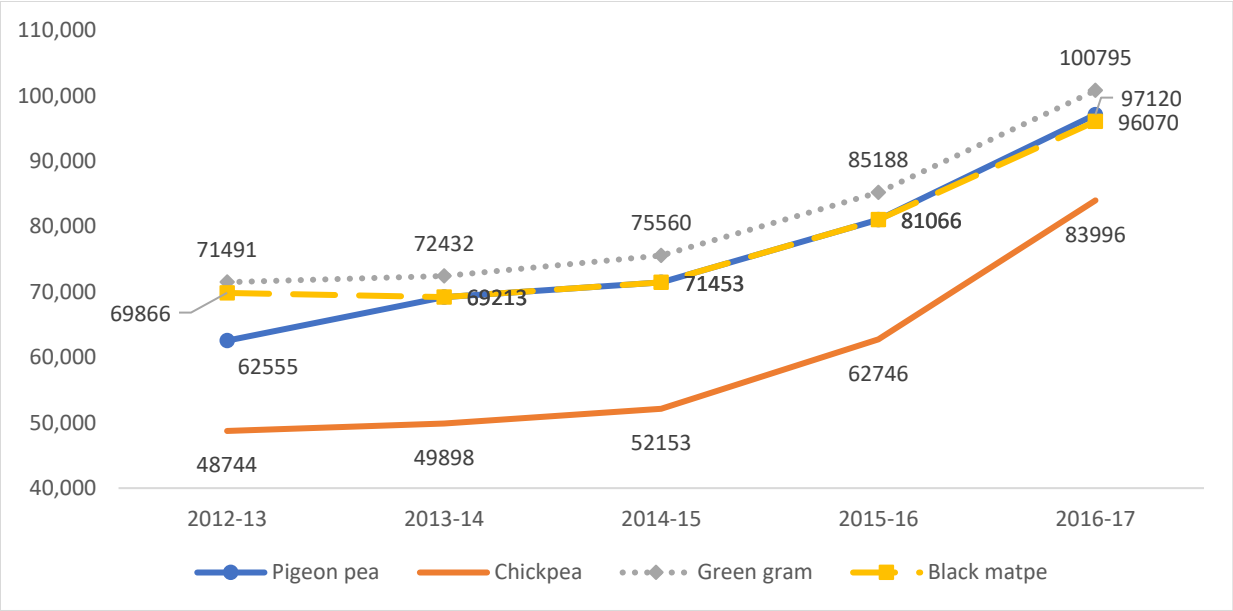
India's advance purchase agreements for pulses: The case of Myanmar

As it did with Mozambique, in 2016, India tried to enter into an agreement with Myanmar regarding pulse exports to India. In both cases, the offered price was the minimum support price, or MSP plus the transportation cost. As discussed above, the government-to-government agreement did not materialize due to concerns over proposed import price and quantity. In 2021, India entered into an agreement with Myanmar to import pulses via private channels with certain conditions, however, it was unlike G2G agreement proposed in 2016.

Figure 8 shows the MSPs (in kyats per quintal) for the major pulses for the last five seasons in India.[15] Historically, the MSPs have been downward rigid and have never fallen, in either nominal or real terms.

[15] Kyat is Myanmar's currency.

Figure 8 Minimum support price (kyats/quintal) of different pulses, 2012–13 through 2016–2017



Source: India, Ministry of Agriculture and Farmers Welfare and Central Bank of Myanmar (2017).
Note: Kyat is Myanmar's currency.

A forward-selling contract indexed to the MSP, therefore, guarantees an upward price trajectory over time. Because the MSP takes into account the total cost of cultivation and is revised every year based on that year's cost data, it also guarantees that net returns will not go down in the future. In doing so, it considers the cost of inputs (discussed above), some of which would affect India and Myanmar in the same way (for example, the cost of fuel).

A committee headed by Arvind Subramanian, former chief economic adviser of India, to review pulse MSPs recommended that when determining MSPs for pulses, the government should, in addition to the costs of cultivation, consider factors such as risks and positive externalities (in terms of environmental benefits), and that it should thus raise the MSP to incentivize pulse production. With the Subramanian committee's recommendations to make MSPs for pulses inclusive of factors over and above the costs of cultivation, the indexation of forward prices to the MSP will likely become more attractive.

At present, yields of pulses are higher and their costs of cultivation are lower in Myanmar than in India. If pulse farmers in Myanmar retain their competitive edge, MSP-indexed forward prices will help them. If the situation reverses and the cost of production becomes higher in Myanmar, then its export will likely lose competitiveness on spot markets as well. Thus, an MSP-indexed forward contract could be worth exploring in its current form and modifications could be assessed if needed from the Myanmar perspective.

Is there a possibility that India will set the MSP too low for pulses after entering the contract with Myanmar to ensure cheap imports?

The answer rests on the nature of price setting; it is unlikely that the Indian government would lower the MSP to get cheaper pulses from Myanmar. Over time the MSP in any crop has not fallen. If an MSP were set very low, doing so would hurt millions of India's own farmers and set poor incentives for increasing domestic production of pulses. Potential losses to Indian farmers from such a decision far exceed the possible gains from cheaper imports from Myanmar. Furthermore, this would be seen as an anti-farmer policy and would be extremely unpopular among India's largest voting bloc—that is, farmers.

Why is India offering to pay a price around the MSP if market prices could be higher?

It is not politically viable for the Indian government to enter into a contract that ensures that farmers in a foreign country get prices higher than those offered to its own farmers. Although it is true that pulse prices remained high in recent years, the price trends had been fluctuating over a longer duration in the past. This fluctuation in prices may be due to the variability in the production of pulses. For instance, India's pulse production was targeted to be 24 million tons in 2018/19, which is close to the production of 25 million tons in the preceding year, 2017/18. However, that is not the same as it was in 2015/16, in which pulse production was only 16 million tons. After that period, due to a sharp increase in production, the farm harvest prices of all major pulses were reported to be less than 70 percent of the MSP even though the MSP was raised as always.

Farmers are getting less than the MSP because of no or limited procurement by the government. In contrast, if Myanmar were under contract, the prices would be preserved since the procurement would be committed. The forward contract is set at around the MSP to trade off risk. Forward contracts are especially important for producers of perishable or specialized commodities. Pigeon pea and black matpe are not perishable, but they are highly specialized commodities for Myanmar's farmers because no domestic consumption of these pulses occurs, and India is the only major buyer.

As in 2017/18, the imports by India will likely be low, and the government will continue imposing the import duties on pulses to protect the Indian farmers (Jadhav 2018). Farmers in Myanmar may lose with all these policy moves. A forward contract can provide insurance against such unstable prices. High market prices of pulses, as in 2015/16, may be one reason why Myanmar did not want to commit to an MSP-indexed forward contract, but such high prices are not likely to be permanent and would decrease when India or other suppliers enjoy a good production year.

The government of India also responds to price increases in pulses because they are a staple in India. After two years of high prices in 2014/15 and 2015/16, the government launched a series of initiatives to increase domestic pulse production through research, extension, and better price incentives. The government started a new scheme with an outlay of $21 million to ensure widespread availability of quality seeds, raised the MSP of pulses, started procurement of pulses from farmers at the MSP, and allocated $151 million to achieve self-sufficiency in pulses by 2022.

High pulse prices also attract entry of countries (the extensive margin discussed below). New countries are entering India's pulse market and could slowly diminish Myanmar's share in India's imports. Indeed, Myanmar's share in India's pulse imports declined sharply over the last few years—both in quantity and value terms as other countries like Canada, Australia, Malawi, and Mozambique joined the list of suppliers.

How big should the contracted quantity be?

Commitment on the contracted quantity is the second major issue to consider in any forward sales contract. Is the contracted quantity feasible on a consistent basis? Should the producer sell forward if crop prospects are uncertain? How can the commitment be serviced if production falls short of the target?

Myanmar's agro-ecology is ideal for pigeon pea and black matpe—pulses that India needs in large quantities but has few other countries from which it can import. Accordingly, the Indian government proposed a contract to import 0.9 million tons of pulses in the first year of the contract and to slowly increase the volume over time. In comparison, Myanmar exported 1.54 million tons of pulses in 2015, 80 percent of it to India, which is higher than the proposed quantity.

Since Myanmar and India are the only two major producers of pigeon pea and black matpe in the world, any shortfall in production in Myanmar is likely to drive up world prices. Myanmar will incur losses if the contract requires it to buy from the spot market to fulfill its contractual obligations to India. However, this concern can be addressed by negotiating the right to suspend the contract by notice of force majeure in case of a widespread crop failure. This safety clause is a part of the sales agreement between Mozambique and India.

The government of India also has plans to encourage private companies to acquire land exclusively for growing pulses in Myanmar and to supply them back to India. Two Indian companies—Tata International and Export Trading Group—are already operating in Myanmar on

their own. An agreement between the two countries will facilitate investment by more private firms in pulse cultivation in Myanmar.

With production locations based on comparative advantage in specific types of pulses, international trade also offers an opportunity to relieve pressures on resources and deliver on outcomes for sustainability. The role of trade based on comparative advantage in ensuring food security by allocating food across surplus and deficit regions has been well recognized (Lamy 2012; OECD 2013).

Three reasons are commonly cited for justifying food trade on these grounds (Clapp 2015). The first is based on the resource endowments (land, labor, climate) that determine the production of food. By specializing in production based on endowments, open-trade policies enable the free movement of food from countries with surpluses to countries with deficits, bringing in efficiency gains and enhancing world food security (Clapp 2015).

The second reason relates to risk mitigation in the face of idiosyncratic shocks that are quite common. Unless the shocks are correlated, trade serves as an important vehicle for redistributing food due to fluctuations in production. The movement of food from surplus to deficit regions also helps to stabilize food prices (Clapp 2015).

Third, since complete self-sufficiency is not practical inter alia for environmental and resource availability reasons, food trade has implications for sustainability. Trade is likely to be important to promote more sustainable agricultural production on a global scale by specializing production in areas where crops including pulses can be grown without the need for excessive land clearing or irrigation (Clapp 2015).

Trade Effects of Policies over Time

To assess the behavior of trade patterns in India as a function of domestic policy and trade policy, we rely on highly disaggregated customs data available at the eight-digit Harmonized System (HS) level. The time of study is from 2000 to 2019. The HS, developed by the World Customs Organization, is an internationally standardized system for classifying traded products. Under the HS classification, pulses come under Chapter 07 (subheading 0713 at the four-digit level), which includes items such as "dried leguminous vegetables, shelled, split or skinned." Table 2 lists the broad categories of pulses covered in this study by their HS codes.

Table 2 Classification of pulses under the Harmonized System

HS code	Description
07131000	Peas
07132000	Chickpeas
07133100	Moong beans, urad, green/black gram
07133200	Small red (Adzuki) beans
07133300	Kidney beans and white peas
07133900	Other pulses
07133400	Lentils
07135000	Broad beans, horse beans
07139010	Pigeon peas

Source: India, Directorate General of Commercial Intelligence and Statistics.

Product disaggregation allows delineation of pulses by type. The data contain information on both import values and export values (in current US dollars as well as in Indian rupees) and volume. However, the volume data are not standardized in terms of units of measurement. Several different units have been used, such as containers, bags, kilograms, and boxes, rather than a common denomination.

We standardized the quantities of imports and exports based on unit values from non-missing data specified in metric units. Using unit values and identifying commonality in value–unit relationships, through hand coding, we standardized the units to kilograms for all quantity trade flows in the data.

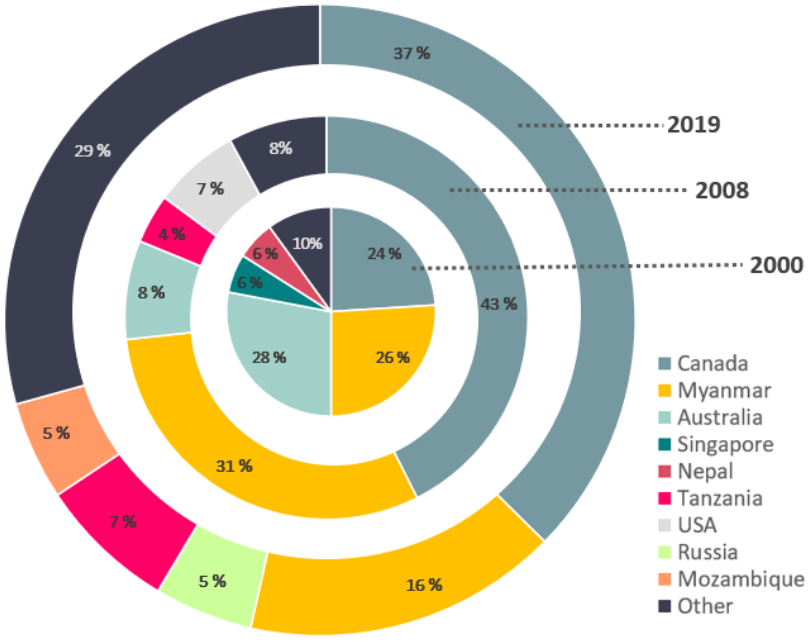
We grouped different types of pulse imports into seven main categories: peas, pigeon peas, chickpeas, green gram, black matpe, lentils, and beans. Peas include yellow pea, yellow split pea, green pea, and dry pea. Pigeon peas include whole as well as one with minor processing (split pigeon pea). Chickpeas include desi chana, kala chana, and white pea. Green gram or moong includes green as well as yellow moong, both whole as well as split varieties. Beans as a group constitute a very small portion of the total pulse trade. Therefore, all types of beans are combined into one category, which includes kidney beans, black-eyed beans, cowpeas, lablab beans, and green beans.

Before 2016, with an estimated annual shortage of 2 to 3 million tons, India's pulse imports increased from 1.2 million tons in 2002 to 4.1 million tons in 2012. There was a positive trend in import penetration of pulses. Whereas in 2002, imports constituted less than 10 percent of the total pulse consumption in the country, that figure shot up to 19 to 20 percent within a decade. However, when compared with other major importers of pulses in the world, India's import penetration is not that high as India is also the largest producer of pulses. But compared with other agricultural

commodities imported by India, after edible oils (50 percent), pulses register the highest import penetration.[16]

In the case of pulse imports, several countries experimented in India's opening market just as imports began to expand. Significant imports of pulses, mainly from Australia, Canada, Myanmar, Thailand, Tanzania, Turkey, Uzbekistan, and the United States—started around 1998–2000 (Figures 9 and 10). Over time, the volume of imports increased, and India began importing from additional countries. The new trading partners included Ethiopia, China, Indonesia, Malawi, Russia, Mozambique, and a few others. Though those countries entered the market, trade from them did not expand to a significant scale over the decade and their respective shares remained small in total pulse imports, except for a few, namely, Malawi, Mozambique, and Russia.

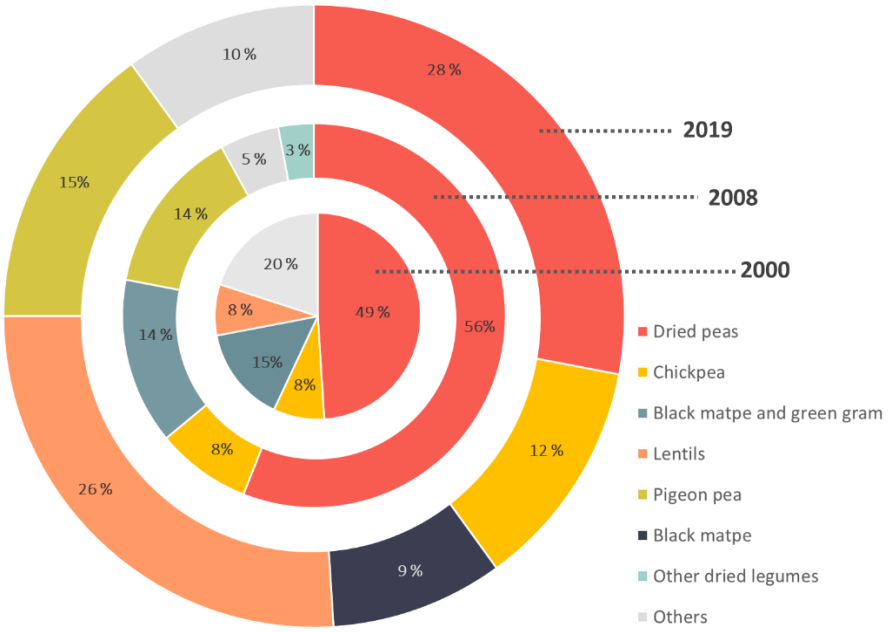
Figure 9 Countries' share in pulse exports to India over time



Source: Directorate General of Foreign Trade.

[16] Until 1994, edible oils were on the negative list in imports and only the State Trading Corporation (STC) was allowed to import them. In April 1994, the import of edible oils was liberalized and the first commodity to be brought under open general license" was palm oil with a 65 percent import duty. Post-1994, the evolution of the edible oils industry in the country can be divided into three distinct phases from the trade perspective. The first phase was from 1994 to 1998 when the customs duty on edible oils was progressively brought down to as low as 15 percent in 1998 (Reddy 2009). The second phase started after 1999 when import duties on edible oils observed an upward trend and they reached as high as 95 percent in the case of refined palm oil in 2005. Finally, the third phase began after 2005 when duties were decreased and were slashed to the lowest level of 7.7 percent in 2008. In year 2013, the import duty was 7.5 percent on refined edible oils and 2.5 percent on crude oils (Agricultural Statistics at a Glance 2013).

Figure 10 Share of different pulses in India's pulse imports over time



Source: Directorate General of Foreign Trade.

Also, during the period until 2012, for each pulse India has usually had a single partner with a significant market share, generally more than 50 percent and, in some cases, even around 80 percent. Examples of such market leaders at different times include Australia for chickpea, Canada for pea and lentil, and Myanmar for pigeon pea, green gram, and black matpe.

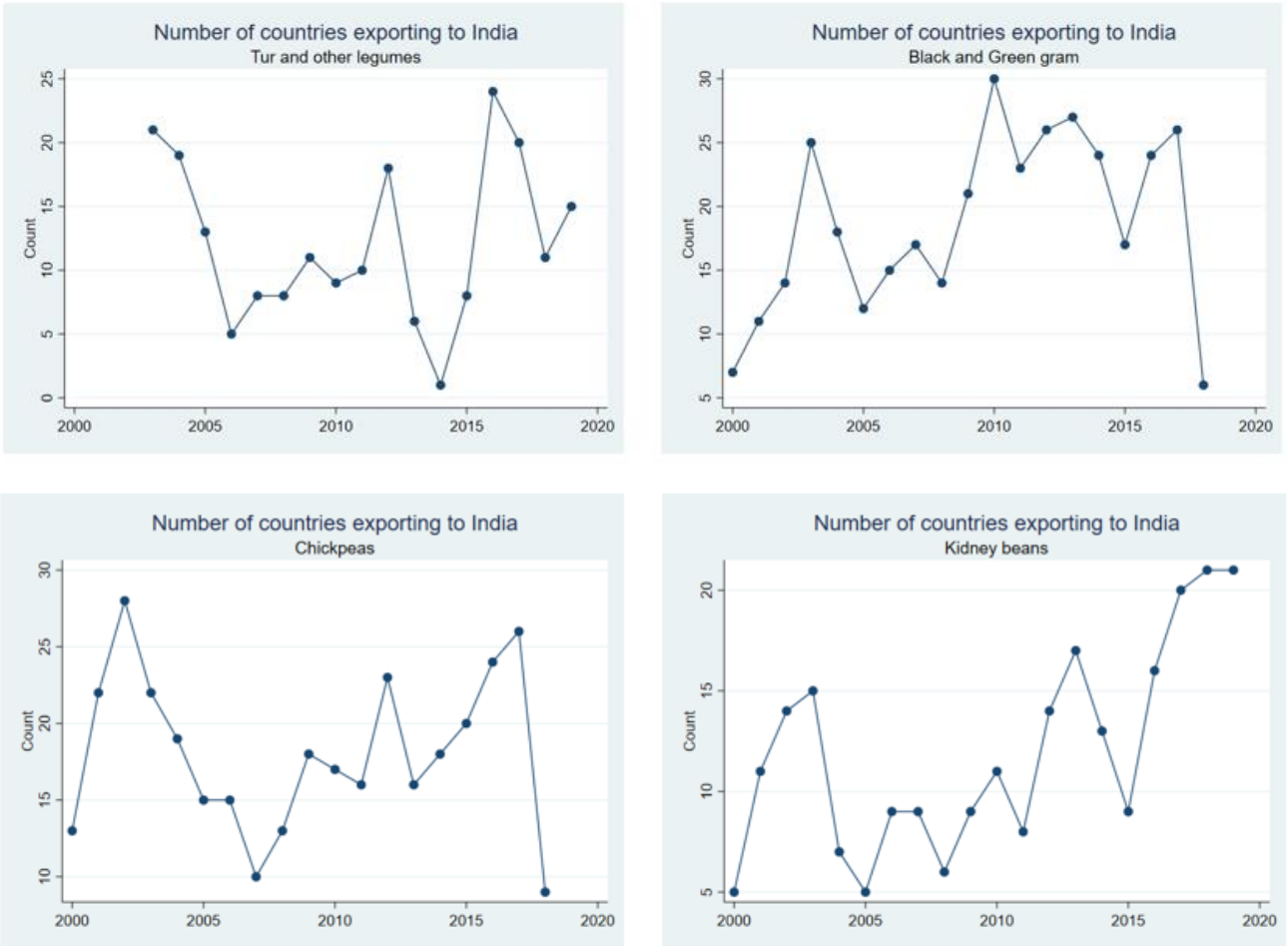
Myanmar, which accounted for the largest share in total Indian imports of pulses (26 percent) in 2000, saw that share rise to 31 percent in 2008 only to fall to 16 percent in 2019. Still, Myanmar remained the top exporter of three pulses—green gram, pigeon pea, and black matpe—to India. Canada's share in total exports increased from 24 percent in 2000 to 43 percent in 2008, although it had fallen to 37 percent by 2019. During the first half of the 2000s, Canada exported chickpea, lentil, and pea to India, but in the second half, chickpea exports fell off and lentil and pea became the main exports to India. On the other side, Russia was the latest addition to India's list of trading partners, accounting for 13 percent of India's pulse imports in 2012, and 5 percent in 2019.

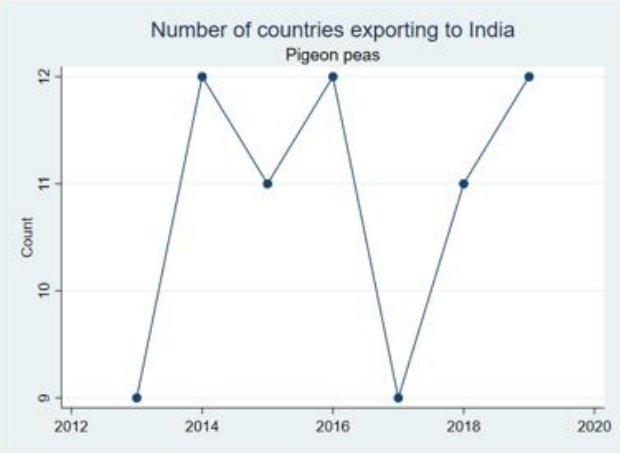
In the period under consideration, India's pulse trade underwent significant changes both in terms of quantities traded with existing trading partners (the intensive margin) and in terms of expansion/contraction in new products and partners (the extensive margin). By 2012, in value terms, pulse imports had risen to $1.93 billion, from $370 million in 2002. Pulses became the second most important agricultural import commodity after edible oils. Because of India's restrictive trade

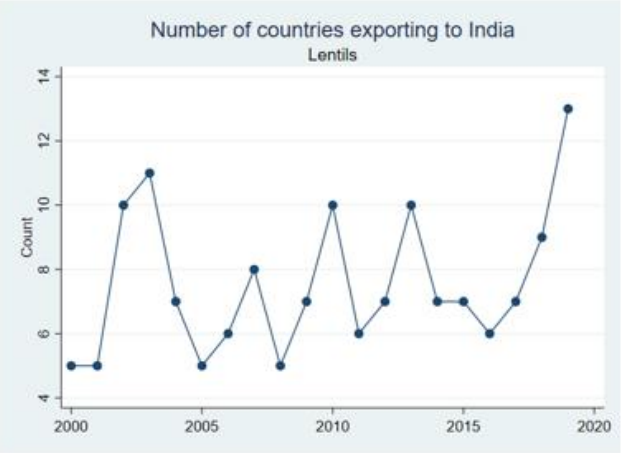
policies after 2017, pulse imports have been falling, and are expected to be around 1 million tons in 2020/21.

Figure 11 examines the extensive margin in terms of the total number of countries exporting pulses to India. Because of the import demand fluctuations and the variable trade policy stance, we see significant movement in terms of the number of countries exporting to India. In some pulses, like pigeon pea, there appears to have been little entry of exporters into Indian markets, and the number of exporting countries has ranged between 9 and 12, notwithstanding the entry of several African exporters over time—such as Malawi, Mozambique, and Tanzania. This implies that at the same time some exporters entered the market, others dropped out. The effect of India's restrictive tariffs and nontariff barriers is illustrated by the case of black and green gram, where from a peak of 30 countries exporting to India in 2010, the number has fallen to a mere five in 2018. The case of chickpea is similar. Only in lentils and in minor pulses has there been an increase in the number of countries exporting to India.

Figure 11 The extensive margin in India's imports: Number of exporters of different pulses







Source: Directorate General of Foreign Trade.

Among the major pulses being imported we see yellow pea, pigeon pea, chickpea, black matpe, and lentils. Imports of pigeon pea, chickpea, and black matpe do not show any secular trend. Pigeon pea imports, for example, increased consistently until 2005 but subsequently varied in both directions. Over time the percentage share of yellow pea in total imports leapt forward and the shares of chickpea and pigeon pea each decreased until 2012. After 2012, pea imports have contracted. Figures 9 and 10 present the extensive margin of India's pulse trade in terms of varieties as well as trading partners. After the food price crisis in 2008, the nature of India's pulse trade changed fundamentally.

Chickpea, which accounted for a significant share (19 percent) of total imports in 2002, saw its share decline to 8 percent in 2008 and further to 3 percent in 2010. Chickpea imports declined significantly between 2003 and 2011, with exceptions in 2005 and 2009. There was a significant increase in chickpea imports in the year 2012, and its share in total imports was 11 percent. The share of chickpeas remained at 12 percent in 2019.

One reason for the declining share of chickpea could be a sustained increase in domestic production (Chandra et. al. 2017). Between 2001 and 2010, chickpea production and yields in India increased by 12 percent and 5 percent, respectively. Falling chickpea imports are also consistent with shifting consumption patterns. Chickpea consumption decreased by about 13 percent between 1988 and 2009 (Chandra et. al. 2017). These consumption trends could possibly explain part of the decline in chickpea imports in combination with supply-side factors such as the advent of high-yielding varieties and a more efficient allocation of land across space (the centers of production gradually moved from north to south and from east to west in the country).

Trade movement has become more a function of extensive margin than of intensive margin. The number of exporters has expanded and the varieties imported have also changed significantly. Whereas in 2008 Canada and Myanmar accounted for 43 percent and 31 percent of India's total pulse imports, respectively, by 2019 those shares had fallen to 37 percent and 16 percent. Tanzania expanded its share from 4 percent to 7 percent.

The extensive margin changes are also reflected in the varieties' market shares. The share of dried peas has fallen precipitously. Earlier, combined imports of yellow pea and split yellow pea increased from a mere 0.2 million tons in 2002 to 1.25 million tons in 2012—an almost sixfold increase. The percentage share of yellow pea in total pulse imports increased from 21 percent in 2002 to almost 32 percent in 2012 (with a peak of 47 percent in 2010). With its increasing share in imports and in turn in the consumption basket, in policy discussions, yellow pea has become to pulses what palm oil is to edible oils in the Indian market.

As a result of the level of India's import demand and the trade policies that have followed, the number of exporters of pulses to India has grown, but each sends a smaller volume. Note that in pulse imports, particularly in commodities such as pigeon pea or lentils, India's imports can be initiated and realized in quick time, as they come substantially from neighboring Myanmar. Chickpea, in contrast, is imported mainly from comparatively far-off places like Australia, and such imports take more time to reach Indian markets.

The degree of synergy between movement in price and movement in trade is comparatively low in the case of chickpea. The transaction cycle is likely to be shorter for pulse imports emanating from the neighborhood, that is, black matpe, green gram, and lentils. This has a significant bearing on the choice of trade policy instruments and their usage because of the extent of cooling effects on prices.

In contrast to chickpea, pigeon pea imports (in quantity) exhibited an upward trend till 2016, after which QRs were imposed on pigeon pea.[17] Although the increase in pigeon pea imports is of a smaller order, there has been extensive margin expansion with African countries becoming important suppliers. Yet the share of pigeon pea in total pulse imports has declined sharply—from 21 percent in 2002 to 16 percent in 2008 to 15 percent in 2019—implying that it has been losing importance in the basket of pulses. As with chickpea, the pattern is consistent with the evolution of domestic supply of pigeon pea. Both production and yield of pigeon pea have increased by 7.6 and

[17] Authors' calculations based on India Customs data.

3.9 percent, respectively, during the past 10 years. Here again, the lowering import penetration has been accompanied by a decline in its per capita consumption by 31 percent between 1988 and 2009.

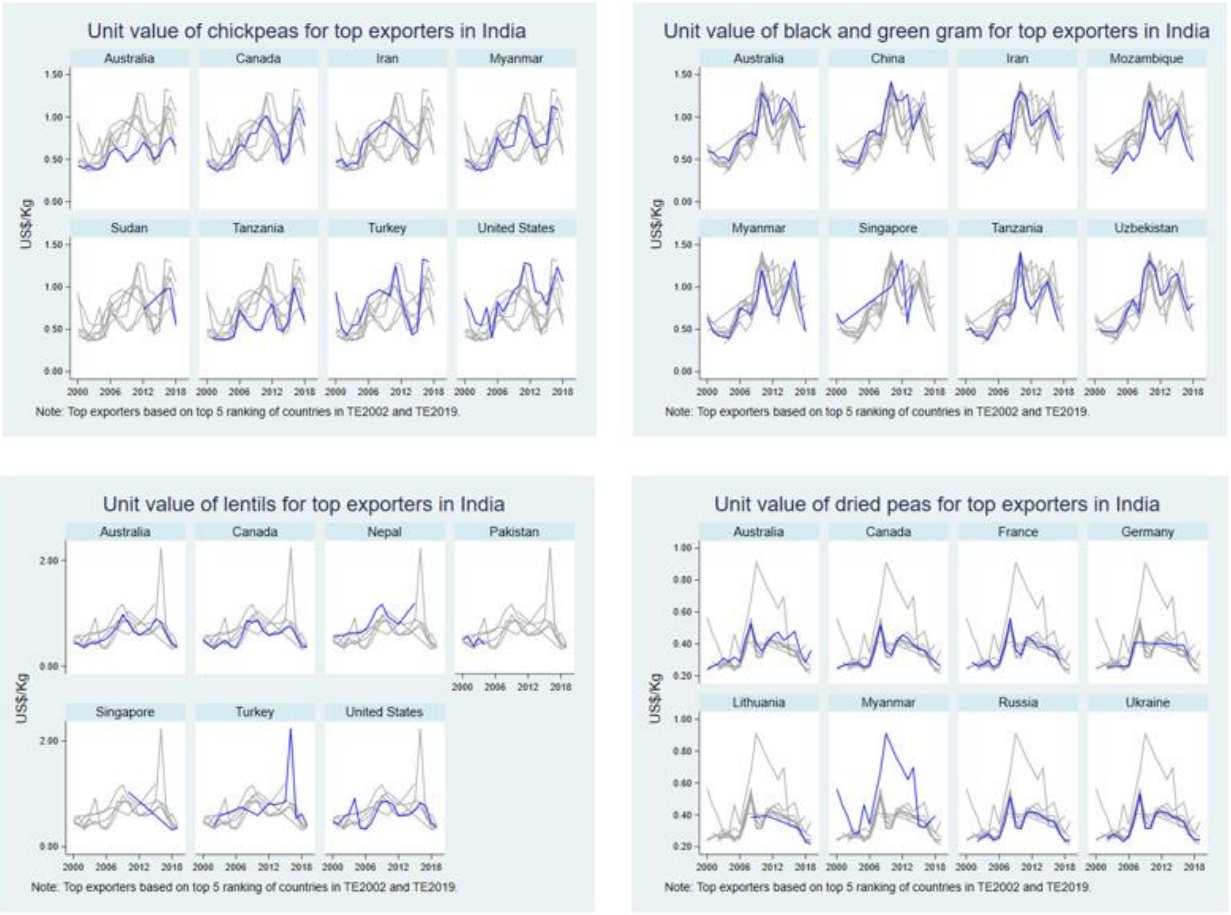
Among other pulses, the share of black matpe in total pulse imports has decreased from 15 percent in 2002 to 8 percent in 2008 and 13 percent in 2012. In 2019, black matpe's share in total imports stood at 9 percent. In lentils, the most traded pulse in the world, the trend in quantity imported has been positive with imports increasing from 0.2 million tons in 2002 to 0.5 million tons in 2012. As we saw with pigeon pea, the per capita consumption of black matpe also decreased by 25 percent between 1988 and 2009. In all pulses, even when domestic production is high, consumption is stunted unless complemented with imports.

Lentils' share in total quantity of pulses imported stood at just 1.5 percent in 2002 and further decreased in the year 2008 before increasing to 6 percent in 2010. The quantity of lentils imported was minimal until 2006, but after 2006, an upward trend was recorded with an exceptional increase in the year 2012. In 2012, lentils' share in total pulse imports was as high as 17 percent, and in 2019 it rose as high as 26 percent.

The extensive margin in trade comprises not only the entry and exit of partners and the types of pulses traded but also price movement. Increasing movement in price may possibly be due to exporting new or improved varieties of pulses. Trading at different prices, or price dispersion, is another element of the extensive margin in India's pulse imports. Figure 12 presents the import prices realized by exporters of different pulses in India.[18] Fabplots present the full distribution and then highlight the specific country in the distribution.

[18] The graphs in Figure 13 are known as fabplots drawn in Stata. We use this tool to compare the import prices realized by different countries. One drawback of these graphs is that they connect across missing values and show a trend. For example, import prices for black and green gram in the case of Singapore are missing from 2002 to 2009, and the graph shows an upward trend. We point out, however, that cases such as the one of Singapore, with a big chunk of missing data points, are infrequent in our graphs.

Figure 12 Import prices of pulses in India

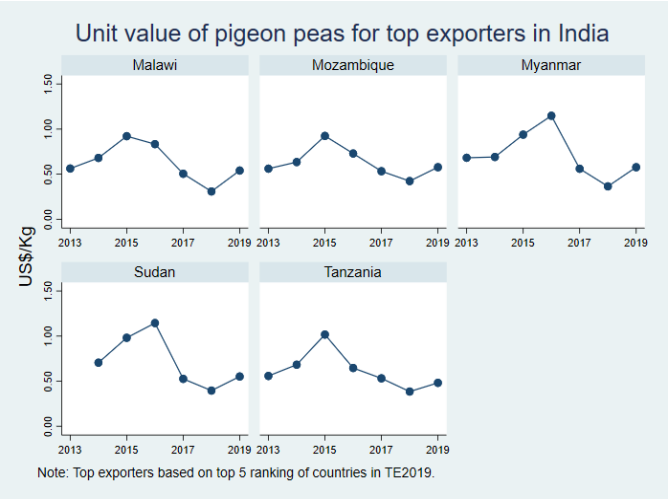


Source: Directorate General of Foreign Trade.

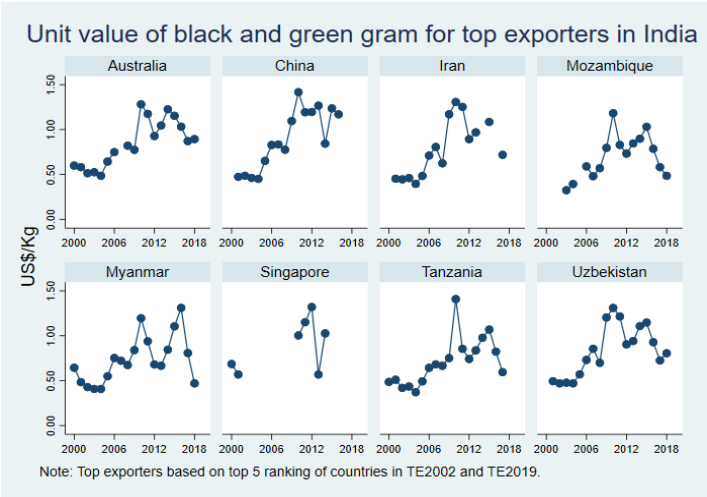
Given the dynamics in import demand and trade policies that vary across pulse type, price dispersion in imports is also different across pulses. The price paid in India for imports of black and green gram have remained somewhat similar across countries (Figure 13).

In other pulses, such as chickpea, we see greater price segmentation. The United States, Turkey, and Canada cater to the comparatively high price segment as compared with Australia, a major chickpea exporter to India. In lentils, as well, we see comparatively high price segmentation. Nepal's exports bring higher prices compared with those of Canada, Australia, and the United States. Admittedly, a substantial part of Nepalese exports would come informally and likely at a comparatively low price. Since tariffs are imposed in ad valorem terms, where there is price dispersion, it accounts for differential incidence of trade restrictions across exporters of pulses. Differences in import prices also partly reflect uneven trade policies. Differentiation in import prices across countries and pulse varieties has become more pronounced over time, resulting in some pulse importers facing different tariffs.

Figure 13 Price of pulse imports to India by country: pigeon pea and black and green gram



Source: Directorate General of Foreign Trade.



Source: Directorate General of Foreign Trade.

COVID-19 Recovery Measures: Implications for the Pulse Sector

As a part of its COVID-19 relief measures, the Indian government announced the extension of the Pradhan Mantri Garib Kalyan Yojana (PMGKY) until November 30, 2020. Under that scheme, in the first round of the lockdown (April–June 2020), the government announced it would provide every ration-card-holding family 5 kilograms of free wheat/rice per month and 1 kilogram of free pulses per household every month. The states were free to decide which free pulse variety would be distributed. However, in June the government announced that the only pulse available under the scheme would be chickpea as the buffer stock for pulses other than chickpea was depleted. According to government data, the central buffer stock consisted of 0.87 million tons of pulses, made up of 0.37 million tons of pigeon pea, 0.11 million tons of green gram, 0.22 million tons of black matpe, 0.13 million tons of chickpea, and 0.02 million tons of lentils. To provide 1 kilogram of pulses per month for five months to 196 million households, the central government needs nearly 1 million tons of pulses.

The government had procured about 2 million tons of chickpea by June 2020. In 2019, production estimates for moong were 67,000 tons, of which the government procured 20,457 tons. In 2020, the production estimates went up by 70,000 tons, but the government managed to procure only 4,498 tons. Moreover, chickpea is cheaper than other alternatives. Its procurement rate is Rs 48.75 per kilogram (Rs/kg), whereas for pigeon pea the rate is Rs 60/kg, and for green gram and lentil the rate is Rs 71.96/kg and Rs 48/kg, respectively.

In the ongoing pandemic, pulses are being positioned as an integral food in different relief packages for migrants and other vulnerable households. As part of the emergency response, 160 million families will, in addition to rice and wheat, receive 1 kilogram of pulses per month free of cost over a period of three months starting in April 2020. This points to a huge shift in policy focus away from basic staples such as wheat and rice to more protein-rich crops such as pulses.

Using COVID-19 as an opportunity, with the massive number of stocks and surplus food grains, including a relatively better pulse production (nearly 22.95 million tons), India aims to expand on its trade with some exporting, although the scope of that seems limited. There has been a fundamental change in India's pulse trade, whereby import expansion has taken place recently on the extensive margin. The relative level of changes occurring on the extensive versus the intensive margin plays a significant role in policy determination.

Conclusion

Pulses constitute an important commodity for India's nutrition needs and for environmental sustainability. Although India remains the largest producer and consumer of pulses in the world, given the size of its population and diverse preferences for different types of pulses, India must rely on imports to meet its pulse needs in a cost-effective and sustainable way. Productivity in different pulses in India lags significantly behind the global frontiers, making a strong case for specialization based on comparative advantage. Lacking comparative advantage and efficiency implies that there is a strong case for India's importing a wide range of pulses and realizing gains from trading in pulses rather than producing them domestically. The comparatively low productivity and the foregoing of gains from trade are both a function of India's resource endowments as well as the inducements of policy. The policy premium on self-reliance—a legacy from pre–Green Revolution times—ignores the fact that self-sufficiency in cereals has come at the cost of crowding out pulses and oilseeds and relegating them to subpar production conditions.

Although trade policies have always been invoked as a way to deal with relative price increases in food—and this is true in pulses as well—the empirical evidence suggests that India's pulse trade has had only a moderate association with controlling domestic pulse prices and that this is likely because trade has not been free enough and that the magnitude of trade has not been great enough to manage prices. Uncertainty surrounding India's pulse policies is also a significant deterrent to India's trade in pulses, that is, in imports.

In general, India's agricultural trade is characterized by high trade restrictiveness and variability including in pulses. The Office of the United States Trade Representative indicates that although the government of India has pursued ongoing economic reform efforts, significant tariff and nontariff barriers that impede imports into India continue to exist. The WTO estimates that India's applied MFN import tariffs are the highest among the world's major economies.

In examining the trade patterns and trade policies of India with regard to pulses, this paper sought to apprehend the whole pulse complex comprising production policies (support prices and procurement operations), consumption policies that value low food prices and the eminence of food-based social safety nets, and political economy considerations that put a premium on self-sufficiency in pulses. India's pulse production has increased in the last few years, and it has directly translated into greater restrictions in international trade.

India's agriculture-related policies, particularly in relation to trade, have been quite variable and unpredictable. Large swings over time and measures that often affect even already signed contracts tend to create uncertainty about India's pulse policy stance among its trading partners. We show that India's policy variability is reflected in changing margins of trade and also in the limited domestic price reduction (cooling) effects of pulse imports in India. In addition, India's choice of trade policy instruments also creates uncertainty. An example of this is the recently added, new 10 percent tariff on imports, labeled the "social welfare surcharge," instituted without public notice or consultation. The social welfare surcharge is applied to the aggregate of duties, taxes, and cess assessed on imports.

Similarly, in 2018, India extended an order requiring international exporters to pay a pest-treatment fee on pulse products being imported into the country. The exporters had to pay fees many times higher than the domestic rate, notwithstanding the national treatment clause under WTO requirements.[19] US exporters are charged a fumigation fee that is only double the standard rate. Until 2017, Canada had been exempted from the fumigation order on a temporary basis.

India's pulse imports have had limited impact on domestic prices. That is due to the level of imports (a function of trade restrictions) as well as policy uncertainty—that is, countries exporting to India find it hard to commit resources and make production choices for the long run. Apart from the fact that not enough pulses are being imported to prevent protein-rich food price increases,

[19] As noted in an earlier footnote, India requires all pulse shipments be treated with the chemical methyl bromide prior to export. Canada was exempted earlier but that was repealed in 2017.

policies have also resulted in price segmentation as comparatively high-priced imports (with greater margin) are penetrating the markets.

The country's trade-restrictive policies consist of, among other things, extremely high bound tariffs, quantitative restrictions, and other nontariff barriers. Bound tariffs in most pulses in India are as high as 100 percent, which provides significant space to move toward extremely high tariffs. Notwithstanding the room to raise tariffs, one of the biggest trade barriers in pulses remains policy uncertainty (including the choice of instruments, timing, and implementation routines) that increases the risk when trying to access India's markets. To make up for that risk, import prices tend to be higher than otherwise. Apart from the pressure this puts on food prices, it also strongly affects exporters' production decisions. Because of such impacts on cropping decisions, pulse supply over the long run is at risk. If trade restrictions remain in place, exporters will tend to seek other markets, as has happened in the case of yellow pea being targeted majorly into the Chinese markets.

Moreover, analysts have argued that uncertainties regarding trade policy may lead to strong demand for deeper tariff cuts in bilateral and regional negotiations. In the set of countries with which India seeks trading arrangements—such as the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation, the ASEAN-India Free Trade Agreement, and the India–US trade agreement, as well as bilateral pulse-specific arrangements such as with Myanmar—high and volatile tariffs create difficulties for negotiated settlements. The effect of this is to create a demand for deeper tariff cuts as there is often significant binding overhang in India's tariff policies leaving room for demand for further cuts in the future. India, in return, might not get the same or similar concessions. India is by far the economy with the most tariffs in relation to comparable countries such as Brazil or Indonesia.

Appendix A Names of Varieties of Pulses

	English names	Hindi names	Scientific/other names
1	Pigeon pea, red gram A. Yellow split (split pigeon pea)	Arhar, tur Tur dal	*Cajanus cajan*
2	Chickpea A. Kabuli chickpea B. Bengal gram, black chickpea C. Yellow gram, split desi chickpea (split Bengal gram)	Chana Kabuli chana Desi chana, kala chana chana dal, split-desi chana	*Cicer arietinum* Garbanzo bean, ceci bean
3	Green gram, mung bean A. Yellow lentil (split and skinned green gram)	Moong, mung Moong dal	*Vigna radiata*
4	Black gram, black matpe, black lentil A. White lentil (split black gram)	Urad, split urad, urad dal	*Vigna mungo*, hepper, minapa pappu, mungo bean
5	Lentils, red lentils	Masoor, masur	
6	Kidney beans	Rajma	*Phaseolus vulgaris*
7	Pea A. Yellow pea B. Green pea	Matar, peela matar, hara matar	*Pisum sativum*
8	Cowpea, black-eyed pea	Lobiya	*Vigna unguiculata*

Appendix B State of Trade Facilitation in India (sourced from the International Trade Administration, US Department of Commerce) [20]

In 2018, the Indian government, in cooperation with the Federation of Indian Exporters, debuted its India Trade Portal (http://indiantradeportal.in/) and published applied tariffs and other customs duty rates applicable to imports. The India Trade Portal provides information on the latest tariff and duty rates by Harmonized System codes.

India also maintains the web-based Indian Customs Electronic Commerce/Electronic Data Interchange Gateway, known as ICEGATE (http://icegate.gov.in). It provides options for calculating duty rates, electronic filing of certain import declarations and shipping bills (export goods declarations), electronic payment, and online verification of import and export licenses. In addition to being announced with the annual budget, India's customs rates are modified on an ad hoc and arbitrary basis through notifications in the *Gazette of India* and contain numerous exemptions that vary according to the product, user, or specific export promotion program, rendering India's customs system complex to administer and open to administrative discretion (Office of the United States Trade Representative 2018).

The Office of the United States Trade Representative report further states that the government of India is increasing the use of electronic forms. India is also building a single window for customs documents, and as a result of this process, India now requires only three documents for importers and exporters for approvals from the 13 separate government agencies that are currently incorporated into the single window to reduce the customs processing time.

After ratifying the WTO Trade Facilitation Agreement (TFA) in April 2016, India established the National Committee on Trade Facilitation (NCTF) in August 2016. In July 2017, the NCTF debuted a roadmap for trade facilitation for India, and it will facilitate domestic coordination and implementation of TFA provisions. The United States and India held joint workshops covering best practices in trade facilitation in October 2016 and in September 2018. The workshops included both Indian and US industry representatives and focused on implementing the TFA and customs reforms expeditiously to facilitate trade.

[20] https://www.privacyshield.gov/article?id=India-Import-Tariffs

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