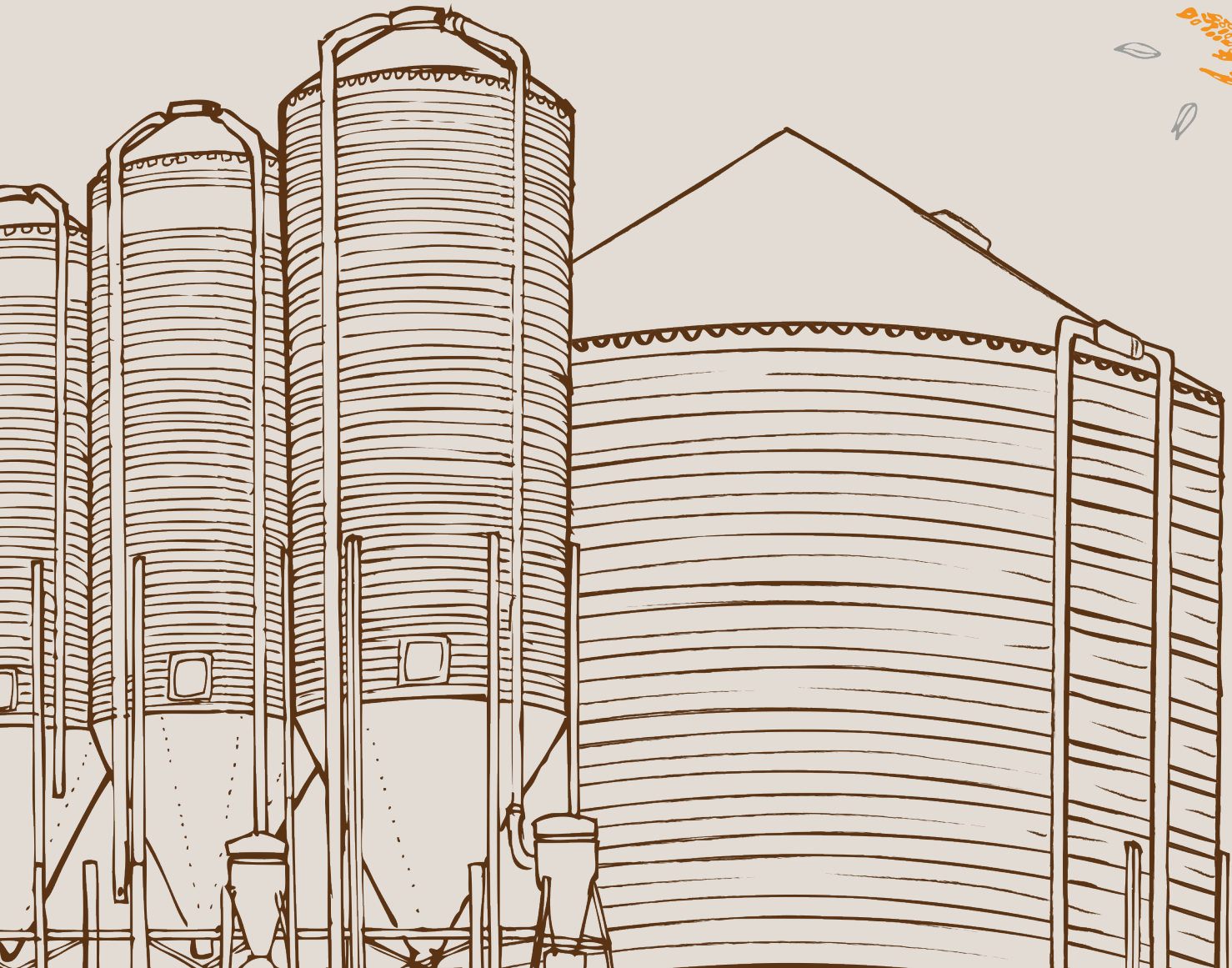
Food and Agriculture Organization
of the United Nations

Public food stockholding

A review of policies and practices



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Food and Agriculture Organization of the United Nations
Rome, 2021

Required citation:

FAO. 2021. *Public food stockholding – a review of policies and practices*. Rome. https://doi.org/10.4060/cb7146en

ISBN 978-92-5-135104-8

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Acknowledgements

This study was prepared by Ishrat Gadhok and Cosimo Avesani, Economists in the Markets and Trade Division (EST) of the Food and Agriculture Organization of the United Nations (FAO), under the guidance of Georgios Mermigkas, Senior Economist, EST, FAO.

The authors thank Joseph Glauber, Senior Research Fellow, Markets, Trade and Institutions at the International Food Policy Research Institute, for his peer review and valuable comments. They are also grateful to the following FAO staff members for their technical review and expert feedback, particularly on specific commodities and regional experiences: Shirley Mustafa (rice), Erin Collier and Lavinia Lucarelli (wheat and coarse grains), Monika Tothova (Near East and North Africa), Elena Conte (Central Africa), Cristina Coslet (Asia), Jonathan Pound (Southern Africa), Jung-eun Sohn (Latin America and the Caribbean).

The analysis also benefited from contributions by Ekaterina Krivonos, Senior Economist, EST, FAO, and Julian Benda, Consultant, EST, FAO, and review by Josef Schmidhuber, Deputy Director, EST, FAO, on an earlier version of the report.

The authors thank Evelyne van Heck, Policy Analyst at FAO, for research support and overall review.

They are also grateful to Jonathan Hallo and Ettore Vecchione for the report design, and to Araceli Cardenas for production support.

Finally, the authors thank Boubaker Ben-Belhassen, Director of EST, FAO, for his overall guidance and support.

Acronyms & abbreviations

AMS	Aggregate Measurement of Support
AoA	WTO Agreement on Agriculture
APTERR	ASEAN-Plus-Three Emergency Rice Reserve
ASEAN	Association of Southeast Asian Nations
BULOG	Badan Urusan Logistik
CAP	EU Common Agriculture Policy
CCC	Commodity Credit Corporation (United States of America)
CONAB	Companhia Nacional de Abastecimento (Brazil)
ECOWAS	Economic Community of West African States
EMAPA	Enterprise for Support in Food Production (the Plurinational State of Bolivia)
EST	Markets and Trade Division of FAO
FAO	Food and Agriculture Organization of the United Nations
FERP	fixed external reference price
FFPI	FAO Food Price Index
FRA	Food Reserve Agency (Zambia)
GASC	General Authority for Supply of Commodities (Egypt)
HLPE	The High-Level Panel of Experts of the Committee on World Food Security
MITS	Ministry of Industry, Trade and Supply (Jordan)
MPS	Market Price Support
NFA	National Food Authority (Philippines)
NFRA	National Food Reserve Agency (the United Republic of Tanzania)
NPS-AMS	Non-product specific AMS
NRP	Nominal Rates of Protection
OECD	Organisation for Economic Co-operation and Development
PAA	Programa de Aquisicao de Alimentos (Brazil)
PASSCO	Pakistan Agricultural Storage and Services Corporation
PS-AMS	Product-specific AMS support
PSE	Producer Support Estimate
PSH	Public stockholding for food security purposes
RASTRA	Beras untuk Keluarga Miskin – Rice for the Poor (Indonesia)
SAARC	South Asian Association for Regional Cooperation
SAGO	Saudi Grains Organization
SFB	South Asian Association for Regional Cooperation Food Bank
SIE	Stock d'Intervention de L'État (Mali)
SNS	Stock National de Sécurité (Mali)
TPDS	Targeted Public Distribution System (India)
UNA	Unidad Nacional de Almacenamiento (Ecuador)
VoP	value of production
WTO	World Trade Organization

Executive Summary

Public provision of food stocks has been a common feature of agricultural policy throughout history and in various geographical contexts – Asia and the Pacific, Europe, Latin America and the Caribbean, Near East and North Africa, North America, and Sub-Saharan Africa. This is because promoting food security, managing price risks protecting consumers, and supporting rural incomes are important social outcomes in any country, and addressing or mitigating the effects of market failures that prevent the achievement of these outcomes tends to be high on the public policy agenda.

While several countries had reduced or eliminated public stockholding programmes following structural adjustment measures and market liberalization in the 1980s and 1990s, these programmes regained momentum following the food price spikes of 2007/08. More recently, the expansion of food procurement and distribution operations during the COVID-19 pandemic, has also brought into focus the role of public stocks during periods of market uncertainty. Against this backdrop, the formulation and implementation of rules related to public stockholding remain a contentious issue in the World Trade Organization (WTO) negotiations.

Over a decade after the food price crisis of 2007/08, conditions on world markets are different today, providing an opportunity for renewed attention to the debate. In this context, this report aims to focus attention on the basics of public stockholding, exploring the objectives of such programmes, the policy instruments used to achieve them, and their possible market impacts. It also synthesizes country experiences in implementing public stockholding programmes in different regions and presents the evolution of administered and international prices over the last decade. Finally, the study highlights the main elements of the WTO negotiations on public stockholding for food security, and some of the issues that need to be resolved to help achieve consensus in this area.

Objectives, policy instruments and impacts

Public stockholding programmes can aim to achieve different objectives, depending on the status of agricultural development in the country and the ability of producers and consumers to manage food price risks. "Emergency stocks" aim to reduce the vulnerability of consumers to sudden supply or food price shocks caused by emergencies; "buffer stocks" aim to stabilize prices over the regular agricultural production cycle to reduce the vulnerabilities of both consumers to price shocks and of producers to income variability; and "stocks for domestic food distribution/food aid" aim to promote physical and economic access to adequate quantities of food for certain target populations. In practice, the distinctions between different types of stocks can be unclear, with countries attempting to achieve several objectives simultaneously.

There are three basic elements of a public stockholding programme: procurement; management; and release of stocks. Depending on the programme's objectives, these functions are carried out or reinforced through a combination of domestic agricultural support and trade policy measures. These include, for instance, market price support linked to procurement of stocks; import barriers to maintain minimum procurement prices;

consumer support/social safety net measures for the release of stocks at subsidized prices; export restrictions to maintain low prices for consumers; and export subsidies for the release of stocks on the world market.

The nature and extent of the impacts of such measures on domestic and global agricultural markets depends on the specific features of agricultural and trade policies used to maintain stocks, and the scale of government operations. Public stocks can play an important role for both poor farmers and consumers: guaranteed market outlets can prevent distress sales by farmers at low prices in places where infrastructure and risk management instruments are lacking; and for the most vulnerable consumers, food distribution at below-market prices can be an important form of social protection. Ample food stocks also have stabilizing effects on global markets. However, given their potentially significant market impacts, both in domestic and international markets, inherent operational challenges, and high fiscal costs, public stockholding programmes need to be carefully evaluated vis-à-vis other viable approaches that may be used to achieve the same objectives.

Public stockholding in practice

This study does not attempt to provide a comprehensive overview of all public stockholding programmes in the world, nor to cover all products. It rather aims to present illustrative examples of the way in which public stockholding programmes have been or are currently being implemented, with the objective of showcasing the diversity of the instruments used and the scope of such programmes, focusing mainly on key staples such as cereals.

In Asia and the Pacific, in all the countries examined (China, India, Indonesia, Pakistan, as well as the Philippines today), the government prioritizes procurement from domestic farmers at administered prices, while the mechanisms of stock release tend to differ. China releases stocks through auctions when market prices or demand are high; India, Indonesia and the Philippines operate food distribution programmes aimed at specific target populations (although there have been several policy developments that have introduced changes to these food distribution measures over the last few years, particularly in Indonesia); and Pakistan releases stocks to millers at subsidized prices, setting a ceiling on the sale prices of flour.

In Latin America and the Caribbean, agricultural market interventions have been substantially reduced during the end of the 20th century. However, since the 2007/08 global food price crisis, some countries have renewed their interest in public stockholding, introducing measures to establish public stocks of cereals, or to support private stock operations. For example, Brazil revitalized the national food supply agency to manage food stocks for both emergency purposes and price stabilization. In some countries including Ecuador, state-owned enterprises have been established to oversee the procurement, storage, and distribution/marketing operations. In other countries, including Colombia and the Dominican Republic, the governments decided not to maintain public food stocks, but to subsidize storage of cereals by farmers or private companies.

In the Near East and North Africa, several countries operate agricultural policy measures that include market price support, storage, and food distribution at subsidized prices. However, because of the difficult climatic conditions and natural resource constraints, many countries tend to replenish their public stocks mainly by means of imports. In Egypt, Jordan and Tunisia, the focus is also on supporting consumers through subsidized food (typically flour and bread), by regulating the sales prices of cereals from public stocks to mills and retail outlets.

In Sub-Saharan Africa, Mali is indicative of other countries in the Sahel region like Burkina Faso and Niger that operate two types of stock schemes: one for emergency purposes, and another for stabilizing prices, with commodities under both schemes procured through administered prices, but released in different ways. In the United Republic of Tanzania, the goal is to maintain public food stocks for emergencies, although procurement at administered prices may also provide incentives for farmers. The stockholding programme in Zambia aims to stabilize prices through procurement at administered prices, and release of stocks at subsidized prices to both processors and consumers.

In the past, public stockholding was also a common feature of agricultural policy in countries in Europe and North America. In the European Union and the United States of America, public stocks were mainly linked to programmes to support farm incomes and prices. With the evolving structure and growth of the agriculture sector, these policy measures also evolved towards more direct forms of income support and incentives for market-oriented production, reducing or eliminating the use of public stocks.

In addition to national food stocks, there are also some examples of regional food reserves, such as the ASEAN[1] -Plus-Three Emergency Rice Reserve (APTERR), the SAARC[2] Food Bank, and the ECOWAS[3] Regional Reserve project, which aim to ensure food security at the regional level. However, with the exception of the APTERR, many of these initiatives still need to be fully operationalized.

Trends in administered prices

Procurement at government-set prices can be linked to any type of public stocks, and the way in which they are implemented can vary by country and commodity. For instance, prices can be set based on consideration of production costs, farmer margins, market prices, or a combination of several factors; they may be applicable sector wide, or only to specific regions and categories of farmers; and purchase decisions may or may not be dependent on market price fluctuations relative to the government price. While they may not be directly comparable to one another, WTO Members notify their respective government-set prices as "administered prices" in their WTO Notifications.

The report provides a snapshot of the trends in administered prices over the last decade, for a selection of countries representing different regions, and for the key staples (maize, rice and wheat). While not a comprehensive assessment, it seeks to provide some additional context to discussions at the WTO, which tend to focus mostly on specific elements of the formula used to calculate market price support as per the WTO Agreement on Agriculture. Remaining mindful of several nuances in interpreting the available data for an illustrative set of countries, a few broad trends in administered prices emerge for maize, wheat, and rice. In nominal terms, administered prices in national currencies have been rising since 2008, while international prices have generally trended downward. However, for several countries, the trend in administered prices gets reversed when converted to USD due to significant currency depreciation. The trend is also reversed or

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1 Association of Southeast Asian Nations

2 South Asian Association for Regional Cooperation

3 Economic Community of West African States

more muted when administered prices are adjusted for inflation. The net effect of both exchange rate and inflation adjustments is that administered prices in several countries have been below indicative international prices for many years.

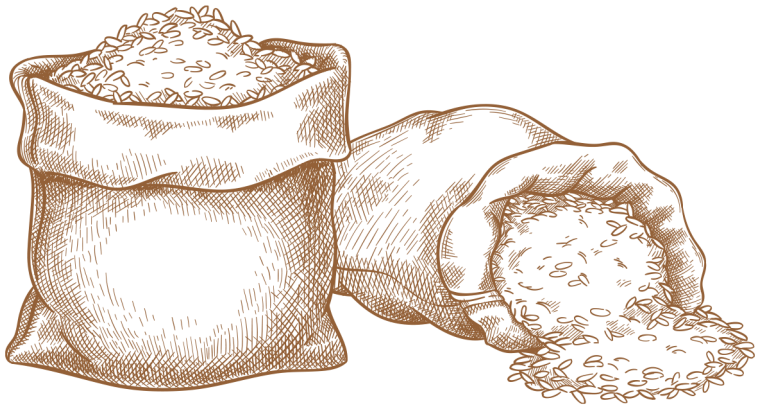
Disciplines in the WTO

Following the price spike of 2007/08, public stockholding became one of the most contentious issues in the WTO, as it was recognized that low levels of stocks contributed to the food price crisis. However, and despite the efforts in the negotiations so far, WTO Members have remained divided with regard to a number of issues, including the methodology of the calculation of Market Price Support (MPS) and the *de minimis* threshold for calculating countries' domestic support under WTO rules.

In fact, WTO Members still tend to have different interpretations of some of its elements. With regard to the fixed external reference price, which is a price used as a proxy of the global market price in the WTO methodology, these issues include: (i) the base period used for its calculation, an issue which is particularly relevant for those WTO Members that acceded the WTO after 1995; (ii) the currency in which it is expressed; and (iii) its adjustment for inflation. Moreover, there are different approaches with regard to the definitions of the eligible production and the value of production. The latter is not directly linked to the MPS calculation; however, it is an important variable in determining the *de minimis* threshold.

CHAPTER 1

Introduction



The relationship between the level of global stocks – both public and private – and world prices received considerable attention during the food price crisis of 2007/08. The *High-Level Panel of Experts of the Committee on World Food Security* noted that "the relationship between stock levels and price volatility is well established: low stocks are strongly associated with price spikes and volatility" (HLPE, 2011). Ample stocks can provide a cushion against supply and demand shocks, preventing eventual shortages and instilling confidence in markets. While the relationship between stocks and prices can vary depending on the specific commodity, time period under consideration, and also the difficulties in correctly measuring stock levels, there is broad consensus that low levels of stocks are associated with increased market risk (HLPE, 2011; Drechsler, 2021), and low stocks-to-utilization ratios and uncertainty about stock levels in some parts of the world are widely quoted as some of the underlying contributors to the 2007/08 price spikes (FAO *et al.,* 2011).[4]

At the time, short supplies on world markets and high volatility of international prices, exacerbated by export restrictions introduced by major producing countries, contributed to the erosion of confidence in global markets as a source of food supplies, particularly among net food importing countries (FAO *et al.,* 2011). Reacting to these risks, many countries have pursued a greater degree of self-reliance, re-establishing parastatal marketing boards and exercising greater public control where parastatals and private traders co-exist (Abbot, 2014). There has been renewed interest in the use of public stockholding as a way of protecting against shocks and price volatility in food markets, with the volume of global cereals stocks (for all main crops) having gradually increased since 2007/08, and reaching a new record in 2017/18 (Drechsler, 2021) (Figure 1).[5] The short-term policy responses to the supply and demand shocks and market uncertainty caused by the COVID-19 pandemic also exemplify this phenomenon (FAO, 2021a).

Public food stockholding, as discussed in the paper, refers to the procurement, storage and release of food stocks by governments through state-owned enterprises or other public agencies, and generally implies stockholding of cereals which are relatively less perishable compared to other products, although there is considerable diversity in the way in which such programmes are implemented in practice.[6] Public food stocks can comprise of both domestically procured and imported food. Many countries hold food stocks targeting

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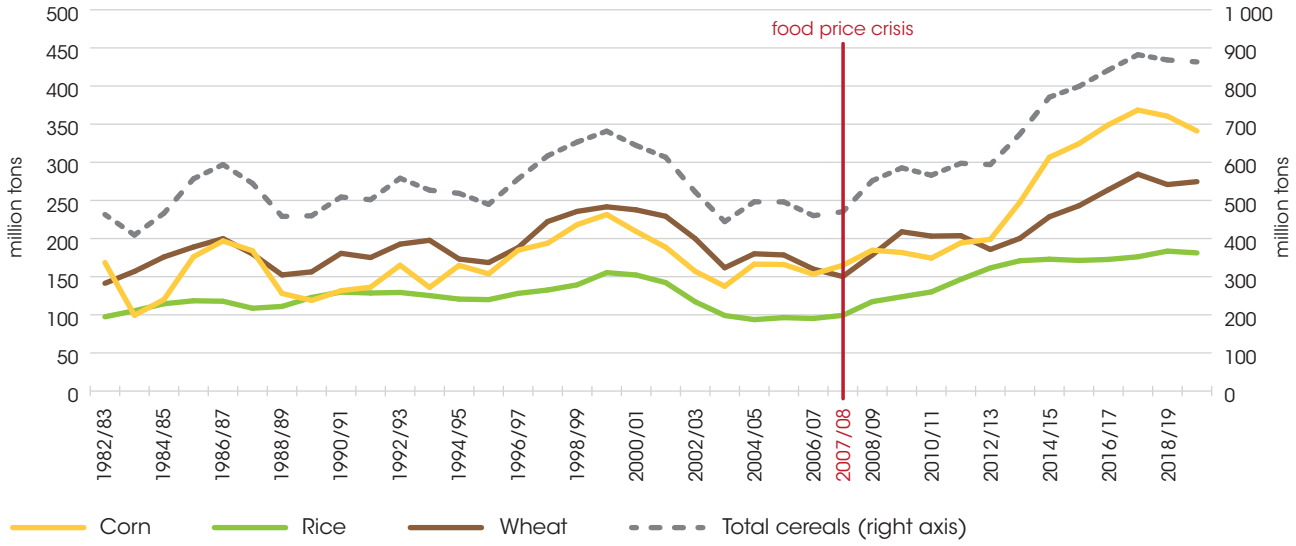
4 Climatic factors also played a significant role, with droughts and weather-related low yields impacting important suppliers such as Australia and Canada for wheat (FAO *et al.,* 2011). Declines in global food stocks leading up to 2007/08 are attributed to such climatic factors, but also to changing price support and intervention buying policies in some countries of the Organisation of Economic Co-operation and Development (OECD); to increasing demand for agricultural commodities (for feed and food in growing economies, as well as for biofuels); and to the financialization of agricultural futures markets (Galtier, 2014).

5 Figure 1 includes both public and private stocks, with three quarters of the total cereals' stocks held by five countries (mostly China, followed by the United States of America, India, the European Union, and Brazil). Grain stocks held by developed countries are estimated to have more than halved since the mid-1980s, with most of these now held by private actors (farmers, processors, traders). By contrast, stocks held by developing countries are estimated to have more than doubled since the mid-2000s, driven by a strong increase in stocks held by governments. It is important to recognize that such estimates are constrained by several issues in obtaining stocks information (both private and public). Private stocks tend to be held for strategic purposes, so the stockholders may be reluctant to disclose their positions. Stocks held by smaller commercial entities and households, can be difficult to monitor due to their sheer numbers. Measuring public stocks can also be challenge, as these are often considered vital to protect national food security so countries may be hesitant to reveal any sensitive information. There are also methodological challenges to making stocks data comparable across countries (see Dreschler, 2021).

6 For instance, in the past, public food stockholding in the European Union included butter. The diversity in the implementation of the procurement, storage and distribution functions is described at length in Chapter 3.

crops – particularly staples – that are prevalent in national diets, provide a large proportion of the overall dietary intake or are important for food security.[7] Countries with large populations, such as China and India, keep substantial public stocks of rice and wheat, for example, considering that international markets may have limited capacities to serve the potentially sizeable needs of these countries, in the event of production shortfalls or market disruptions (particularly in the case of rice, given a thinly traded market). This situation can cause severe distress to a large number of people, which can create a national emergency. Countries that have a history of famines or are frequently exposed to shocks (e.g., droughts, floods and conflicts) are generally more likely to maintain stocks, in particular of grains (Calpe, 2017).

Figure 1. Evolution of global cereal stocks (1982 – 2020)



Source: Drechsler, 2021, from FAO Country Cereal Balance Sheet (CCBS) system.

Considering the multiple objectives of public food stockholding programmes, the different measures needed to achieve them,and their possible effects on regional or global markets, public stockholding, and in particular market price support associated with domestic procurement to build stocks, remains a contentious issue at the WTO. Overall, agricultural negotiations aimed at reducing distortions to production and trade have progressed slowly after the Uruguay Round, complicated by the diverging views among WTO Members, *inter alia*, on the appropriate policy instruments to achieve food security. While by and large, exporting countries favour stricter limits on trade-distorting domestic support, many other countries, in particular those where agriculture is dominated by smallholder farmers and boosting domestic production is considered a prerequisite for food security, argue for additional flexibilities in this area.

[7] In practice, these are often commodity stocks that can ultimately be used for both food and other purposes, such as animal feed or other industrial uses, depending on how the stock release functions are implemented.

Over a decade after the food price spikes of 2007/08, conditions on world markets are different today. For instance, stocks-to-use ratios for cereals are significantly higher today compared to 2007/08 (FAO, 2021a), and while food prices have been rising since May 2020 (as measured by FAO Food Price Index)[8], at the time of writing this report, they remain below peak levels reached in previous years (FAO, 2021b). Moreover, over the next ten years, supply growth is expected to outpace demand growth, and real prices, to remain at or below their current levels (OECD and FAO, 2020). While the way public stockholding for food security programmes is implemented remains a contested issue in the WTO, the current market situation allows for renewed attention to the debate.

In this context, this paper aims to focus attention on the basics of public stockholding by addressing the following questions: what are the objectives of such measures, how are they actualized through various policy instruments, and what are their possible implications for domestic and international markets? (**CHAPTER 2**); how have countries in different regions (Asia and the Pacific, Latin America and the Caribbean, Near East and North Africa, Sub-Saharan Africa, as well as Europe and North America) implemented such programmes both now and in the past? (**CHAPTER 3**); how have administered prices for key staples evolved over the last decade and what are the implications of inflation and exchange rate fluctuations? (**CHAPTER 4**); what is the state of play in the WTO negotiations? (**CHAPTER 5**); and finally, some concluding remarks (**CHAPTER 6**).

The review of country policies and practices does not aim to provide an exhaustive overview of all public stockholding programmes in the world, nor of all commodities covered. Instead, the country cases serve as illustrative examples, to showcase the diversity of objectives and policy measures used. An attempt has been

[8] The FAO Food Price Index (FFPI) is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices weighted by the average export shares of each of the groups over 2014-2016 (FAO 2021b). It is important to clarify that FAO food price indices are formed from prices of bulk food commodities in international trade and do not indicate prices paid directly by retail consumers of food (FAO, 2020).

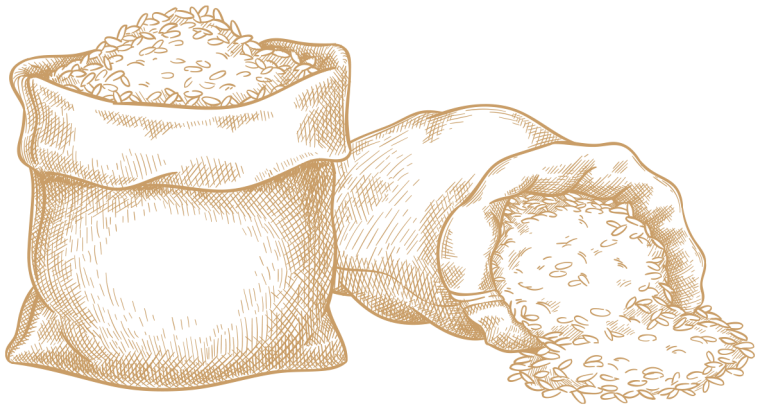
made to focus on recent data, and on national sources of information to the extent possible (mainly national websites and publications; presentations of relevant ministries at FAO or other international forums; and country responses to points raised by Members under the WTO Committee on Agriculture review process), or on institutional reviews that involve significant engagement and inputs from national sources (e.g. WTO Trade Policy Reviews; OECD Agricultural Policy Reviews; certain FAO publications). Information was available to varying degrees for different countries.

Analysis of administered price data was limited by the availability of information for different countries and different years. To be consistent with the WTO terminology of administered prices, data from countries' WTO notifications were often used as the first source of information. However, for several countries, other sources – mainly national, but sometimes third-party sources including FAO – were used to supplement the data.

The authors welcome any feedback to correct remaining errors.

CHAPTER 2

Policies for public food stockholding and their impacts



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2.1. Objectives and types of public food stocks

Public food stocks usually complement private stocks held by farmers, processors, and traders, and also consumers (Box 1). Countries tend to maintain one or more of three generic types of food stocks: "emergency stocks", "buffer stocks", and "stocks for domestic food distribution/food aid", which differ in their objectives.

Box 1. Relationship between public and private stocks

Depending on their storage capacities, farmers may hold stocks to manage production risks and to smooth their food consumption in the face of erratic supplies and prices; processors, to meet their business needs between one harvest period to another while hedging against price risks; and traders, for financial gain in the expectation of higher prices in the future. Consumers may also hold significant volumes of stocks, depending on the country, period and commodity in question. From a public policy standpoint, the question is whether this level of private stock is optimal, especially given the inherent uncertainties in agricultural markets. A private trader aiming to maximize profits from seasonal price differences would not account for situations of extreme price variability, such as those arising from significant climatic or geo-political events, thereby underproviding storage and failing to curtail price spikes. Another issue is the potential for monopolistic behaviour of firms that operate stocks. Moreover, in a free market, whether in the usual agricultural production cycle or in an emergency situation, only those who have the necessary resources may acquire food. Given the important social outcome of ensuring food security, and the risks of market failures that may prevent the achievement of this objective, public provision of stocks remains a common policy instrument. However, there is also a risk of public stocks crowding out private storage, exacerbating the problem that they were designed to solve.

Source: Briones (2014), Murphy (2009), Wright (2009).

Emergency stocks aim to reduce the vulnerability of consumers to supply disruptions or food price shocks caused by emergencies such as climatic events (droughts, floods, earthquakes etc.) or geo-political events (for instance, wars and localized conflicts), as well as potential disruptions to international trade flows. Countries typically maintain a certain level of stocks equivalent to one or more months' worth of national consumption to ensure access to food, targeting the neediest population groups in the event of a food shortage. In principle, emergency stocks do not play a price stabilization function or seek to increase incomes of producers. As such, stocks can be sourced from national producers at market prices or through imports, and the release and distribution of stocks may be implemented through partnerships with NGOs or the private sector, as well as directly through governments' own outlets.

The primary objective of ***buffer stocks*** is to stabilize prices within the domestic market to avoid excessive volatility. A key feature that sets buffer stocks apart from emergency stocks is that the policy focus is on both consumers and producers. For instance, there is a recognition that the exposure of poor farmers to low and volatile prices can undermine their incomes, livelihoods and ultimately their food security. As such, buffer stocks aim to address price variability not only in times of emergencies linked to climatic or political events, but also over the regular agricultural production cycle. Governments typically create a price band, i.e., a range between which they want to keep prices, with a floor price aiming to support farmers and the ceiling price aiming to protect consumers from price hikes. These prices can be enforced in different ways. For instance, some countries may procure commodities only when the market price drops below the floor price, while others may implement a pan-seasonal, pan-territorial floor price independent of the prevailing market price.

Similarly, some countries may enforce the ceiling price by releasing stocks only when market prices rise above this ceiling, while others may set a price for the milled or processed form of the commodity, and control the prices at each point of sale, from government warehouses to the final point of consumption.

The objective of ***stocks for domestic food distribution/food aid*** is to promote physical and economic access to adequate quantities of food for certain target population groups, such as those suffering from chronic food insecurity. Beneficiaries are typically targeted based on considerations of poverty levels and distance to food markets, and food distribution is often implemented through retail outlets at subsidized prices. Such stocks may also be used for food-based social welfare schemes such as school feeding or food-for-work programmes, or to supply public institutions (e.g., hospitals, army). These stocks could be comprised of both domestically procured commodities and imports.

In practice, the line between these different types of stocks can be quite ambiguous, with countries implementing public stockholding programmes that aim to simultaneously fulfil several objectives such as providing incentives to producers and addressing both chronic and acute food insecurity. Chapter 3 discusses various country examples that illustrate this point.

2.2. Complementary agricultural and trade policy measures

The maintenance of public stocks involves a number of inter-linked domestic support measures, such as market price support in the procurement of stocks, and consumer support measures in the release of stocks. Moreover, while public stockholding programmes start out with domestic policy instruments, ensuring their effectiveness typically requires complementary trade policy measures, such as import tariffs or quotas to maintain the procurement prices, export restrictions to maintain low consumer prices, and export subsidies or other export promotion measures to release stocks.

Market price support linked to the procurement of public stocks

Procurement is often done at prices set by government authorities, which can be implemented in different ways e.g., through direct purchases by the government at the set price, or through setting an indicative minimum price that must be adhered to by processors and traders. These purchase prices may be above, equivalent to, or even below international market prices (further discussion on "administered prices" in Chapter 4).

Such procurement can help achieve legitimate domestic policy objectives of providing income support to farmers. Even if purchases are done at prices that are in line with world market prices, by providing a guaranteed market outlet and predictable prices, public procurement can support farm incomes by reducing price risks, particularly for smallholder farmers if they are effectively targeted (Box 2). However, by providing a price floor, administered prices may also provide incentives for farmers to produce larger quantities than what they would otherwise produce. As such, assuming price transmission, procurement at administered prices, particularly when they are above world market prices, is usually considered a form of trade-distorting subsidy. In this discussion, however, it is important to distinguish between Market Price Support (MPS) according to the WTO rules, which are discussed in detail in Chapter 5, and the economic concept of price support, as introduced in Box 3.

Box 2. Public procurement from smallholder farmers

Depending on the volumes procured and the number of beneficiaries covered, guaranteed prices through public procurement can be particularly important when the lack of warehousing facilities, roads, risk management instruments and market information systems lead to distress sales at low prices, and the lack of employment opportunities outside farming implies limited capacities of farmers, particularly smallholders, to diversify their incomes. Having a stable market and hence, less variable income, can encourage on-farm investment, bring about improvements in product quality and food safety to comply with the required standards, and strengthen producer associations through which purchasing is usually channelled. In practice, however, the complexity of public procurement programmes implies a high degree of organization and skills in the responsible public institutions. Their price stabilization effect can be limited by the "leakage" of food grains due to poor targeting or wasteful management of stocks. In other cases, such schemes end up benefiting only a small set of farmers, with small producers either unaware of the existence of prices offered by government procurement programmes, or unable to sell through the procurement channels, thereby selling their products to middlemen at prices below the administered price.

Source: Arias *et al.* (2013) and FAO and ICTSD (2013).

Box 3. WTO measure of market price support compared to the economic concept

The measure of market price support in the WTO Agreement on Agriculture (AoA) captures the gap between the current administered price and a proxy of the world price, the fixed external reference price (FERP), taken as an average of import prices in the 1986-1988 period, multiplied by the amount of eligible production to receive price support. This is different from the economic concept of price support. One of the most recognized and widely used measures of this economic concept is the measurement of market price support in the Producer Support Estimate (PSE), which is an ex-post measure that is calculated by the Organization of Economic Cooperation and Development (OECD) for monitoring and evaluation purposes rather than for enforcing binding commitments. Trade distortion is better measured by the economic concept of price support i.e., based on the price gap between the domestic producer price and a reference price based on the current border price. The impact of the market price formula used in the WTO rules was not an issue during the early years of the AoA nor when the Doha Round mandate was being negotiated in 2001, as there was little change in nominal average global agricultural prices between 1986 and 2003. After that date, however, the formula has become more constraining because of the steep rise in nominal world food prices. When world market prices increase significantly in nominal terms relative to the FERP and current domestic market and administered prices follow suit, a gap would develop between the current administered price and the FERP, implying increasing domestic support under the WTO rules, while in reality the difference between world market price and administered price may not increase at all, or even decrease. In such instances, WTO rules may in fact constrain countries in increasing administered prices even when they are set at a level below the current world market price.

Source: adapted from: Matthews (2015) and Brink (2007).

Import barriers to maintain minimum procurement prices

To maintain the procurement prices at the stated level, policy makers often need to implement some level of import protection. When the domestic price is above the import parity price – as would be the case if the government procures the commodity at above-market prices – private actors may import the commodity at the lower international market price and sell to the government at the higher administered price, thereby leaking the intended benefits of the public procurement programme to importing agents and eventually, producers in other countries. It may therefore become necessary for governments to control imports, typically by maintaining tariffs at a level that brings the import parity price to the level of the procurement price (or above), in order for the public procurement programme to contain costs and achieve its objective of supporting domestic producers. There are numerous examples of this in different contexts. For example, before the 1992 reforms of the EU Common Agriculture Policy (CAP), the European Union imposed variable levies on imports to sustain stable domestic prices and its farm support programme. The United States of America similarly used import tariffs and quotas to complement the production control measures implemented in the 1930s (USDA, 1984). However, such policies can adversely affect domestic consumers who pay prices that are higher than world market prices.

Consumer support measures for the release of stocks

Public stockholding programmes are often directly linked to social safety net measures. For instance, India's Targeted Public Distribution System (TPDS) provides certain quantities of food grains at subsidized prices to population groups defined in relation to the government-determined poverty line (OECD and ICRIER, 2018). In other instances, the targeted consumers include populations in disconnected rural areas or poor urban neighbourhoods. One such example is Diconsa in Mexico, which consists of a network of government-owned stores (mainly in rural and peri-urban areas) that sell basic commodities at subsidized prices and represent the only option for food provision in 10 percent of rural localities (Scott and Hernandez, 2017). The intended benefit of these measures is to lower the price of food for certain groups of consumers, with the ultimate impact depending on how effectively the programme can reach the target populations.

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Export restrictions to maintain sufficient domestic supplies and low prices for consumers

To keep domestic prices low for consumers and to protect them from international price shocks, countries may resort to export prohibitions, duties, or other export restrictions in times of short supplies or elevated world prices. These measures were widely used during the food price spikes of 2007/08. While these policies may help to achieve the government's objective of increasing domestic availability and containing rising prices, such measures can also have the effect of lowering domestic producer prices below international market prices, thereby offsetting the effects of any market price support provided to producers through the procurement of stocks and any complementary import-restricting measures. For instance, OECD and ICRIER (2018) found an overall negative Producer Support Estimate for India for the entire period studied (2000 to 2016), in part due to the price-depressing effects of export prohibitions, export quotas, export duties or minimum export prices. Pernechele, Balié and Ghins (2018) similarly noted zero or negative Nominal Rates of Protection (NRP) for a number of commodities in their study of fourteen African countries, resulting from an erratic policy environment in which market measures such as ad hoc export restrictions offset the positive incentives provided to producers through public procurement programmes and other types of support.[9]

Export subsidies for the release of stocks and maintaining stable domestic prices

In cases where administered prices, together with import tariffs, raise domestic prices above world market prices, producers have incentives to expand production to levels that could exceed domestic demand. However, such surplus production cannot be sold to other countries, since the world market price is below the domestic price. In order to release surplus production or accumulated stocks on world markets, governments have often provided export subsidies in order to incentivize exporters to sell at lower world market prices. This was a common policy instrument used by some countries in the past, most notably the European Union, in connection with their market price support programmes. However, the use of export subsidies by the European Union has been declining steadily since 2005 reaching zero in 2013, driven in part by reforms of the CAP, which resulted in reduced food stocks and smaller exportable surpluses (FAO, 2017a). Export subsidies, particularly when provided by large exporters, can have the effect of depressing international prices due to higher supplies on the world market. While this can benefit consumers in net food-importing developing countries, without receiving similar levels of government support, farmers in developing countries can face significant challenges to compete in world and domestic markets. Export subsidies have therefore been at the core of the WTO negotiations on export competition, resulting in the Nairobi Decision in 2015, whereby the Members agreed to eliminate export subsidies and to discipline the use of other forms of export subsidization, including the use of food aid for surplus disposal, to avoid circumvention of the export subsidies decision and to ensure that their trade-distorting impact will be minimized.

2.3. Common issues in implementation and market impacts

Since the objectives of public stockholding are often to support producers while ensuring reasonable prices for consumers, the various policy instruments that are used can have offsetting effects. For instance, while market price support may be useful for supporting poor producers, import tariffs, that are imposed

[9] Other factors such as persistence of market inefficiencies resulting from high transportation costs and lack of post-harvest support also contribute to negative price incentives (Pernechele, Balié and Ghins, 2018; OECD and ICRIER, 2018).

to support the implementation of the market price support measures, can undermine the effectiveness of the measures that aim to lower food prices for the poor. In contrast, consumer support measures, as well as export restrictions that aim to lower prices, can offset the producer incentives provided through public procurement. These and other domestic market impacts, together with the high fiscal costs and operational challenges of implementing public stockholding programmes, necessitate a discussion of their cost efficiency *vis-à-vis* alternative approaches. Moreover, it is also important to examine the impacts of public stockholding programmes on international markets and on the food security of populations in other countries.

Impacts on domestic markets

While providing a guaranteed and remunerative outlet for smallholder farmers can be important for supporting farm incomes, government purchases can promote over-reliance on institutional markets. Moreover, the private sector may be crowded out in downstream processing and trading activities. Even if there are opportunities for private actors, their incentives to invest may be undermined by policy risks in commodities where the government is heavily involved in marketing and distribution and where the corresponding policies change often. These effects can undermine the long-term development and stability of agricultural markets which are needed to boost investment and technology adoption.

Public stockholding programmes also affect consumption. While food distribution at below-market prices can be an important form of social protection for the most vulnerable, for those poor consumers not reached by such measures, the combination of high administered prices and import barriers can imply higher consumer prices, with negative effects on their access to food, in the absence of other concomitant consumer support measures. Moreover, in the long run, as production may be skewed towards commodities that are procured by the government, typically non-perishable products like cereals, at the expense of higher-value products, the resulting incentives could be detrimental to diversifying domestic diets towards more nutritious products.[10] For instance, in Egypt, a 2017 research study suggests that the food subsidy system contributed to unbalanced diets by providing calorie-rich foods (*baladi* bread and flour, as well as other energy-dense, nutrient-poor foods) at very low constant prices, and with amounts established in the ration cards of the beneficiaries that are well above the dietary recommendations (FAO, 2017b).

Operational effectiveness

In many cases, the multiplicity of objectives and functions of responsible public agencies can be challenging to achieve in practice. Buffer stock programmes that aim to provide both high prices for producers and low prices for consumers often end up achieving only one goal at the expense of the other (Deuss, 2015). For example, in the Dominican Republic, the rice price support mechanism and trade restrictions have resulted in rice prices that are more stable than international rice prices, but at levels substantially above world market prices (Krivonos and Dawe, 2014). That is, there is a potential trade-off between risk reduction and the effects of changes in price levels. Moreover, the capacities for management, oversight, and coordination with other agencies can be limited or overextended. For instance, poor targeting of beneficiaries for regular or emergency food distribution can undermine the achievement of the programme's food security objectives.

[10] This discussion only relates to food distribution programmes linked to public stockholding. It does not consider the potentially positive effects on dietary diversification from improved incomes for those farmers benefiting from public procurement.

Similarly, unpredictable, or non-transparent rotation decisions, and the difficulty of judging the need for interventions and their timing may add to market uncertainty, thereby undermining the achievement of price stabilization objectives (FAO, 2014a).

Fiscal sustainability

One intractable issue with operating public stocks is their high fiscal costs. In a study of public stocks in India, Indonesia, the Philippines and Zambia, the costs of operating public stockholding programmes were estimated to vary, on average, between 0.5 percent to 1.5 percent of the GDP in different years (World Bank, 2012). These may include the direct costs of procurement, storage, release, and distribution of stocks, but also inefficiencies in implementation which can compound the costs. The costs of holding stocks, particularly during consecutive periods of abundant harvests can be fiscally unsustainable, and the potential for food waste where storage systems are inadequate can be significant (FAO and ICTSD, 2013). For instance, in Zambia, expenditure tied to the Food Reserve Agency (FRA), which purchases over 60 percent of marketed maize in some years, comprises one among two major components of the agriculture sector budget. It is estimated that the 15 to 30 percent of the procured grain are lost due to poor storage (Chapoto, 2019). In other cases, like Pakistan, where public stockholding is financed through commercial loans, the costs of interest payments can be substantial. Moreover, large volumes procured by government can also result in bulging inventories that cannot be sold easily at the administered price, and for which additional costs may be incurred in disposals to domestic or foreign markets (Krivonos and Dawe, 2014; Calpe, 2017). In contrast to these experiences, public stockholding of rice in Indonesia is cited as a relatively more sustainable case of price stabilization with minimal procurement of rice (8.2 percent of production on average, and never more than 10 percent) (Galtier, 2014).

Cost efficiency

Given the significant budgetary outlays associated with public stockholding and their possible market impacts, it is important to consider these programmes *vis-à-vis* other approaches – particularly cash transfers/direct payments – that may be used to achieve the same objectives.[11] For instance, a policy objective of supporting farm incomes may also be achieved through direct payments rather than public procurement – an approach that has been adopted in the European Union, United States of America, and China in recent years. Similarly, a policy objective of addressing chronic food insecurity can also be achieved by providing cash to the food insecure, which would not only have lower transaction and administrative costs compared to public stockholding measures but would also promote a diversified diet by offering beneficiaries more choices. For instance, in the case of India, a policy simulation projected that replacing TPDS with unconditional cash transfers ("direct benefit transfer") would be less costly for the government, the per capita calorie consumption for low-income populations would be at least as high, if not higher, and the composition of diets, more varied (OECD and ICRIER, 2018).

However, the viability of direct payments and cash transfers as alternatives to guaranteed purchases for farmers, and food distribution for consumers, depends, *inter alia*, on the depth of financial inclusion of the poor, which can be particularly challenging in remote areas and among the illiterate. Moreover, the potential economic and social impacts of cash versus in-kind transfers need to be considered for the consumers as well. For instance, in a study of cash versus food transfers in Mexico, Cunha, De Giorgi and Jayachandran (2019) find that in poor and remote villages, the price effects of both types of transfers can be significant – cash transfers lead to price inflation while in-kind transfers, by increasing local supply, depress prices. Even without their price inflationary effects, the value of cash transfers can be eroded when prices rise, unless they are consistently revised. For instance, Gadenne *et al*. (2017) find that given substantial price risk in India, in-kind transfers may offer an insurance against rising prices as opposed to cash transfers. Moreover, the impacts of cash transfers on intra-household dynamics are also subject to some debate: while they offer the potential for economic and social empowerment of women, such outcomes are influenced by existing gender-norms and how the programmes are implemented (FAO, 2015a). Indeed, context and programme design are found to be important determinants of the impacts of cash versus food transfers (Gentilini, 2016).

If the policy objective is to manage acute food insecurity, such as during food crises, lowering import barriers to allow more imports may provide a less costly alternative to public stocks. However, the effectiveness of this alternative would depend on whether food security depends on a commodity that is traded on international markets. For instance, in many countries in the Sahel region, the main staples consumed by the poor are millet and sorghum, for which there is limited international trade. While regional markets may be a source of imports, they have limited potential to stabilize price increases caused by climatic hazards, which tend to affect most of these countries simultaneously (European Commission, 2018). As such, there may be limited alternatives to public stocks for emergency purposes. In other countries, where staples are traded on international markets, stabilizing prices through imports depends on whether the food price crisis is localized or global, as demonstrated by the 2007/08 experience. For instance, while for many years, Bangladesh managed to mitigate rice price increases through increased imports, this was not possible in the event of the global rice price crisis of 2008, where lowering of import barriers by many importing countries

[11] Ideally, a cost-benefit analysis of alternatives should be explored in each country context.

like Bangladesh, together with export restrictions imposed by exporting countries provoked panic buying that exacerbated the increase in domestic rice prices (European Commission, 2018). As discussed in Chapter 3, this was also the experience in many other countries in Africa and Latin America, which revived their public stockholding policies following 2007/08.

Effects on international markets

Beyond domestic considerations, stockholding policies, through their impacts on domestic production, can affect trade volumes depending on the resource endowment of a country, the scale of price distortion that is created by administered prices, and the volumes procured (FAO and ICTSD, 2013). Production of potentially competitive export products could be reduced, as the price incentives may divert production towards products supported by the government programme. Imports from other countries may be reduced to the extent that a larger share of consumption is covered by domestic production (FAO and ICTSD, 2013).

World prices can also be affected by public stocks, depending on the magnitude of agricultural output in a country and its share in world trade. Stocks held by countries with large internal markets can have a positive stabilizing effect on the global market. This is particularly important in thinly traded markets such as rice (only 9 percent of world production is traded internationally). For example, China's rice consumption is approximately three times the volume of rice traded internationally, and any significant drop in domestic production in the absence of stocks would have thrown world markets in disarray (Calpe, 2017). In fact, following the food price crisis of 2007/08, the stability in global rice prices relative to wheat and maize prices, was in part attributable to the larger stocks held by major producing countries such as India, Thailand and Vietnam since 2003 (Timmer, 2014).

However, storage policies can also depress international prices if the stocks are periodically sold at below-market prices on international markets, as was the case with export subsidies used by the United States of America and the European Union in the past to dispose of accumulated stocks (Galtier, 2014). The timing of the disposal of stocks, especially if unpredictable and not factored into traders' decision-making can influence world price levels and volatility (FAO and ICTSD, 2013). Especially when large quantities of surplus stock are released into already thin global markets, they could have a suppressing effect on international prices, to the detriment of other exporters.

Considering the potential effects of public food stockholding on global markets as described above, the matter has been the subject of intense debates at the WTO.

CHAPTER 3

Public stockholding in practice: regional experiences

As discussed in Chapter 2, it is often challenging to distinguish between different types of stockholding programmes in practice, and to separate them from the broader set of agricultural support measures. Part of the reason for this is that in many countries, the purpose of public stocks has changed over time. Programmes that started out with the aim of operating emergency stocks have evolved to feed into regular social safety net programmes, and/or to incorporate an element of price support to farmers in the acquisition of the stocks. On the other hand, programmes that started out with the objective of operating buffer stocks have evolved into emergency stockholding functions only. As such, one public agency may be responsible for multiple functions that concern domestic markets as well as trade policy measures, and with stocks being used for more than one purpose. Below is a synthesis of Annex A, which highlights some illustrative examples of public stockholding programmes in different geographic and historical contexts, focusing on common elements among them. The objective is to showcase the diversity of the instruments used and the scope of such programmes, focusing mainly on key staples such as cereals. The responses of governments to the COVID-19 pandemic and related lockdown measures, also provide examples of the role of public stocks during periods of market uncertainty (Box 4).

Box 4. Procurement and release of food stocks during the COVID-19 pandemic

Abundant stocks at the beginning of the pandemic likely contributed to confidence in food markets, with the global stocks-to-use ratio for most commodities in 2020 being substantially higher than in 2007/08. However, although stock levels, both in absolute terms and relative to their use, have followed an upward trajectory, they are increasingly concentrated in a few countries, with China, the United States of America, India, the European Union, Brazil, Argentina, and the Russian Federation accounting for 76 percent of all cereal stocks today, and China alone estimated to hold the majority of that. On the one hand, large stockpiles held by important market players can have a stabilizing effect on international markets, providing reassurance on the availability of supplies. On the other hand, the fact that large stockpiles are held by large countries characterized by strong food consumption trends, such as China and India, can also imply that these stocks may be less responsive to global price signals in the event of shocks that also affect their domestic markets.

During the first wave of the COVID-19 pandemic, several net importing countries expanded cereal stock purchase operations, including through imports, to build up food stocks with the objective of meeting the needs for public food distribution programmes, and/or extending support to farmers facing marketing disruptions associated with lockdowns. For instance, Bangladesh increased its wheat procurement target by 50 percent, and Kyrgyzstan announced funding to purchase wheat and wheat flour as emergency stocks for market and price stabilization, while Egypt approved a financing agreement with the International Islamic Trade Finance Corporation (ITFC) for the purchase of essential commodities including wheat. At the same time, China, despite holding large stocks, reportedly expanded its purchases of rice.

Several countries, including those with sizable stockholding operations, such as India and China, released stocks to increase domestic market availability and support vulnerable populations. India increased the monthly quota of subsidized food grains, including wheat and rice, to beneficiaries of the Targeted Public Distribution System and also provided free monthly rations of wheat and rice (and pulses in the first run of the scheme) for 800 million people. China released upwards of 10.14 million tonnes of grain, including maize, during the first wave of the pandemic (between January and June 2020) to the market, a 43 percent increase from a year ago, to address domestic shortages in certain parts of the country.

Source: FAO (2021).

3.1. Asia and the Pacific – mainly rice and wheat

The origins of public food stockholding in many countries in South and Southeast Asia dates back to the 1960s and 1970s, with countries aiming to manage food security threats arising from weather-related production shocks and mitigating the risks of adopting the Green Revolution technologies of the time (Rashid, Gulati and Cummings, 2008). While some countries such as Bangladesh and Vietnam reduced government intervention in staple food markets during a period of liberalization in the 1980s and 1990s, there has been a renewed policy of public stocking in Bangladesh following the 2007/08 food price crisis (Rashid, Gulati and Cummings, 2008; European Commission, 2018). In other countries, public stocks, particularly for rice and wheat, have been maintained since their original establishment, albeit with changing objectives and functions. At the same time, existing cooperation agreements from the 1970s and 1980s that established regional food reserves were revitalized (for instance, the South Asian Association for Regional Cooperation Food Bank (SFB), in 2007, and the ASEAN-Plus-Three Emergency Rice Reserve (APTERR) in 2011), although they achieved different levels of implementation.[12]

[12] The SFB was established in 2007, aiming to address some of the implementation challenges associated with the SAARC Food Security Reserve (SFSR) (established in 1987), but it still remains to be operationalized (Rahman, Bari and Farin, 2018). The APTERR was also established in 2011 to address the implementation challenges of its predecessor (East Asia Emergency Rice Reserve, EAERR), and prior to that the ASEAN Food Security Reserve (AFSR) and ASEAN Emergency Rice Reserve (AERR), which were established in 1979 (Rahman, Bari and Farin, 2018). The APTERR additionally expanded membership to the reserve, to include China, Japan and the Republic of Korea, which together comprise the vast majority of APTERR stocks. These stocks consist of "Earmarked Emergency Rice Reserves" (consisting of specific levels of stocks that are voluntarily earmarked by each country) and "Stockpiled Emergency Rice Reserves" (rice voluntarily donated to the APTERR in the form of cash or physical stocks), with the stock release functions linked to specific forms of emergencies (www.apterr.org/faq). Operationalization and maintenance of the reserve is facilitated by the establishment of a fund.

The stated objectives of the national policies linked to public food stockholding fall within a spectrum of supporting both farmers (providing remunerative prices, assured markets) and consumers (stabilizing prices and markets, ensuring food security) and coping with emergencies. In all the cases examined, the government currently prioritizes procurement from domestic farmers at administered prices (although imports can be important for meeting shortages), while the mechanisms for stock release tend to differ. Until recent policy changes in Indonesia, it has been similar to India in that the stockholding program was mainly linked to targeted food distribution through social safety net programmes. the Philippines also has a food distribution programme that targets end-consumers, but also sells stocks at subsidized prices to accredited retailers. Pakistan on the other hand, releases stocks at subsidized prices to mills (rather than directly to consumers or end markets) and sets ceilings on flour prices (this is similar in design to public stockholding measures in a number of countries in Near East and North Africa). Unlike the other cases, China releases stocks depending on market conditions, with the government aiming to improve its stock release mechanism as part of its overall agricultural policy reform.

Table 1. Public stockholding programmes in selected countries in Asia and the Pacific

China	The objectives of food stocks are to regulate grain supply and demand, stabilize grain markets, and cope with emergencies. The China Grain Reserve Corporation (SINOGRAIN) is tasked with procuring and managing stocks, and controlling trade of grains, mainly rice and wheat. SINOGRAIN purchases grains if the market price drops below yearly minimum price levels. For cotton, soybeans and rapeseed, public stockholding was discontinued in 2014/15, and for soybean and maize, direct payments based on area planted have replaced intervention prices. In 2020, ceilings on procured volumes of wheat and rice were established for the first time. Public stocks are released through auctions when market prices or demand are high, although only a small proportion tends to be auctioned due to high auction prices or inconsistent product quality.
India, Indonesia and the Philippines	All three countries have elements of procuring grains from farmers at administered prices, and releasing them through targeted distribution programs, although several changes have been introduced within the last 2 years. In India, public stocks maintained by the Food Corporation of India (FCI) aim to serve the dual functions of providing farmers with remunerative prices and making food grains available to the vulnerable at reasonable prices. Similarly, in Indonesia, the mandate of the Badan Urusan Logistik (BULOG) has historically included purchasing rice, as well as providing subsidized rice for low-income groups; and in the Philippines, the National Food Authority (NFA) (recently transformed from a "trading and regulatory agency" to a "buffer stocking agency") has the objective of procuring paddy solely from local farmers and maintaining "optimal levels of stocks". In all three cases, procurement from farmers is at administered prices. Food distribution programmes aimed at a targeted group of consumers have been key outlets for food stocks in all three countries: the Targeted Public Distribution System (TPDS) in India; the Beras untuk Keluarga Miskin (RASTRA) programme in Indonesia, until 2019; and the rice distribution programme in the Philippines, which sets release prices at wholesale and retail levels to distribute to rice-deficit provinces (although emergency interventions are also key outlets). While India recently expanded its food distribution programme during the COVID-19 crisis (Box 4), Indonesia's policy has shifted towards replacing RASTRA with a programme of electronic food vouchers, together with setting maximum retail prices of rice.
Pakistan	In Pakistan, the objectives of public stocks are to support farm incomes as well as stabilize prices for consumers. The Pakistan Agricultural Storage and Services Corporation (PASSCO) procures wheat at administered prices, with its operations financed through commercial loans. Stocks are mainly released to millers at subsidized prices, with the government setting ceilings on the sales price of flour processed from subsidized wheat – a policy that is similar in design to those that have been used in countries in the Near East and North Africa region.

3.2. Latin America and the Caribbean – mainly wheat, maize, rice and beans

In Latin America and the Caribbean (LAC) agricultural market interventions have been substantially reduced during the 1980s and 1990s. However, since the 2007/08 global food crisis, some countries renewed their interest in public stockholding, introducing measures to establish public grain stocks, or to support private stock operations (Demeke *et al.,* 2014).

For example, faced with export restrictions on wheat by main exporters and high dependency on imports to satisfy the domestic demand, the Plurinational State of Bolivia implemented a number of measures to boost its domestic production and replenish its stocks. Similarly, Brazil revitalized the national food supply agency to manage food stocks for both emergency purposes and price stabilization. Likewise, in other countries including Ecuador, state-owned enterprises have been established to oversee the procurement, storage, and distribution/marketing operations. Other countries, including Colombia and the Dominican Republic, did not maintain public food stocks, but subsidized storage of grains by farmers or private companies at the time of harvest when prices are low, and subsequently releasing stocks during the lean season. Others, including Honduras, Nicaragua and Venezuela also maintained food stocks as part of food security programmes, with purchases from farmers and distribution of food (FAO, 2017c).

Table 2. Public stockholding programmes in selected countries in Latin America and the Caribbean

Brazil	Historically, the *Companhia Nacional de Abastecimento* (CONAB) played an important role in implementing a policy of stabilizing agricultural prices and guaranteeing rural incomes, but this was phased out during a period of economic reforms in 1990s. After 2007/08, Brazil revitalized CONAB to manage food stocks for emergency purposes and price stabilization. Purchases are made at minimum prices, which are operationalized through different purchasing programmes e.g., direct purchases from farmers as well as premiums paid to commercial buyers/ wholesalers who buy at minimum prices. In addition, CONAB runs a specific programme for procuring food from family farmers (*Programa de Aquisicao de Alimentos* - PAA) to build stocks and supply safety net programmes such as school feeding schemes.
Bolivia (Plurinational State of) and Ecuador	In both the Plurinational State of Bolivia and Ecuador, following the 2007/08 price spikes, specific agencies were established for public stockholding: the *Enterprise for Support in Food Production* (EMAPA) in the Plurinational State of Bolivia, and the *Unidad Nacional de Almacenamiento* (UNA) in Ecuador (although the UNA had a predecessor *Empresa Nacional de Almacenamiento y Comercialización* - ENAC). In both countries, grains are procured at administered prices: in the Plurinational State of Bolivia, EMAPA pays a "fair price", equivalent to the sum of the production cost plus a margin; in Ecuador, prices are set in each marketing season, based on similar considerations of production costs and producer margins. Both EMAPA and UNA are also responsible for marketing of products. EMAPA for instance, transforms wheat into flour and sells the products at fixed prices to consumers, including bakeries, through their own selling points or other channels.
Chile	COTRISA is a state-owned enterprise that is in charge of several functions related to public stockholding, such as buying, selling, packaging, storage, transporting, distribution and trading, aiming to improve marketing conditions of small producers. Purchases are made when domestic prices decline, taking as a reference international prices and import costs.

3.3. Near East and North Africa – mainly wheat

To fulfil national food security objectives, Near East and North African (NENA) countries make use of a number of agricultural policy measures that include market price support, storage, and food distribution at subsidized prices. However, because of the unfavourable natural endowments and resource constraints, often leading to highly variable cereal production year-on-year, NENA countries tend to replenish their public stocks mainly by means of imports.

For instance, Egypt, while adopting some market price support measures to help producers, became one of the biggest wheat importers worldwide (WTO, 2018a). Similarly, Saudi Arabia, which was a net exporter in the 1990s, made the decision to significantly limit the support to wheat production, and now relies almost exclusively on imports for its stockpiling programme.

While these overall policy changes led to a substantial reduction in the general support to agriculture in the region, such practices made countries of Near East and North Africa highly dependent on food imports and therefore on international commodity markets (OECD and FAO, 2018).

Table 3. Public stockholding programmes in selected countries in Near East and North Africa

Egypt, Jordan and Tunisia	In general, in Egypt, Jordan and Tunisia, public stocks aim to fulfil the dual objectives of supporting farmers and consumers. In all three countries, procurement from domestic farmers is at administered prices. The agencies responsible for domestic procurement are usually also tasked with importing grains: in Egypt, it is the General Authority for Supply of Commodities (GASC); in Jordan it is the Ministry of Industry, Trade and Supply (MITS); and in Tunisia it is the Grain Board. Until recently, in both Egypt and Jordan, the supply chain of wheat from public stocks to mills, to bakeries and final retail outlets was regulated through fixed prices. However, in 2017 and 2018 respectively, both Egypt and Jordan announced a move away from such a policy: in Egypt, only the price of bread would be fixed (and the government would pay bakeries the difference), and in Jordan, direct cash subsidies would be provided to beneficiaries. Tunisia maintains fixed prices for the sale of cereals to mills and semolina factories.
Saudi Arabia	While having previously focused on achieving self-sufficiency for products such as wheat, to safeguard natural resources, Saudi Arabia introduced a policy change in 2008 that led to an almost complete reliance on imports for the stockpiling programme, with the Saudi Grains Organization (SAGO) tasked with importing and storing wheat. Wheat stocks are used for supplying bakeries with wheat flour at subsidized prices.

3.4. Sub-Saharan Africa – mainly millet, sorghum, maize

Public food stocks in many countries in the Sahel were created in response to the food emergency of early 1970s, when the region suffered severe droughts, and the high prices in international markets created challenges for securing adequate levels of food imports (Murphy, 2009). During a period of liberalization of grain markets in the 1980s, public stocks were significantly reduced and reformed to mainly serve emergency functions ("Stock National de Sécurité", SNS), which were co-managed by donors and linked to early warning systems (Galtier, 2019). However, following food crises in 2005 (for millet and sorghum due to drought and locust outbreaks) and 2008, there was a resurgence in public stockholding programmes for price stabilization; for instance, in Burkina Faso, Mali, and Niger (which built additional "intervention stocks" that were directly managed by the government, as well as local stocks or "cereal banks" managed by communities).[13] The food price crisis of 2008 (particularly rice) also gave impetus for two initiatives: the networking of national public stocks (RESOGEST), and the building of a regional food reserve – the ECOWAS Regional Reserve Project –, which currently has the framework and institutions in place but is yet to be implemented (Galtier, 2019).

Several countries in Eastern and Southern Africa also established public stockholding mechanisms (mainly maize) for the purposes of price stabilization. Countries such as Kenya, Malawi, Zambia and Zimbabwe operate buffer stocks for price stabilization (buying maize at minimum prices following harvest and selling at ceiling prices) (Kornher, 2018), together with strategic reserves for emergency purposes (through subsidized or free food distribution to the most vulnerable populations). Other countries such as Ethiopia, Rwanda and the United Republic of Tanzania aim to operate strategic reserves for emergency purposes only (Kornher, 2018), although their mechanisms of stock procurement and release may involve fixed prices. The examples below illustrate these three different types of stockholding programmes that are similar to those implemented by other countries in the same sub-region.

[13] An important consideration in this regard, was that the main staples consumed by the poor in the Sahel region are coarse grains like millet and sorghum, which are not traded on world markets, limiting the possibility to mitigate price shocks through imports (Galtier, 2019).

Table 4. Public stockholding programmes in selected countries in the Sub-Saharan Africa

Mali	Two kinds of stocks are held: the Stock National de Sécurité (SNS), mainly comprised of millet and sorghum, and aimed at responding to food emergencies; and the Stock d'Intervention de L'État (SIE), mainly comprising of rice, aimed at regulating markets. Procurement for both stocks is from domestic producers at administered prices. Stocks are released from SNS for free or subsidized prices during emergencies, and from SIE at subsidized prices to targeted consumer groups. Separately, local stocks are also maintained by municipalities.
the United Republic of Tanzania	In the United Republic of Tanzania, the mandate of the National Food Reserve Agency (NFRA) is to ensure availability of food in times of shortage. Although the mandate does not explicitly include price stabilization, the NFRA procures maize at annually set prices and releases it through three main channels: directly to the food insecure (identified based on annual vulnerability assessments) for free or at highly subsidized prices; to WFP and national institutions such as prisons at a premium; and to millers at subsidized prices, with specified flour retail prices.
Zambia	In Zambia, the Food Reserve Agency (FRA) aims to ensure a reliable domestic supply and to stabilize prices. A pan-territorial, pan-seasonal administered price is intended to serve as the minimum price, which has often been above wholesale prices. Maize is released on the market at subsidized prices to processors, who are required to reduce the wholesale price of maize meal to pass the subsidy on the consumers. Stocks are also sold at below market prices directly to vulnerable communities.

3.5. Europe and North America – selected cereals, dairy and meat products

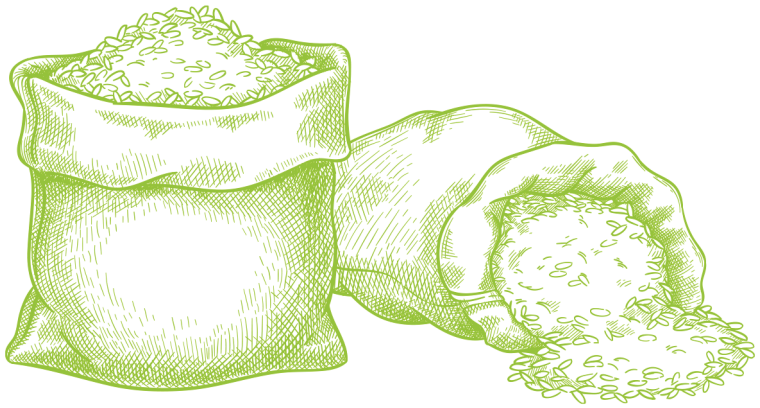
Public stockholding was a common feature of agricultural policy in the European Union and the United States of America in the past, mainly linked to programmes to support farm incomes and prices. With the evolving structure and growth of the agriculture sector in both the European Union and the United States of America, these policy measures also evolved towards more direct forms of income support and incentives for market-oriented production, reducing or eliminating the use of public stocks.

Table 5. Public stockholding programmes in selected countries in Europe and North America

European Union	In the thirty years between the adoption of the EU Common Agriculture Policy (CAP) in 1962, to a fundamental reform of the CAP in 1992, public food stocks were accumulated as a by-product of farm income support measures that encouraged surplus production. Intervention agencies would buy commodities when prices fell below a fixed minimum price. Through the CAP reform process that was initiated in 1992, these minimum support prices were gradually reduced, obviating the need for public stocks. Instead, direct payments based on historical levels of production were introduced, followed in 2003 by the Single Farm Payment (decoupled from types of products and volumes produced), followed by further reforms in 2015 that allow for combining different direct payment schemes based on the national context. Negotiations are ongoing to shape the next version of the CAP which will come into force in 2022.
United States of America	In the 1930s, the United States of America implemented a policy that aimed to raise farm prices through a reduction in food supply (as opposed to the more direct form of farm income support in the European Union). The way the policy was implemented resulted in the accumulation of public stocks. The Commodity Credit Corporation (CCC) made "non-recourse loans" to farmers at higher-than-market prices i.e., the loans could be satisfied by forfeiting the commodity pledged as collateral when prices dropped below the "loan rate". In this way, the loan rate became a floor price in the domestic market, and the CCC acquired stocks by taking title to the farmers' grain if they failed to redeem their loan. The role of the CCC in commodity storage and price setting was reduced by the mid-1980s and essentially eliminated by the 1990s. The Farm Bill of 1996 introduced decoupled farm income support payments, although subsequent Farm Bills of 2002, 2008, 2014 and 2018 introduced a reversal towards subsidy payments that are tied to current market conditions.

CHAPTER 4

Administered prices



Procurement of domestically produced agricultural and food products at pre-defined minimum purchase prices can be linked to any type of public stocks. Since the objectives of the stocks, and therefore of public procurement can differ, the way in which they provide incentives to producers also vary (Box 5). For instance, prices can be set based on considerations of production costs, farmer margins, market prices, or a combination of several factors; they may be applicable sector-wide, or only to specific regions and categories of farmers; and purchase decisions may or may not be dependent on market price fluctuations relative to the government price. As such, while the exact nature of, and the nomenclature used to describe the government-set prices may not be directly comparable to one another, WTO Members notify their respective government-set prices as "administered prices" in their WTO notifications.[14]

Box 5. Incentives to food producers through public procurement

A 2018 study of public stockholding in different countries identified four mechanisms through which procurement for public food stocks can be used to provide incentives to producers, illustrating the different objectives of government-set prices:

- providing a permanent price support to farmers, through procurement of a large share of marketed surplus, allowing the price to be maintained at a high level;
- providing a permanent support to specific categories of farmers, through targeted purchases from small farmers. Even if prices are in line with prevailing prices in international markets, the existence of a regular market outlet provides production incentives to farmers;
- providing price support to farmers in periods of price collapses, through purchases (even at prices equivalent to the international price) during periods when international prices decline; and
- providing support to specific categories of farmers when there is a need to rebuild the food reserve, through occasional purchases during food crises or to rotate the stock to avoid quality deterioration.

Source: European Commission (2018).

As discussed in Chapter 2, the economic concept of market price support is based on the price gap between the domestic price and a reference price based on the current border price, where the prices reflect commodities at the same level of processing (i.e. farm-gate prices adjusted upwards, based on the specific marketing margins along the value chain up to the f.o.b. or c.i.f. prices as relevant, or vice-versa, for each country). While such a comprehensive assessment is beyond the scope of this analysis, this chapter seeks to provide some additional context to discussions at the WTO, which tend to focus mostly on specific elements of the formula used to calculate market price support, such as the level of the fixed external reference price (FERP) and the definition of eligible production, which are of a technical or legal nature, relating specifically to the provisions of the WTO Agreement on Agriculture. It does so by presenting a snapshot of the trends in administered prices over the last decade, for a selection of countries representing different regions, and for the key staples: maize, rice and wheat. This chapter also underscores the complexities associated with comparative analyses of the impacts of producer price support schemes and public food stockholding on international markets; particularly, challenges in finding appropriate grounds for comparisons, and related data gaps. An in-depth assessment of the drivers of the trends in each country is beyond the scope of this paper. Instead, the goal is to present a comparative overview within the constraints of the available data (Box 6), which may serve as the basis for further detailed analysis.

[14] Further discussion in Chapter 5.

As such, it is important to be mindful of several nuances in interpreting the trends (Box 7).

For each commodity, the following are presented:

- index of nominal administered and international prices (administered prices in national currencies, and international prices in USD/tonne) (2008 = 100) (top left chart);
- levels of nominal administered and international prices in USD/tonne (bottom left chart);
- index of real administered prices (in national currencies) (2008 = 100) (top right chart); and
- levels of real administered and international prices, in USD/tonne (bottom right chart).

Box 6. Data on administered prices between 2008 and 2019

Annex B, Table B.1 provides raw data on administered prices in national currencies. To be consistent with the WTO terminology of administered prices, data from countries' WTO notifications were often used as the first source of information. A complete series for the years 2008 to 2019, in national currencies, was available for Tunisia, and until 2016, for China. For other countries (e.g., Brazil, Indonesia, Jordan, the Philippines, and Saudi Arabia), data was available only for some years in which case other sources of data – mainly national, but sometimes third-party sources including FAO – were used to supplement the data from WTO notifications. For India, Pakistan and Brazil, data from WTO notifications was only available in USD, so data in national currencies was obtained from national sources in order to enable the inflation-adjustment calculations, and in the case of Brazil and Pakistan, to create a more complete time series. For several countries (Ecuador, Egypt, Mali, the United Republic of Tanzania, and Zambia), since no data was available through WTO notifications for the years covered), a combination of national sources, WTO Secretariat reports and FAO publications were used. Data sources and explanations are provided in the Bibliography, section on *Data sources for administered prices*.

To observe changes in the levels of administered prices in different countries, both nominal and real values were indexed to the year 2008. Real values were calculated by adjusting nominal prices (in national currencies) for inflation using national GDP implicit deflators (Annex B, Table B.4). To observe the level of the countries' administered prices relative to international prices, administered prices in both nominal and real values were converted to USD/tonne (Annex B, Tables B.2 and B.3). International prices were also adjusted for inflation using the world average GDP implicit deflator. The selected international prices (f.o.b.) for each of maize, wheat and rice are intended as indicative of the average international price (Annex B, Figure B.1).

Box 7. Interpreting trends in administered and international prices

It may be expected that administered prices follow a trend that is inverse to the movement in international prices. That is, when international prices are high, such as in 2008, and 2011 to 2013, administered prices would be low (since there would be limited need for government intervention to protect farm incomes during these periods); in turn, when international prices decline, administered prices would be raised. However, countries can differ substantially in terms of how administered prices are set relative to the prevailing domestic and international market prices, and also in the extent to which domestic and international markets are integrated, leading to divergences from the expected trend. For instance, even in the event of a decline in international prices, high domestic prices could result from poor harvests in a given year, particularly when infrastructure connecting rural areas to markets is weak. In this situation, a country may choose to decrease the administered price, contrary to the expected trend.

In terms of the relative price levels, it must be noted that administered prices reflect farm-gate prices, whereas international prices are f.o.b. prices, i.e., they reflect the farm gate price plus the margins along the value chain until the final point of export. As such, the administered prices would be expected to be below the international f.o.b. price (to which any applicable import tariff should be added). However, this would depend on the level of the prevailing domestic market price (plus a farmer margin potentially provided by the administered price), as well as the domestic marketing and trading costs until the point of export; each of these factors can differ by country. Moreover, while the analysis presents an indicative international price, the most relevant comparator may also differ by country, depending on the quality of the commodity produced, the extent to which that commodity is traded, and the main trading partners. Lastly, since the price levels are presented in USD/tonne, the trends also reflect exchange rate fluctuations, which can differ substantially by country.

Taking such considerations into account, a few common trends in administered prices stand out for most of the examined countries, and for all three commodities:

- In nominal terms, administered prices in national currencies have been rising since 2008, while international prices have trended downward (top left of the four charts for each commodity). Some exceptions include the Philippines for several years, and Jordan and Egypt for a few years immediately following 2008;
- When converted to USD, nominal values trend downward due to significant currency depreciation in several countries; particularly for Brazil, Egypt, Tunisia and Zambia, and to a lesser extent, India and Pakistan (bottom left charts);
- Adjusting for inflation, administered prices in national currencies have declined since 2008/09 in several countries, with the effects most pronounced in Brazil, Egypt, Pakistan, and Zambia (top right charts). For other countries, sharp increases in nominal prices have been more muted when adjusted for inflation, if not always lower than the 2008 price levels, such as in Ecuador, India, Indonesia and Tunisia, and to a lesser extent, China;
- Adjusting for both inflation and exchange rates, for most countries examined, administered prices have been below indicative international prices for most years (bottom left charts). Exceptions include for instance, Ecuador for maize, and China and Jordan for wheat, and China and Indonesia for Indica rice.[15]

[15] For rice there are three indicative international prices, so the comparison is not as straightforward.

4.1. Maize

In the countries reviewed, administered prices for maize were prevalent in some countries in Latin America, such as Brazil and Ecuador, and in Sub-Saharan Africa, such as in the United Republic of Tanzania and Zambia.[16] While in nominal terms, administered prices have been rising in Brazil and Zambia since 2008, when adjusted for inflation, they have significantly declined (Figure 2). Prices in Ecuador, in both nominal and real values, have followed a different trend, in that they declined in the initial years after 2008, but were raised in 2011 and only slightly lowered in the following years. Converting to USD, real values of administered prices in the United Republic of Tanzania have been below or close to the international price (US No.2 Yellow maize) for the available years; Brazil, well below for all years; and Zambia, below since 2011 (Figure 3).

[16] Administered price for maize was not available for the United Republic of Tanzania in 2008 so an index is not presented.

Figure 2. Index of administered prices for maize

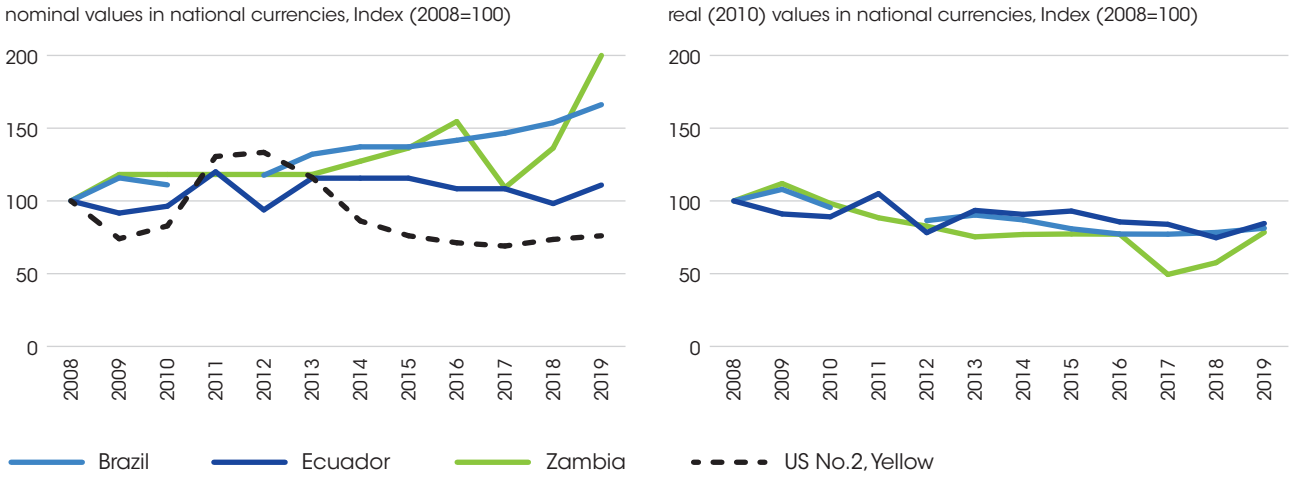
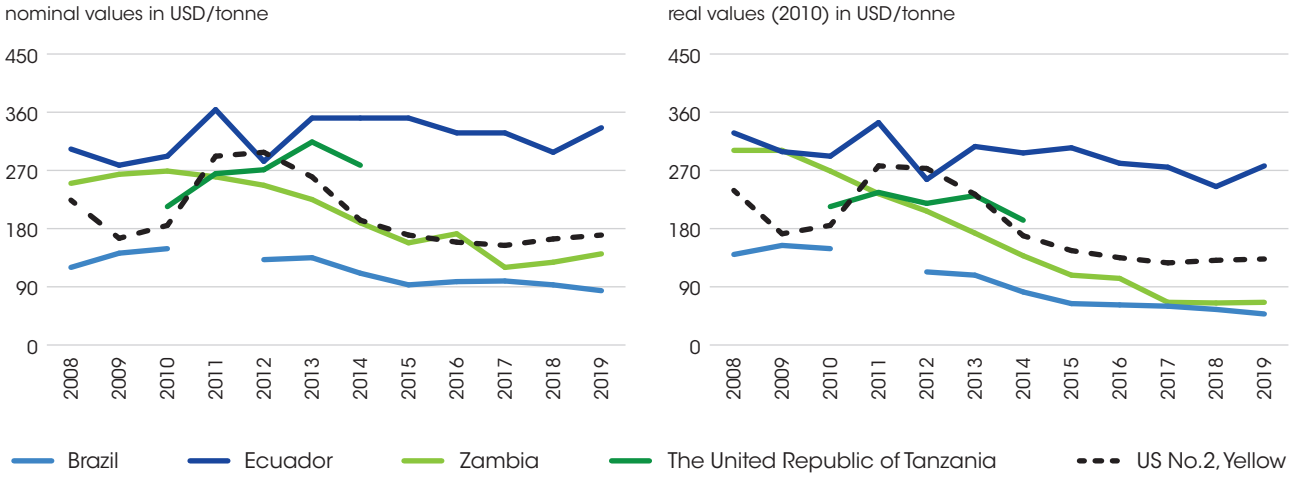


Figure 3. Administered and international prices for maize



4.2. Wheat

Administered prices for wheat are prevalent in several countries in Asia and the Pacific, Latin America, and Near East and North Africa. In China, India, Pakistan and Brazil, these prices have generally risen in nominal terms since 2008, however, once adjusted for inflation, the price increase only holds for China for all years (Figure 4). Relative to international prices, in real values, the administered price in China has been higher than the indicative international price (US No.2 Hard Red Winter) since 2012 (Figure 5). Administered prices in the other countries were generally below the international price between 2011 and 2014. Since 2015, India's administered price[17] has remained close to the international price, while the administered price in Pakistan exceeded the international price in 2016.

[17] Does not include any state-level bonuses. As well, in its notifications to the WTO, India notifies administered prices for wheat in USD/tonne. In this analysis, to be consistent with the approach adopted for other countries, administered prices in USD are calculated using the data available from national sources in INR, and exchange rates from World Bank (see Annex B.1, B.2, and B.3.). Any differences between this data and that which is notified by India to the WTO are due to differences in the exchange rates used.

Figure 4. Index of administered prices for wheat in Asia and Latin America

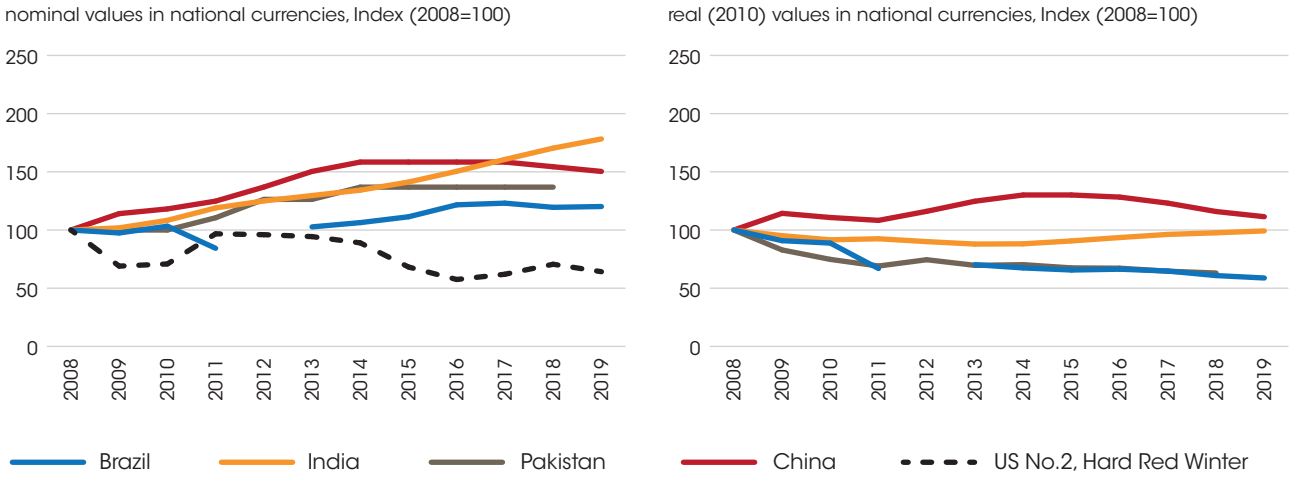
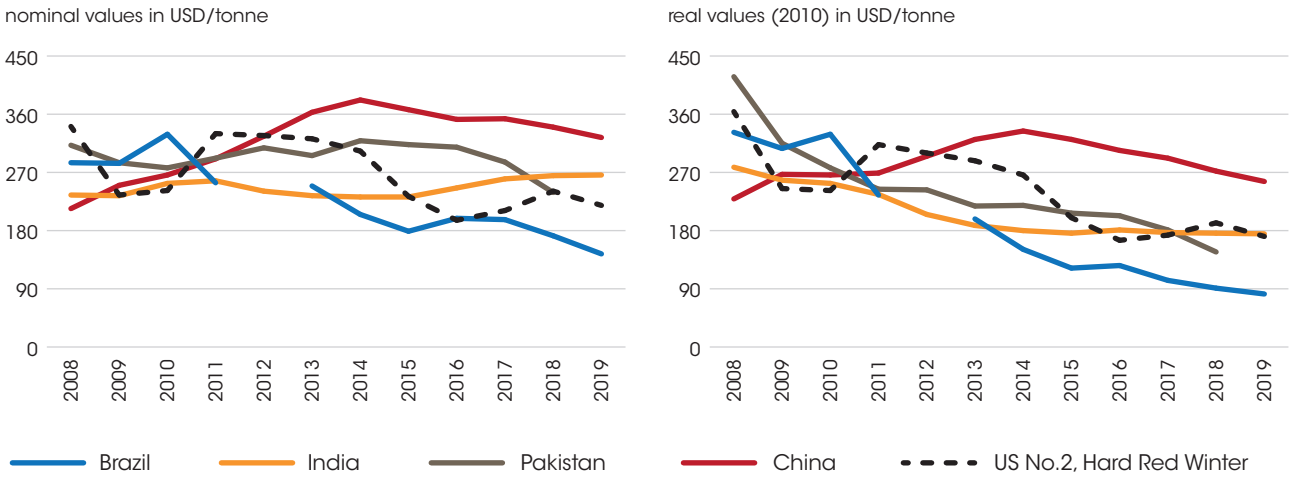


Figure 5. Administered and international prices for wheat in Asia and Latin America



In the Near East and North Africa region, the effects of inflation are particularly pronounced. In Tunisia for instance, there is an upward trend in nominal administered prices for both common and durum wheat since 2008 (Figure 6). However, the price increase is more muted when adjusted for inflation. In Saudi Arabia where nominal prices have been stable since 2008, and in Egypt, where they have been rising since 2010, adjusting for inflation shows a decline in real prices. That said, in both nominal and real terms, administered prices in most countries in the region tend to be relatively close to or above the indicative international price (Figure 7). In real values, the administered price in Jordan has been above the indicative international price for all years for which data is available; in Tunisia (common wheat), it has hovered around the international price; and in Egypt, given significant currency devaluation, the administered price has remained below the international price for most years since 2013.[18] In Saudi Arabia, except for one year (2015) before the procurement policy was phased out, the administered price (in real terms) has remained below the international price since 2010. With a policy change introduced in 2019, administered prices have been re-introduced, at levels above international prices.

[18] It should be noted that the US No.2 Hard Red Winter wheat quality is comparable to all the countries covered, except Tunisia for durum wheat.

Figure 6. Index of administered prices for wheat in Near East and North Africa

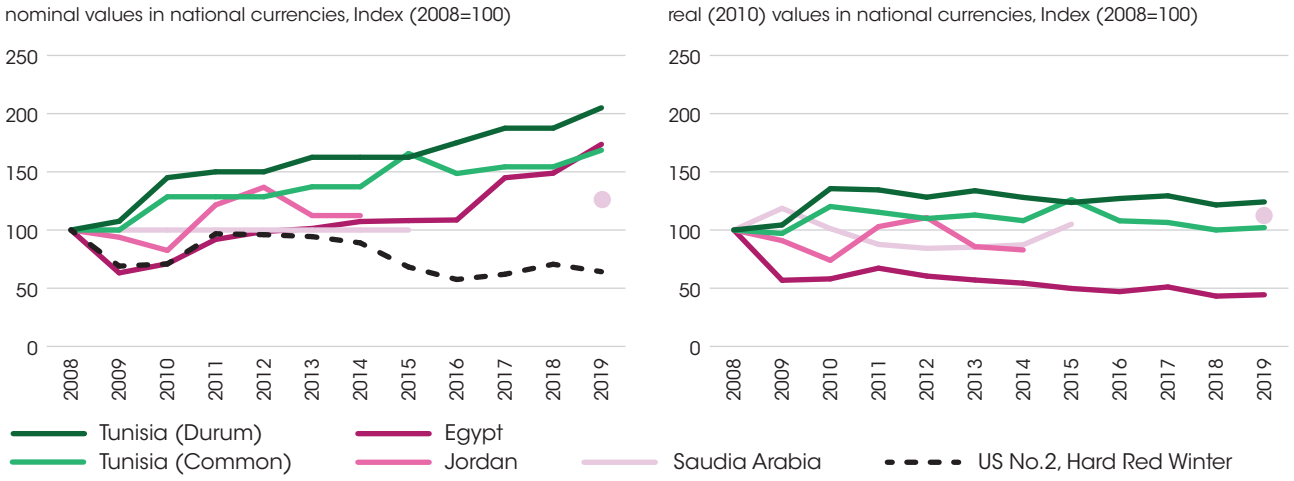
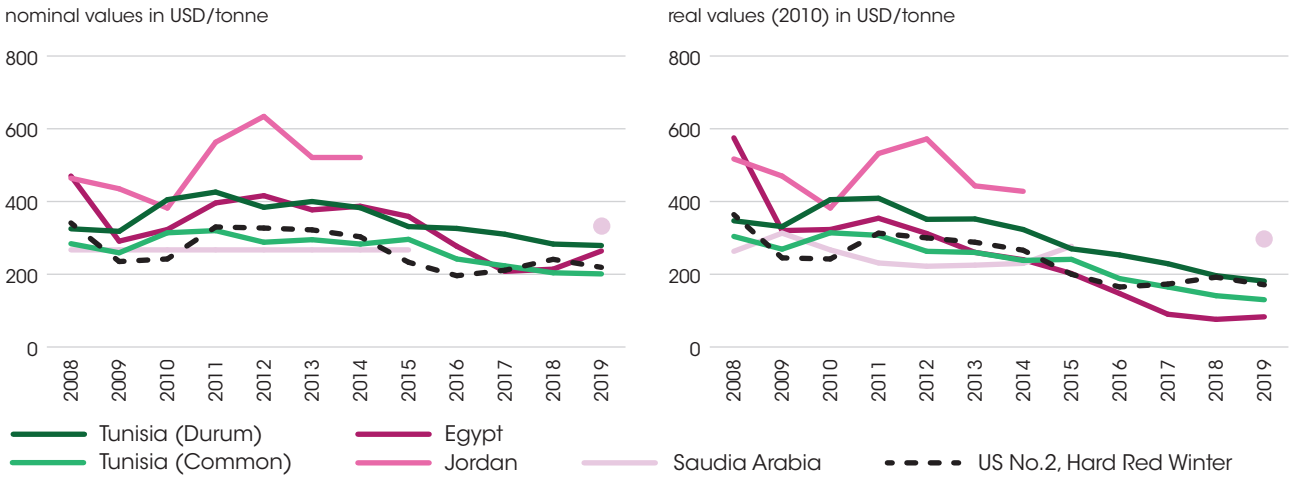


Figure 7. Administered and international prices for wheat in Near East and North Africa



4.3. Rice

Comparative analysis of administered price data for rice needs to consider two important points. First, as discussed in Box 4, administered prices are not directly comparable to international prices, as they do not account for the various post-farm gate margins accrued along the value chain e.g. in milling/processing, transportation, packaging etc. This is particularly clear in the case of rice, where the fact that administered prices are typically applied to paddy (unhusked rice) whereas the FERP refers to rice (i.e. milled form), has led to some discussion on how domestic support for rice is calculated and notified to the WTO (in particular, the appropriate conversions to use to account for quality differentiation; see Box 8). International prices refer to rice (milled form), given that the bulk of rice globally traded constitutes milled rice. Therefore the analysis below presents administered prices for both paddy (typically from national sources) and rice (mostly from WTO notifications).[19] Second, unlike wheat and maize for which different international prices generally converge to similar levels, there is significant segmentation of the

[19] Except for Ecuador, for which only administered prices for paddy were available.

global rice market. In this report, the choice of international (export) price against which the administered prices of the various countries examined were compared is based upon historical trade patterns, in terms of varieties and qualities typically imported (or exported, where the country in question is a net-exporter of rice) and trading partner (or competitor in international markets for net rice exporters). The analysis therefore considers three groups of administered prices: 1) Indica (in Asian origins), including as examples, India (common), China (Indica), Indonesia and the Philippines, which are compared to the price of 25 percent broken (milled) rice from Viet Nam; 2) Indica (in the Americas), including only Ecuador as an example, with the US N.2, 4 percent Long Grain (milled) rice price as the comparator; and 3) Japonica rice, including only China as an example, which is compared to the US N.1, 4 percent Medium Grain (milled) export price.

Box 8. Administered prices for paddy and WTO Notifications on domestic support for rice

In notifying market price support to the WTO, countries must calculate the difference between the applied administered price and the FERP of a product, multiplied by the volume of eligible production (see Chapter 5). In the case of rice, since the FERP refers to the international price, and therefore to milled rice,[20] while administered prices typically apply to paddy, WTO Members have tended to use a conversion factor (usually volume based conversion rates), to adjust the paddy administered prices (and volumes) to their milled rice equivalent. The countries examined in this analysis provide examples of the approaches used:

- **China:** in its notifications from 2008 to 2010, only one rice price was notified, with the explanation that this is a *"weighted average of the prices of Japonica and Indica rice with the ratio of 1:2"*. Based on paddy price data from national sources, the rice prices notified to the WTO for these years appear to be for paddy rather than milled rice. Starting 2011, until 2016 (the last year of China's domestic support notification), Indica and Japonica rice prices are notified separately, with the explanation that *"administered price and eligible production of indica and japonica rice (unmilled paddy) were converted to those of milled rice, using the conversion rate of 70%"*. That is, administered prices of paddy would have to be divided by 0.7 (i.e. a conversion factor of 1.43), to get the resulting milled rice price series.
- **India:** in all of its notifications from (2008 to 2019), India notifies administered prices for rice and not paddy, providing the following explanation: *"Applied administered price is procurement price for common paddy. For converting to the equivalent price of rice a coefficient of 1.5 has been used."* This is consistent with the approach used in its Supporting Tables relating to its Schedules of Commitments (G/AG/AGST/IND).
- **Indonesia:** Presidential Instructions announce five different prices (two for wet paddy, at farmer and mill level; two for dry paddy at mill and BULOG warehouse level; and one for rice, at the BULOG warehouse level). In its notifications to the WTO (available from 2012 to 2018), Indonesia notifies the price of rice at the BULOG warehouses, and therefore no conversion factors are notified.
- **the Philippines:** in its notifications from 2008 to 2015, the Philippines provided the following clarification in this supporting tables for domestic support: *"Palay (paddy) is converted into rice terms based on 65% milling recovery rate"*. It is unclear whether this conversion factor was applied to the administered price, or to procured volumes only. Available data on administered prices of paddy (2013 onwards) shows that paddy prices were at the same level as the milled rice prices notified to the WTO (for the years 2013 to 2015, for which data is available for both series).
- **Ecuador:** no WTO notifications on domestic support are available.

[20] Unless otherwise specified in countries' supporting tables.

Completed and published after the aforementioned notifications, a dispute settlement Panel investigating China's domestic support for agricultural producers commented on some variables used for the calculation of market price support for rice in China during the analysed period (WTO, 2019a). The Panel report used as the starting point, the following provisions in the Agreement on Agriculture: (i) Paragraph 7 of Annex 3 which states that the AMS "shall be calculated as close as practicable to the point of first sale of the basic agricultural product concerned"; and (ii) Article 1(b) of the Agreement on Agriculture, which provides that that "basic agricultural product" in relation to domestic support commitments is defined as the product "as close as practicable to the point of first sale as specified in a Member's Schedule and in the related supporting material". The panel concluded that the "point of first sale" of the "basic agricultural product" would be the point at with Chinese producers of rice sell their product to government agencies, and that the price at the point of first sale for rice would be the "farm-gate", "paddy" or "unmilled" price of both Indica and Japonica rice. It therefore concluded that rather than adjusting the administered prices into milled equivalent, the FERP should be adjusted downwards, to reflect the unmilled equivalent level, noting that mathematically, there is no difference in the resulting calculation of market price support. Moreover, the panel suggested that the FERP be adjusted using a volume-based conversion rate of 70 percent for China, in the absence of the preferred "appropriate price-based conversion data", which could duly account for quality and marketing stage differences.

In nominal terms, administered prices for paddy have been rising since 2008 in India (common)[21] and China (Indica)[22] (Figure 8) as well as Indonesia,[23] while for the Philippines, they have remained below 2008 levels for all years for which paddy price data is available (2013 to 2019) (Figure 10). When adjusted for inflation however, the price increase only holds for China, and for limited years in India and Indonesia (Figure 8). Relative to the international price (Viet Nam, 25 percent broken), in real values, the administered prices of rice have followed different trajectories in the four countries examined (Figures 9 and 11): India's rice prices have been below the indicative international price (it should be noted that India was the leading global rice exporter during the examined period, and therefore India's prices could also serve as a benchmark for other countries);[24] China's rice prices have been above since 2012 (and paddy prices, since 2013) although they have been declining since 2015;[25] Indonesia's rice prices have been above since 2009, while those of the Philippines have hovered around the international price.[26]

[21] India announces minimum support prices for two varieties of paddy: "common" and "grade A". Since the price levels are very similar, only one series (common paddy) was used in this analysis (not including any state-level bonuses). Moreover, this also allows for comparability to India's administered prices for rice notified to the WTO, which refer to common rice.

[22] The paddy price series for China is a simple average of the administered prices for early- and mid-late Indica.

[23] Indonesia's paddy price refers to the HPP government purchase price at the farmer level. It should be noted that in 2017, BULOG had been allowed to pay up to 10 percent more than the applicable government purchase prices. **www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/745945/**

[24] The series "India Rice, WTO" refers to rice prices notified by India to the WTO (in USD/tonne). Using the paddy price data, a conversion factor of 1.5 (Box 8) and exchange rates notified to the WTO to calculate the series in USD/tonne results in the same rice price data as that notified to the WTO, except for the year 2009, when the calculated price is USD 15.82 higher.

[25] The series "China, Indica, WTO" refers to rice prices notified by China to the WTO (in CNY/tonne, converted to USD using exchange rates in Annex B.3) from 2011 to 2016 (see Box 8). To create a complete rice price series, for the years 2008 to 2010, and 2017 to 2019, paddy prices were divided by the conversion factor (0.7) (the series "China Rice, Indica, estimated").

Figure 8. Index of administered prices for paddy and rice in India and China

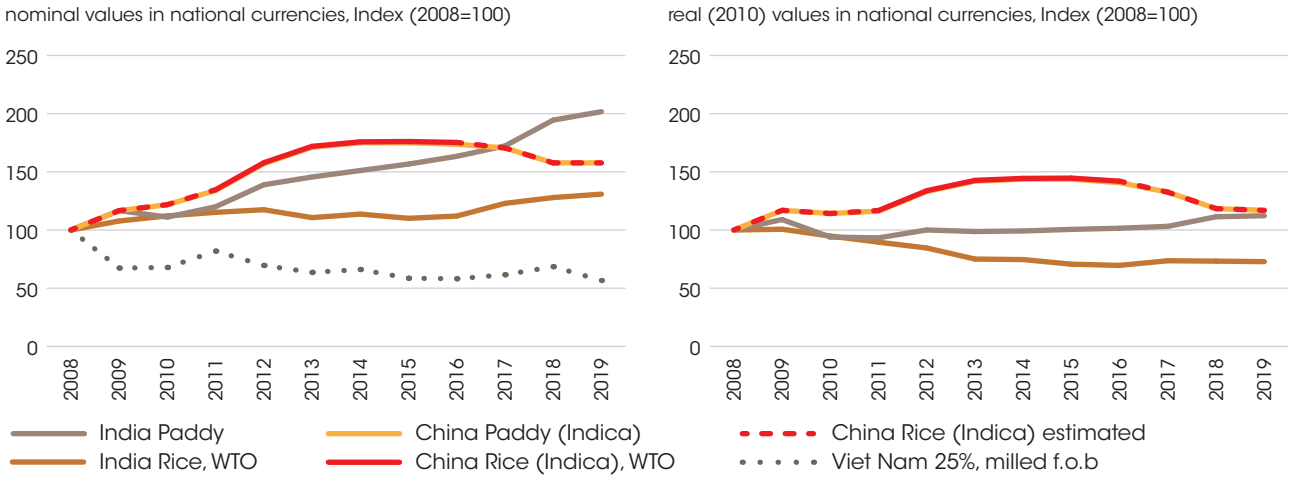
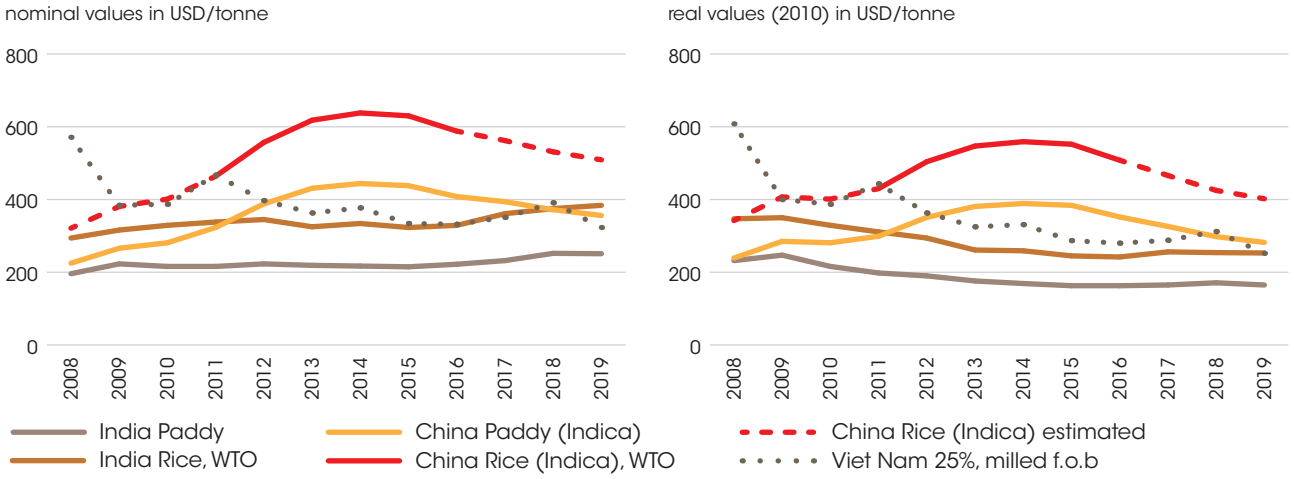


Figure 9. Administered and international prices for paddy and rice in India and China



[26] The Philippines notified administered prices for rice to the WTO from 2008 to 2015, which are at similar levels to administered prices for paddy available from national sources (data available for the years 2013 to 2019) (see Box 8). Reported paddy prices do not include the additional incentive payments that were also provided to farmers on top of the NFA buying price (i.e. a Buffer Stocking Incentive of PHP 3.00/kg; a delivery incentive of PHP 0.20/kg; a drying incentive of 0.20/kg, and a Cooperating Development Incentive Fund of PHP 0.30/kg), until 2019, when they were discontinued; instead, the NFA support price was adjusted upwards (but still below the total price that farmers would receive with the addition of incentive payments) (see NFA, 2020, in *Works Cited, Data sources for administered prices, Philippines, Paddy, 2020*).

Figure 10. Index of administered prices for paddy and rice in Indonesia and the Philippines

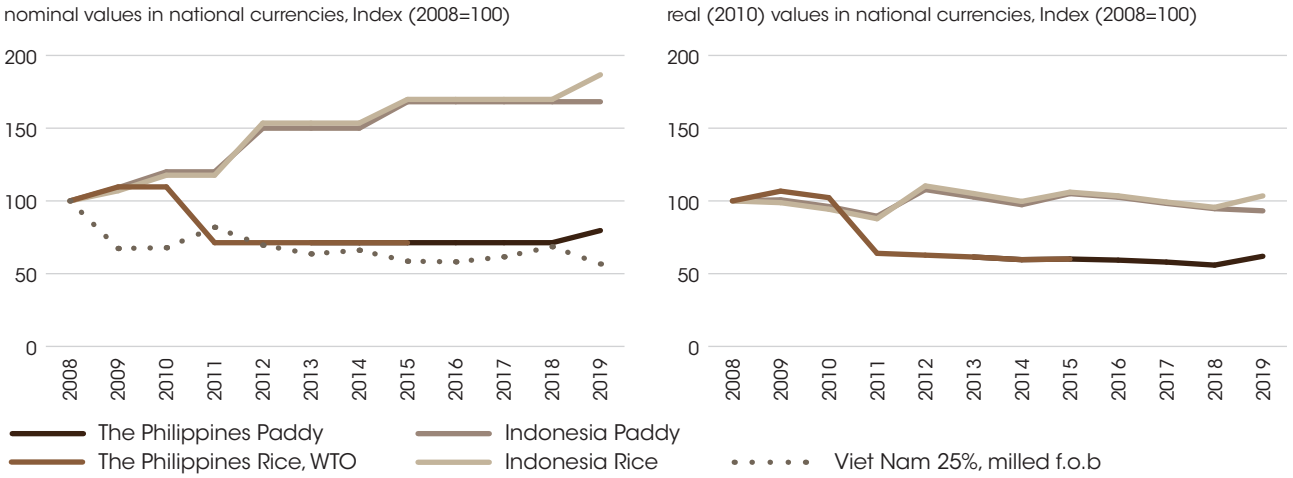
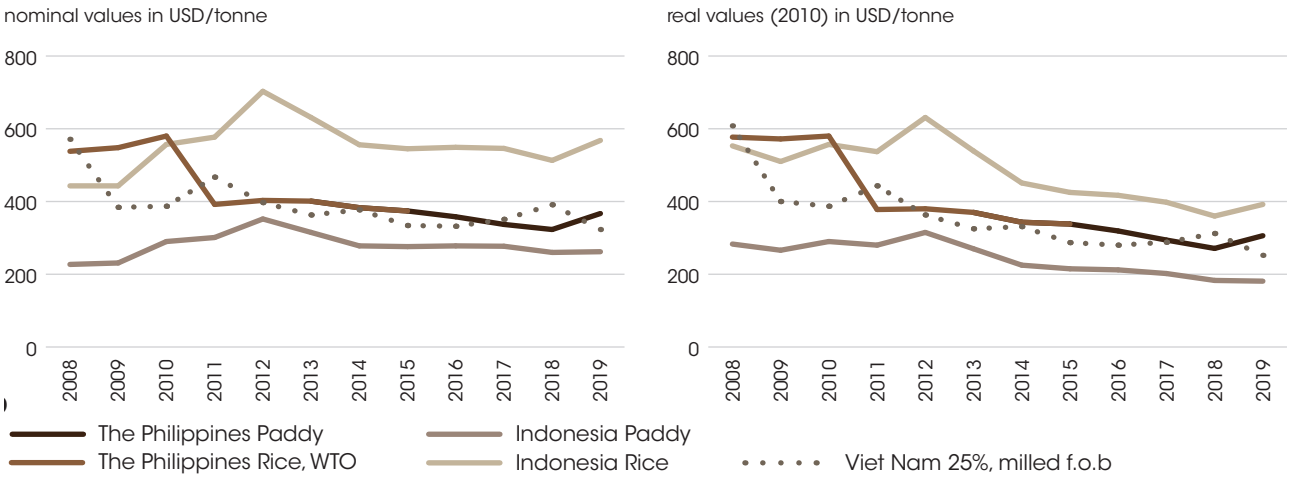


Figure 11. Administered and international prices for paddy and rice in Indonesia and the Philippines



For Indica rice in the Americas, and for Japonica, the examined countries show similar trends. In Ecuador, although administered prices for paddy[27] have followed an upward trajectory since 2008 (Figure 12), they have remained below the indicative international price (US N.2, 4 percent Long Grain) in both nominal and real terms, remaining close to the international price since 2016 (an analysis of administered prices for rice is not possible for Ecuador as no WTO notifications are available) (Figure 13). Similarly for Japonica rice, while China's administered prices for Japonica paddy have been increasing since 2008 (Figure 14), administered prices for rice[28] have been below the international price (US N.1, 4 percent Medium Grain) in both nominal and real terms, except for the years 2013 and 2016 when they were at par with the international price (Figure 15).

Figure 12. Index of administered prices for paddy in Ecuador

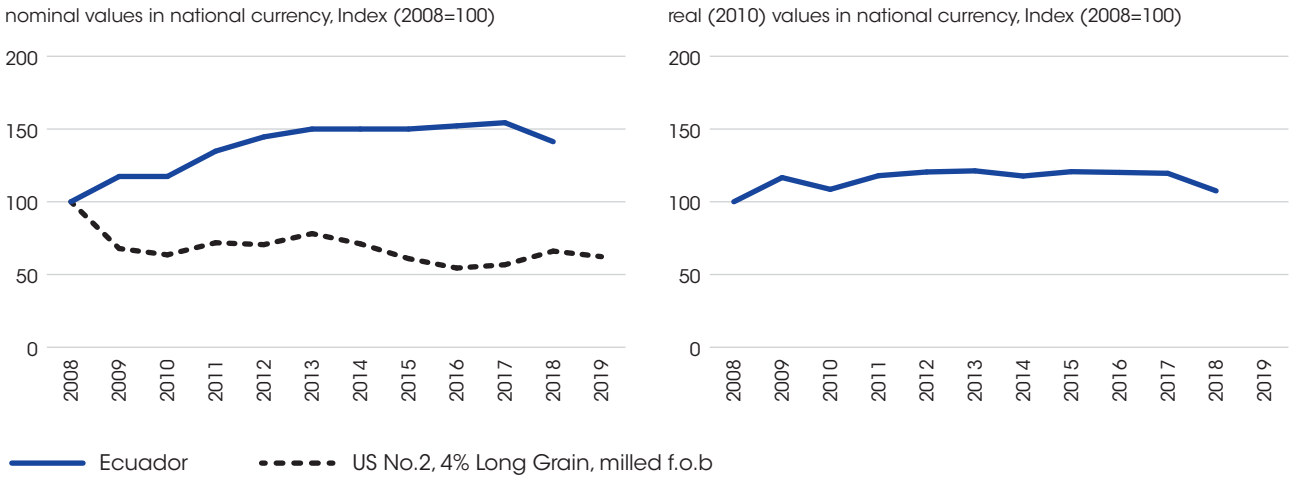
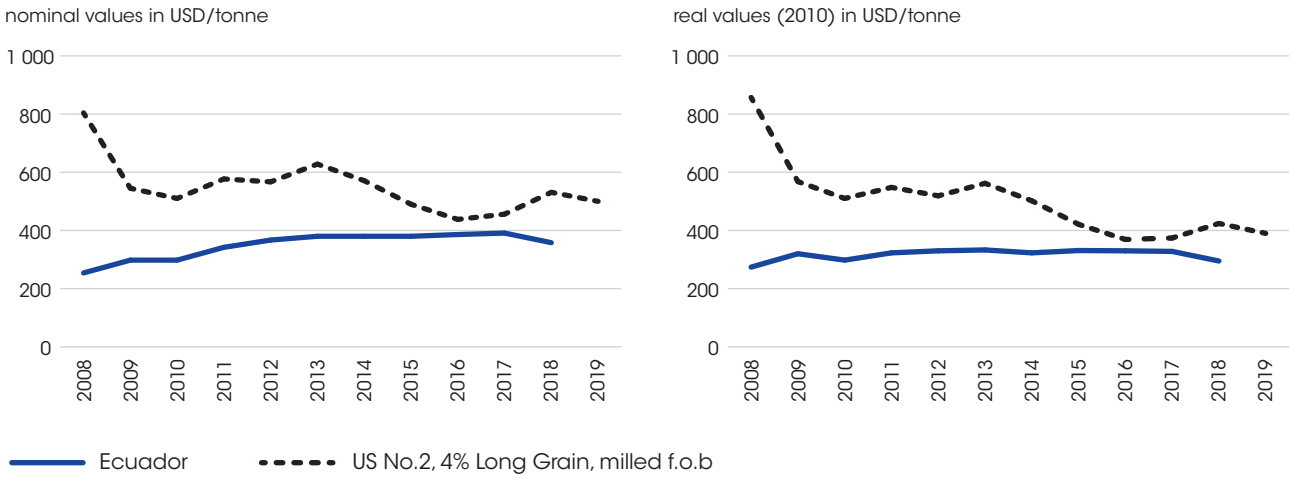


Figure 13. Administered and international prices for paddy in Ecuador



[27] Refers to "arroz en cascara", with quality of 20 percent humidity and 5 percent impurity. The "precio mínimo de sustentamento" was taken as minimum support price.

[28] Similar to the Indica rice price series, the "China, Japonica, WTO" series refers to rice prices notified by China to the WTO (in CNY/tonne, converted to USD using exchange rates in Annex B.3) from 2011 to 2016 (see Box 8). To create a complete rice price series, for the years 2008 to 2010, and 2017 to 2019, paddy prices were divided by the conversion factor (0.7) (the series "China Rice, Japonica, estimated").

Figure 14. Index of administered prices for Japonica paddy and rice in China

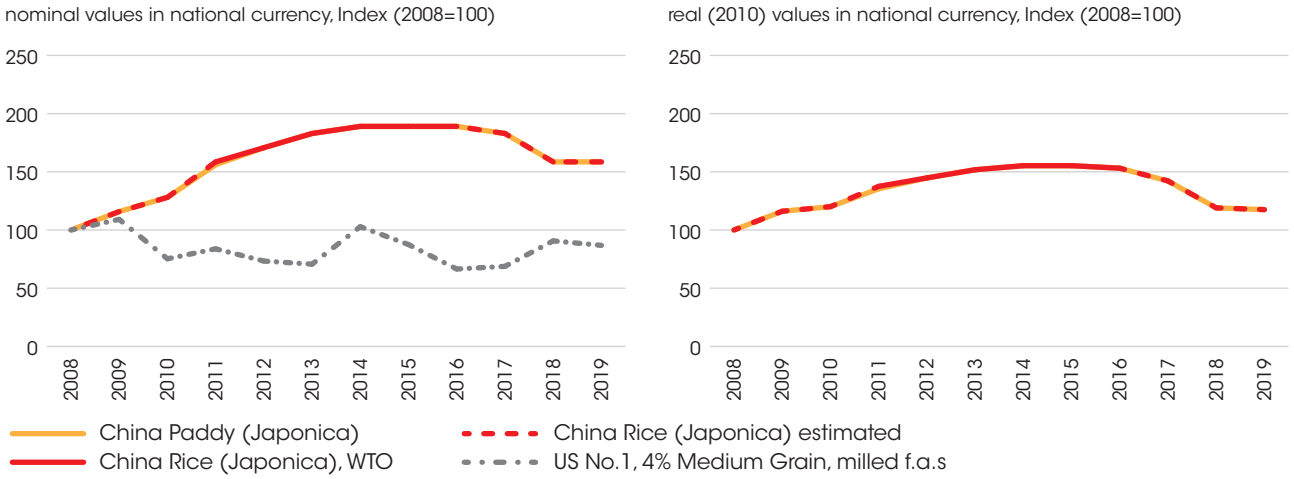
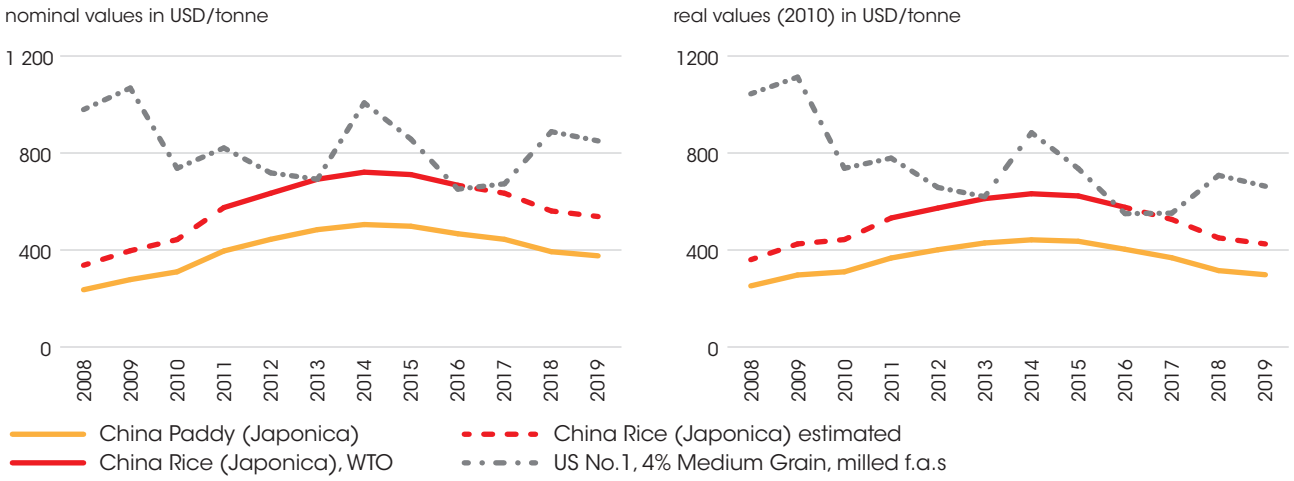
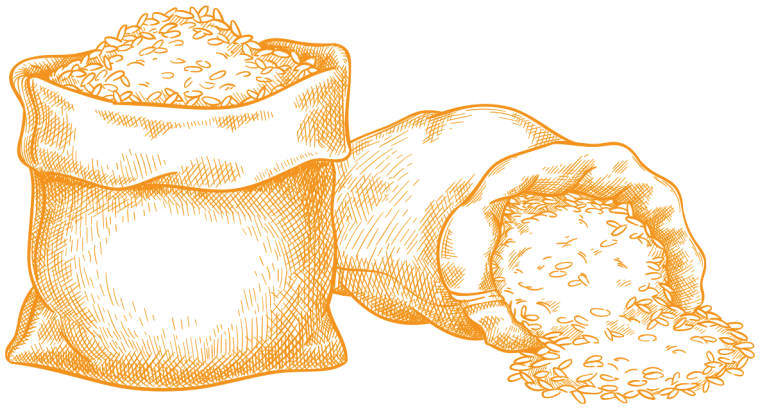


Figure 15. Administered and international prices for Japonica paddy and rice in China



CHAPTER 5

Disciplines in the WTO



The WTO Agreement on Agriculture (AoA) includes specific provisions on Public Stockholding for food security purposes (Annex 2 of the AoA) and on Market Price Support (Annex 3, paragraphs 8 and 9), summarized in Box 9.

Box 9. Domestic support rules in the WTO

One of the primary objectives of the AoA is to limit trade-distorting support to agriculture. To regulate subsidies and other forms of support, the WTO rules make a distinction between different categories of agricultural support measures:

- Measures that qualify as exempt from ceiling commitments under Annex 2 of the AoA (the so-called "Green Box"). As outlined in Annex 2, these measures must meet the fundamental requirement that they have no, or at most minimal, trade-distorting effects or effects on production and must also conform to general and policy-specific criteria as stipulated in the Annex;
- Some specific measures applied by developing countries only (outlined in Article 6.2 of the AoA, the so-called "Development Box"), for example agricultural input subsidies generally available to low-income or resource-poor producers. These measures are exempt from ceiling commitments;
- Direct payments under production-limiting programmes (the so-called "Blue Box"). These are also exempted from ceiling commitments;
- Measures that do not meet the criteria for the other three categories fall under the so-called "Amber Box". Such support is limited through commitments applying to the calculated Aggregate Measurement of Support (AMS).

An AMS is calculated for each basic agricultural product, generating a number of product-specific AMSs, and for the agriculture sector as a whole, generating a non-product-specific AMS.

Product-specific AMS (PS-AMS) support is the sum of all non-exempt support to the product, for example Market Price Support (MPS), which is measured when an administered price is applied. **Non-product specific AMS** (NPS-AMS) support is support provided in favour of agricultural producers in general. These could include generally available input subsidies, credit subsidies, fuel subsidies, etc.

All individual product and non-product specific AMSs are then summed into the Current Total AMS. However, the *de minimis* provision allows any AMS, whether product-specific or non-product-specific, to be excluded from the Current Total AMS if the PS-AMS or NPS-AMS are below a specific threshold calculated from the year's product specific or aggregate value of production (VoP), respectively. The *de minimis* thresholds each year are a given percentage of the values of production of each basic agricultural product and of agriculture as a whole. The percentages are 5 percent for developed countries; 10 percent for developing countries and 8.5 percent for China and Kazakhstan (resulting from their accession protocols to the WTO).

A country's Final Bound Total AMS is its ceiling on Current Total AMS. Some countries have a zero Final Bound Total AMS and some have a non-zero Final Bound Total AMS. A country with a zero Final Bound Total AMS is only entitled to provide non-exempt support up to its *de minimis* thresholds in any given year.

As Paragraph 3 of Annex 2 of the AoA stipulates, domestic support for the accumulation and holding of stocks of products which form an integral part of a food security programme identified in national legislation is exempted from the calculation of AMS, under certain conditions. It may include government aid to private storage of products as part of such a programme. The conditions for excluding government support to public stockholding from domestic support commitments are: (i) the volume and accumulation of stocks shall correspond to predetermined targets related solely to food security; (ii) the process of stock accumulation and disposal are financially transparent; (iii) food purchases by the government are made at current market prices; and (iv) sales from food security stocks are made at no less than the current domestic market price for the product and quality in question.

With regard to public food stockholding programmes in developing countries whose operation is transparent and conducted in accordance with officially published objective criteria or guidelines, the Agreement makes it clear (footnote 5 to Annex 2) that while governments have the right to acquire and sell food at administered prices, the difference between such prices and the "external reference price" is accounted for in the AMS.

As most of the developing countries have their Final Bound Total AMS set at zero they can provide non-exempt agricultural support only up to *de minimis* level, thus limiting the amount of policy space for AMS support that is available to them, and constraining their use of non-exempt policies, such as market price support provided with the help of administered prices. Moreover, since *de minimis* levels are based on the current value of production, it is difficult for administration purposes to know what that limit might be in advance.

Market price support (MPS) is a commonly used instrument that falls under the Amber Box as a product-specific AMS. Annex 3, paragraphs 8 and 9 of the AoA established the rules for its calculation. It equals the gap between a fixed external reference price and the applied administered price multiplied by the quantity of production eligible to receive the applied administered price:

MPS = (Applied administered price - fixed external reference price) x eligible production

Paragraph 9 of Annex 3 of the AoA states that the "fixed external reference price" (or FERP) shall be based on the 1986-88 period for a given commodity, and shall generally be the average f.o.b. unit value for the basic agricultural product in a net exporting country, and the average c.i.f. unit value in a net importing country. It also states that the FERP may be adjusted for quality differences as necessary. The eligible production is the quantity of production which is "eligible" to receive the benefit of the price support provided through the applied administered price which is relevant (WTO, 2000a; WTO, 2000b).

5.1. Main issues related to the calculation of Market Price Support and the *de minimis* threshold

While the methodology for the calculation of MPS appears to be straightforward, WTO Members tend to follow different approaches in the way they determine its value (Konandreas and Mermigkas, 2014). The main reasons for this lie in the different interpretations that countries apply to define the variables included in the MPS calculation. In fact, it appears that some concepts in the Agreement on Agriculture tend to be understood differently by Members, and while some definitions were eventually clarified by the rulings of the WTO dispute settlement mechanism when disagreements on the interpretation occurred, many others remain unclear.

Alternative base periods: In some cases, countries have been using a fixed external reference price calculated on the basis of a time period different than the one indicated in the AoA. This was the case, for instance, of the Republic of Korea. In its supporting tables, the Republic of Korea notified – for certain products including beef – a FERP calculated on the basis of years 1989-91. The country did so claiming that the it did not have sufficient price data to determine the FERP of those products on the basis of years 1986-88. The Panel and Appellate Body that investigated the case of "Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef" (Korea-Beef dispute) stated that, even if Members do not have all the data, they are always supposed to notify on the basis of the 1986-88 reference period. While this ruling added clarity for the original Members, it left uncertainty for those who acceded the WTO at a later stage. In fact, while the WTO Secretariat suggested that for the latter, the fixed external reference price should be based on the reference period notified at the time of accession (WTO, 1996), some countries, for example Australia, stated that without any specific amendment to the AoA, or in the absence of a clear provision in the relevant Accession Protocols, countries should establish their FERP based on the 1986-88 base period (DFAT, 2018). This issue was analysed by a dispute settlement Panel investigating China's domestic support for agricultural producers, which found that China was entitled to use the period included in its accession protocol, rather than 1986-88 (WTO, 2019a).

Different currencies for MPS programmes and FERP: Another issue is related to some Members' practice to adjust for currency fluctuations in the calculation of MPS. For instance, India's supporting tables include the FERP expressed in national currency, but the country notifies all its market price support in US dollars (Sharma, 2003; Konandreas and Mermigkas, 2014). In practice, in its notifications, India calculates MPS based on an applied administered price in US dollars after converting it from Indian rupees using the exchange rate during the period covered by the notification, while for the FERP the 1986-88 exchange rate is utilized (Brink, 2014). Overall, numerous questions have been raised in the WTO Committee on Agriculture regarding the practices by some Members of reporting support in USD and the different exchange rates used for calculation of the market price support (Brink, 2014). A Panel Report adopted by the Dispute Settlement Body (DSB) in April 2019 regarding "Domestic Support for Agricultural Producers" in China may have provided some clarity. In fact, albeit reviewing a different issue, the Panel affirmed that, in assessing compliance with domestic support commitments, broad correspondence should exist in the calculation processes used in the country notifications to the WTO and its supporting tables.

FERP adjusted for inflation: Some WTO Members, for example Jordan (WTO, 2017a), Tunisia (WTO, 2018b) and Ukraine (WTO, 2013a) notified the WTO that they adjust their FERPs when calculating their market price support in order to take account of inflation. These countries are claiming that the basis for this practice is contained in Article 18, paragraph 4 of the Agreement on Agriculture, which states that "in the review process Members shall give due consideration to the influence of excessive rates of inflation on the ability of any Member to abide by its domestic support commitments". However, other WTO Members do not agree with this interpretation. They maintain that this article only calls for Members to give due consideration to excessive inflation rates when they are reviewing the notification of other Members and does not justify the notifying Member to adjust FERPs, which is supposed to be fixed (Kondandreas and Mermigkas, 2014). Moreover, what could constitute excessive rates of inflation has not been specified. No dispute has been filed in these cases.

Eligible production: The definition of "the quantity of production eligible to receive the applied administered price", i.e., eligible production, has been subject to intense debates in the WTO. Some Members notify as eligible production only the production purchased by government at the administered price, while others use the total of their marketable production. The provisions of the Agreement on Agriculture do not specify this. An important case that has helped to shed light on this issue was the above-mentioned Korea-Beef dispute (WTO, 1999). The findings – further confirmed by the above-mentioned dispute settlement Panel investigating China's domestic support for agricultural producers (WTO, 2019a) – indicate that eligible production should refer to the volume of marketable production that is "fit or entitled" to be purchased for procurement and not the quantity that was actually purchased by the government. However, as the report of the Appellate Body on the Korea-beef case underlines, there may be circumstances when eligible production may be less than total marketable production. This could be the case, for instance, where there is a legislatively predetermined, explicit, non-discretionary numerical limitation on the quantity of marketable production that a governmental intervention agency could take off the market at the administered price in any year (WTO, 2000b).

Value of production: The value of production of a particular product is another important variable as it determines the *de minimis* threshold for the specific product. The Agreement on Agriculture does not provide a clear definition for value of production. Various countries and international organizations have been developing definitions using different methods which result in different estimates of this variable (Brink, 2012). This complicates efforts to ensure compliance with domestic support rules on applying *de minimis*.

5.2. The Bali Ministerial Decision and ongoing negotiations on public food stockholding at the WTO

Following the launch of the Doha Development Agenda in 2001, the provisions on public stockholding for food security purposes (PSH) in the Agreement on Agriculture became subject to intense debate at the WTO on the basis of numerous proposals submitted by the Members. Following the price spike in 2007/08, in many countries there was a renewed interest in food reserves as a means to guarantee sufficient supplies. Many developing countries sought to expand their food reserves and encourage agricultural production through public stockholding schemes.

Against this backdrop, several proposals on reforming the provisions related to public stockholding have been tabled at the WTO, suggesting amendments of the relevant MPS and PSH rules.

Despite the lengthy discussions on these issues, no agreement had been reached on public stockholding until the WTO Bali Ministerial Conference in 2013. The so-called "peace clause" agreed in Bali established that until a permanent solution is found, Members shall refrain from challenging, through the WTO Dispute Settlement Mechanism, compliance of a developing Member with its obligations under the Agreement on Agriculture in relation to trade-distorting domestic support to traditional staple food crops through existing public stockholding programmes for food security purposes (FAO, 2014b). This interim solution would exist until a permanent one is agreed, with a work programme to produce a permanent solution within four years, by the 11th WTO Ministerial Conference (WTO, 2013b). This was clarified and confirmed by the WTO General Council Decision in November 2014 (WTO, 2014a).

To limit the negative effect that stocks acquired could potentially have on food security of other Members and on global markets, a number of transparency obligations and safeguard provisions were agreed in Bali. These include (i) the fact that the peace clause only covers public stockholding programmes existing at the time of the Bali Ministerial Decision, and (ii) that countries should ensure that stocks procured under such programmes do not adversely affect the food security of other Members, although it is not clear how compliance will be monitored and enforced. Moreover, in order to benefit from the Decision, developing Members must continue to fulfil domestic support notification requirements and notify the Committee on Agriculture if it is exceeding or is at risk of exceeding its AMS limits. At the WTO 10th Ministerial Conference in Nairobi (2015) a Decision on Public Stockholding reaffirmed the commitment from Bali and encouraged WTO Members to make all concerted efforts to agree on a permanent solution.[29]

In the run-up to the 11th Ministerial Conference in Buenos Aires, several Members submitted proposals with the aim of finding a permanent solution, as per the Bali Decision. The main features of the various proposals included (i) exemptions for support provided under existing public stockholding programmes as well as new programmes of least developed countries (LDCs) and smaller programmes of developing countries from the calculation of trade-distorting domestic support (Brazil, the European Union, Colombia, Peru and Uruguay) (WTO, 2017b); (ii) exemptions for support provided under public stockholding programmes from the calculation of trade-distorting domestic support, also advocating for a wider country and product coverage, including all public stockholding programmes for food security purposes used by developing countries and least-developed countries (the G-33 group) (WTO, 2017c); (iii) exemption for new PSH programmes for

[29] In this regard, India is the only country that has made use of this mechanism to date (19 May 2021). It submitted two notifications to the WTO Committee on Agriculture on rice for the marketing years 2018/2019 and 2019/2020.

LDCs, and for other developing countries provided that these latter do not involve procuring more than 15 percent of the product in question (Norway and Singapore) (WTO, 2017d); and (iv) exemptions for support provided under PSH programmes, while providing additional safeguards to ensure that stocks procured do not distort trade or adversely affect food security of other Members (Russian Federation and Paraguay) (WTO, 2017e).[30]

Despite the deployed efforts, a permanent solution could not be found, and the public stockholding issue remains as one of the most difficult to resolve in the WTO negotiations on agriculture.

[30] In the run-up to the 12th Ministerial Conference and after the drafting of this report, additional proposals have been submitted by Members.

CHAPTER 6

Concluding remarks

Following the global food price spikes of 2007/08 and the COVID-19 crisis, there is a broad consensus that ample supplies of food reserves can have a stabilizing effect on international commodity markets. Moreover, within domestic markets, public stockholding programmes aim to alleviate legitimate policy concerns in many countries. Public food procurement, when properly targeted, can provide smallholder farmers with predictable prices and higher incomes, not only improving their livelihoods but also creating incentives for farmers to undertake the necessary investments to increase productivity. At the same time, subsidized food transfers linked to public stocks can ensure physical and economic access to food for the poorest and most vulnerable consumers, despite any volatility in food prices.

The extent to which public stockholding programmes achieve such objectives depends crucially on the effective targeting of beneficiaries, which is not only an operational challenge (organizing procurement from a large number of very small farmers, for instance), but also one that can sometimes create trade-offs between producers and consumers. Programmes that aim to provide both high prices for producers and low prices for consumers may end up achieving only one goal at the expense of the other due to the offsetting effects of the different policy instruments employed. Trade-offs also exist within the target groups. For instance, while public procurement may support producer incomes, it may crowd out the private sector in downstream processing and trading activities (and the potential for off-farm employment opportunities therein) where the government is heavily involved in marketing and distribution. Similarly, subsidized food transfers may help to alleviate food insecurity among the most vulnerable, but those poor consumers that are not covered by such food subsidies and transfers may actually face higher domestic prices as a result of the procurement prices set by the government.

To what extent markets, both domestic and international, are affected by the operations of public stockholding depends on the scale of the intervention – the proportion of product procured from a specific market channel as well as the timing and method for releasing stocks. The timing of release, especially if unpredictable and not factored into traders' decision-making, can significantly influence price levels and volatility, domestically and, if the country is a significant trader, internationally. The distorting effects of public stockholding can be significant if procured supplies are exported at subsidized prices, rather than being consumed domestically (FAO, 2015b). Given their market impacts, and the significant budgetary outlays and operational challenges associated with public stockholding, such programmes need to be evaluated against alternative policy options. For instance, the effectiveness of public expenditure on supporting farm prices versus direct income support, and other forms of social protection such as cash instead of food transfers for the poor needs to be evaluated carefully in each particular context.

In evaluating such impacts, it is crucial to distinguish between the objectives of different types of public stockholding programmes, and the combination of policy measures used to implement them. This report identified three broad categories of public food stocks: "emergency stocks" which aim to reduce vulnerability to food price shocks caused by emergencies; "buffer stocks" which aim to stabilize prices over the regular agricultural production cycle, reducing vulnerability to price shocks as well as income variability for farmers; and "stocks for domestic food distribution/food aid" which aim to promote physical and economic access to adequate quantities of food for certain target populations. However, the distinctions between different types of stocks can be unclear in practice, with countries attempting to achieve several objectives simultaneously through the implementation of both producer- and consumer-oriented measures; e.g. market price support linked to procurement of stocks; import barriers to maintain minimum procurement prices; consumer

support/social safety net measures for the release of stocks at subsidized prices; export restrictions to maintain low prices for consumers; and export subsidies for the release of stocks on the world market.

Public stockholding programmes were found to be prevalent across countries from different regions, at different levels of development, and with fundamentally different production and trading structures. Most of the countries examined procure stocks domestically at administered prices, although they can differ in how such prices are set and implemented, and the extent to which domestically procured stocks are complemented by imports. In most countries, administered prices for maize, wheat and rice have been rising in nominal values, but for several of these countries, significant inflation and exchange rate fluctuations have meant that these procurement prices have been below indicative international f.o.b. prices for a number of years. Countries also differ in their mechanisms of stock disposal. Some operate food distribution programmes that directly target the vulnerable; others dispose of stocks by regulating sales prices of food from government warehouses to processors and/or retailers; and yet others release stocks on markets depending on the prevalent domestic market price, or through a combination of several of these approaches.

As countries implement their programmes in different ways, public stockholding became one of the most difficult agricultural negotiations issues at the WTO, with Members expressing highly polarized views on the way forward. To some extent, these differences in positions reflect divergent understandings of what food security entails. Some Members maintain that supporting low-income resource-poor farmers is a prerequisite for achieving food security given their important contribution to the national food supply and widespread food insecurity among farmers themselves. Others point out that ultimately it is the access of consumers to food that matters, and that high levels of market price support distort domestic and global markets, shifting production away from competitive producers/ exporters and ultimately inflating prices for consumers. When several major producing countries increase support to agriculture, the cumulative effect could also constrain the opportunities for farmers in developing countries, and in particular in LDCs, to compete in global markets.

The implications of public procurement and stockholding therefore need to be considered in light of their objectives, as well as their multiple determinants, which include the different phases of operation, the timing, predictability and transparency of operational decisions, the structure and functionality of markets from which stock is procured and into which it is sold, and – not least – the supply-responsiveness of producers (FAO, 2015b). Achieving a permanent solution on public stockholding in the WTO will therefore require a better understanding of the implications of the use of food stockholding schemes and in particular, the different impacts that such programmes could have on producer incomes and food security in countries at different levels of development, as well as the food security of other developing countries.

A crucial element of this discussion, which is also at the core of the debate at the WTO, is the methodology for the calculation of MPS, as differences remain among the Members on issues such as the fixed external reference price and eligible production, as well as the value of production (which is important in determining the limits on MPS). However, gaps in the data on administered prices, marketing and trading margins from farm gate to border, procured volumes and stock levels, among others, add further complexity to comparative analyses of the actual implementation of public food procurement and stockholding programmes, and their possible impacts on international markets. These issues need to be properly addressed.

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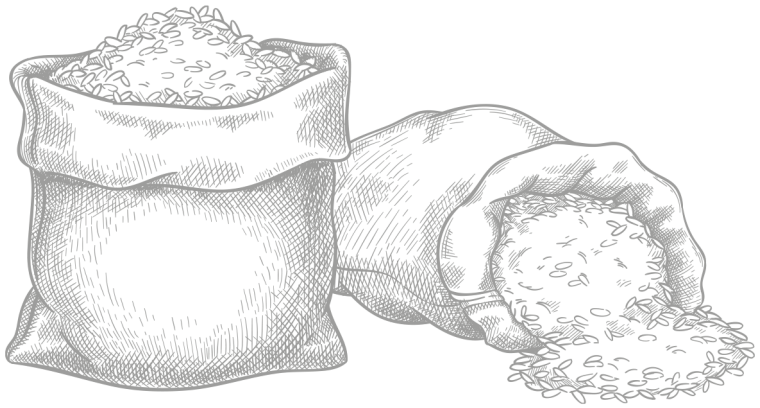

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Data sources for administered prices

Brazil	Maize and Wheat	2008/09	**World Trade Organization (WTO).** 2012. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/27. 1 March 2012. *WTO*. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NBRA27.pdf&Open=True**
		2009/10	**World Trade Organization (WTO).** 2013. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/30. 23 April. 2013. *WTO*. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA30.pdf&Open=True**
		2010/11 2011/12	**World Trade Organization (WTO).** 2014. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/32. 3 February 2014. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA32.pdf&Open=True** **World Trade Organization (WTO).** 2014. Committee on Agriculture. Notification - Brazil - Domestic support. Corrigendum. G/AG/N/BRA/32/Corr.1. 22 May 2014. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA32C1.pdf&Open=True**
		2012/13	**World Trade Organization (WTO).** 2015. Committee on Agriculture. Notification - Brazil - Domestic support.G/AG/N/BRA/37. 29 January 2015. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA37.pdf&Open=True** **World Trade Organization (WTO).** 2016. Committee on Agriculture. Notification - Brazil - Domestic support. Corrigendum. G/AG/N/BRA/37/Corr.1. 8 January 2016. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA37C1.pdf&Open=True**
		2013/14	**Companhia Nacional de Abastecimento (CONAB).** 2021. PGPM - Programa de Garantia de Preços Mínimos. CONAB. [online]. [Cited 12 April 2021]. **http://consultaweb.conab.gov.br/consultas/consultaPgpm.do?method=acaoListarConsulta)** **World Trade Organization (WTO).** 2016. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/40. 12 January 2016. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA40.pdf&Open=True**
		2014/15 (wheat only)	**Companhia Nacional de Abastecimento (CONAB).** 2021. PGPM - Programa de Garantia de Preços Mínimos. CONAB. [online]. [Cited 12 April 2021]. **http://consultaweb.conab.gov.br/consultas/consultaPgpm.do?method=acaoListarConsulta**) **World Trade Organization (WTO).** 2016. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/41. 27 October 2016. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA41.pdf&Open=True**

2015/16	**Companhia Nacional de Abastecimento (CONAB).** 2021. PGPM - Programa de Garantia de Preços Mínimos. CONAB. [online]. [Cited 12 April 2021]. **http://consultaweb.conab.gov.br/consultas/consultaPgpm.do?method=acaoListarConsulta**) **World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/48. 14 March 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA48.pdf&Open=True**
2016/17	**Companhia Nacional de Abastecimento (CONAB).** 2021. PGPM - Programa de Garantia de Preços Mínimos. WTO. [online]. [Cited 12 April 2021]. **http://consultaweb.conab.gov.br/consultas/consultaPgpm.do?method=acaoListarConsulta**) **World Trade Organization (WTO).** 2019. Committee on Agriculture. Notification - Brazil - Domestic support. G/AG/N/BRA/52. 1 February 2019. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NBRA52.pdf&Open=True**
2017/18 2018/19 2019/20	**Companhia Nacional de Abastecimento (CONAB).** 2021. PGPM - Programa de Garantia de Preços Mínimos. CONAB. [online]. [Cited 12 April 2021]. **http://consultaweb.conab.gov.br/consultas/consultaPgpm.do?method=acaoListarConsulta**
Notes	For Brazil, CONAB data were only available since 2013/2014. As such, to create a more complete time series, WTO notifications were used for the years 2008/09 to 2012/13. However, these were only available in USD (instead of Brazilian Real, BR), and they have been converted to BR/tonne using World Bank average annual exchange rate for the two years in each marketing year. Conversions were also made when quantities were provided in weights different than the tonne. To attempt to make the data from the two sources consistent, CONAB data (which was available by month, and by region) was aggregated as follows: national averages by agricultural year were created using data for regions representing over 95 percent of production (according to the harvest historical series of CONAB: **https://www.conab.gov.br/info-agro/safras/serie-historica-das-safras?start=20**) and averaging these between the agricultural year. For wheat, between March (first year) to February (second year)*, and for maize, between July (first year) to June (second year). To verify the comparability of the averages resulting from this method, additional Brazilian notifications to the WTO have been used for reference. *It should be noted that, in the case of wheat, Brazilian notifications to the WTO follow a slightly different path. Administered prices are notified according to the beginning of an agricultural year, which starts on March of the second year, instead of the first one. As these data have been provided by the country and officially notified to the WTO, a decision was made not to recalculate such data according to the methodology used with data coming directly from CONAB.

China	Wheat and Rice	2008	**World Trade Organization (WTO).** 2011. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/21. 13 October 2011. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NCHN21.pdf&Open=True**
		2009 2010	**World Trade Organization (WTO).** 2015. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/28. 6 May 2015. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN28.pdf**
		2011	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/42. 14 December 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN42.pdf&Open=True**
		2012	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/43. 14 December 2018. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN43.pdf&Open=True**
		2013	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/44. 14 December 2018. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN44.pdf&Open=True**
		2014	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/45. 14 December 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN45.pdf&Open=True**
		2015	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/46. *WTO.* [online]. 14 December 2018. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN46.pdf&Open=True**
		2016	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - China - Domestic support. G/AG/N/CHN/47. 14 December 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NCHN47.pdf&Open=True**
		Notes	For 2008, 2009, 2010, the WTO notifications (i.e. sources (WTO, 2011) and (WTO, 2015) in the table above) provided only one administered price for rice which was the "weighted average of Japonica and Indica rice with the ratio of 1:2". In the notifications for subsequent years, the administered prices for Japonica and Indica varieties are provided separately.
		2017 (wheat only)	**National Development and Reform Commission (NDRC).** 2016. Notice on the announcement of the minimum purchase price of wheat in 2017. 21 October 2016. In: *Open Government Affairs, Policies, Notice, NDRC.* [online]. [Cited 17 June 2021]. **https://www.ndrc.gov.cn/xxgk/zcfb/tz/201610/t20161021_963246.html**

		2018 (wheat only)	**National Development and Reform Commission (NDRC).** 2017. Notice on the announcement of the minimum purchase price of wheat in 2018. 25 October 2017. In: *Open Government Affairs, Policies, Notice, NDRC.* [online]. [Cited 17 June 2021]. **https://www.ndrc.gov.cn/xxgk/zcfb/tz/201710/t20171027_962581.html**
		2019 (wheat only)	**National Development and Reform Commission (NDRC).** 2018. Notice on the announcement of the minimum purchase price of wheat in 2019. 15 November 2018. In: *Open Government Affairs, Policies, Notice, NDRC.* [online]. [Cited 17 June 2021]. **https://zfxxgk.ndrc.gov.cn**
		Notes	Prices in in CNY/50 kg from NDRC were converted to CNY/tonne (reported in Annex B.1) by multiplying by 20.
China	Paddy	2008 2009 2010 2011	**FAO.** 2011. *Rice Market Monitor.* Volume XIV – Issue No. 2. P.4. April 2011. Rome, FAO. 37 pp. **http://www.fao.org/3/am491e/am491e00.pdf**
		2012	**FAO.** 2012. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 01/02/2012. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/293/**
		2013	**FAO.** 2013. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 01/02/2013. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/1269/**
		2014	**FAO. 2014. China (Mainland).** Rice. Support Prices. Commodity Policy Developments. 12/02/2014. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/2098/**
		2015	**FAO.** 2015. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 04/02/2015. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/548406/**
		2016	**FAO.** 2016. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 02/02/2016. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/679597/**
		2017	**FAO.** 2017. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 17/02/2017. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/745405/**
		2018	**FAO.** 2018. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 09/02/2018. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/746133/**

		2019	**FAO.** 2019. China (Mainland). Rice. Support Prices. Commodity Policy Developments. 25/02/2019. In: *FAO Markets and Trade.* [online]. **http://www.fao.org/economic/est/est-commodities/commodity-policy-archive/detail/en/c/753958/**
Ecuador	Maize	2008	**Ministerio de Agricultura y Ganadería.** 2008. Acuerdo Ministerial No. 068/2008. 24 April 2008. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2008/2008_068.pdf**
		2009	**Ministerio de Agricultura y Ganadería.** 2009. Acuerdo Ministerial No. 072/2009. 8 May 2009. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2009/2009_072.pdf**
		2010	**Ministerio de Agricultura y Ganadería.** 2010. Acuerdo Ministerial No. 126/2010. 14 April 2010. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2010/2010_126.pdf** **Ministerio de Agricultura y Ganadería.** 2010. Acuerdo Ministerial No. 301/2010. 27 July 2010. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2010/2010_301.pdf**
		2011	**Ministerio de Agricultura y Ganadería.** 2011. Acuerdo Ministerial No. 215/2011. 11 June 2011. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2011/2011_215.pdf**
		2012	**Ministerio de Agricultura y Ganadería.** 2012. Acuerdo Ministerial No. 077/2012. 13 April 2012. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2012/2012_0077.pdf**
		2013	**Ministerio de Agricultura y Ganadería.** 2013. MAGAP fijó precio del maíz amarillo duro para septiembre de 2013. *MAGAP.* [online]. **https://www.agricultura.gob.ec/magap-fijo-precio-del-maiz-amarillo-duro-para-septiembre-de-2013/#search**)
		2014	**Ministerio de Agricultura y Ganadería.** 2014. Precio mínimo de sustentación de maíz amarillo es de 15,90 para el ciclo 2014. *MAGAP.* [online]. **https://www.agricultura.gob.ec/precio-minimo-de-sustentacion-de-maiz-amarillo-es-de-1590-para-el-ciclo-2014/**
		2015	**Ministerio de Agricultura y Ganadería.** 2015. Se fija precio del maíz amarillo duro para diciembre. *MAGAP.* [online]. **https://www.agricultura.gob.ec/se-fija-precio-del-maiz-amarillo-duro-para-diciembre/**
		2016	**Ministerio de Agricultura y Ganadería.** 2016. Activan precio mínimo de sustentación de maíz amarrillo duro. *MAGAP.* [online]. **https://www.agricultura.gob.ec/activan-precio-minimo-de-sustentacion-de-maiz-amarrillo-duro/**
		2017	**Ministerio de Agricultura y Ganadería.** 2017. Precio mínimo de sustentación de maíz se mantiene en 14,90 dólares. *MAGAP.* [online] **https://www.agricultura.gob.ec/precio-minimo-de-sustentacion-de-maiz-se-mantiene-en-1490-dolares/**
		2018	**Ministerio de Agricultura y Ganadería.** 2018. Acuerdo Ministerial No. 046/2018. 11 April 2018. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2018/2018-046.pdf**

		2019	**Ministerio de Agricultura y Ganadería.** 2019. Acuerdo Ministerial No. 067/2019. 25 April 2019. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2019/067-2019.pdf**
Ecuador	Paddy	2008	**Ministerio de Agricultura y Ganadería.** 2008. Acuerdo Ministerial No. 069/2008. 24 April 2008. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2008/2008_069.pdf**
		2009	**Ministerio de Agricultura y Ganadería.** 2009. Acuerdo Ministerial No. 052/2009. 2 April 2009. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2009/2009_052.pdf**
		2011	**Ministerio de Agricultura y Ganadería.** 2011. Acuerdo Ministerial No. 189A/2011. 11 May 2011. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2011/2011_189-A.pdf**
		2012	**Ministerio de Agricultura y Ganadería.** 2012. Acuerdo Ministerial No. 130/2012. 1 June 2012. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2012/2012_0130.pdf**
		2013	**Ministerio de Agricultura y Ganadería.** 2013. Acuerdo Ministerial No. 187/2013. 19 April 2013. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2013/2013_187.pdf**
		2014	**Ministerio de Agricultura y Ganadería.** 2014. Acuerdo Ministerial No. 119/2014. 9 April 2014. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2014/2014_119.pdf**
		2015	**Ministerio de Agricultura y Ganadería.** 2015. Acuerdo Ministerial No. 127/2015. 13 May 2015. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2015/2015_127.PDF**
		2016	**Ministerio de Agricultura y Ganadería.** 2016. Acuerdo Ministerial No. 089/2016. 2 May 2016. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2016/2016_089.pdf**
		2017	**Ministerio de Agricultura y Ganadería.** 2017. Acuerdo Ministerial No. 107/2017. 11 May 2017. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2017/2017_107.pdf**
		2018	**Ministerio de Agricultura y Ganadería.** 2018. Acuerdo Ministerial No. 047/2018. 11 April 2018. *Registro Oficial.* [online]. **http://servicios.agricultura.gob.ec/mag01/pdfs/aministerial/2018/2018-047.pdf**
		Notes	Paddy is intended as rice with 20 percent humidity and 5 percent impurity. For some years, a ceiling price also applied. For 2010, no price was indicated, and the price of the previous year was used in the table. Maize is intended as maiz amarillo duro with 13 percent humidity and 1 percent impurity. Where different prices applied during the year, the highest one was taken as a reference. For both commodities, the Precio mínimo de sustentamento was taken as minimum support price.

Egypt	Wheat	2008 2009 2010 2011 2012 2013 2014 2015 2016	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Responses to points raised by Members under the review process. "Prices declared by the Government of Egypt for the marketing of wheat". G/AG/W/187. ID 88021. 7 November 2018. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/W187.pdf&Open=True**
		2017	**FAO.** 2017. GIEWS Country Brief: Egypt. 19 May 2017. Rome. **http://www.fao.org/giews/countrybrief/country/EGY/pdf_archive/EGY_Archive.pdf**
		2018	**FAO.** 2018. GIEWS Country Brief: Egypt. 3 December 2018. Rome. **http://www.fao.org/giews/countrybrief/country/EGY/pdf_archive/EGY_Archive.pdf**
		2019	**FAO.** 2019. GIEWS Country Brief: Egypt. 22 May 2019. Rome. **http://www.fao.org/giews/countrybrief/country/EGY/pdf_archive/EGY_Archive.pdf**
India	Wheat and Paddy	2008/09 2009/10 2010/11 2011/12 2012/13 2013/14 2014/15 2015/16 2016/17 2017/18 2018/19 2019/20	**Reserve Bank of India.** 2021. Minimum support price for food grains according to crop year. In: *Database on Indian Economy. Statistics. Real Sector. Agriculture.* [online]. [Cited 16 June 2021]. **https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics**
India	Rice	2008/09 2009/10 2010/11	**World Trade Organization (WTO).** 2014. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/10. 10 September 2014. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND10.pdf**
		2011/12 2012/13 2013/14	**World Trade Organization (WTO).** 2017. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/11. 13 July 2017. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND11.pdf**
		2014/15 2015/16	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/12. 1 May 2018. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND12.pdf&Open=True**

		2016/17	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/13. 20 July 2018. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND13.pdf&Open=True**
		2017/18	**World Trade Organization (WTO).** 2019. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/15. 29 march 2019. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND15.pdf&Open=True**
		2018/19	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/18. 31 March 2020. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND18.pdf&Open=True**
		2019/20	**World Trade Organization (WTO).** 2021. Committee on Agriculture. Notification – India – Domestic Support. G/AG/N/IND/25. 8 April 2021. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIND25.pdf&Open=True**
Indonesia	Rice	2008 2009 2010 2011	**Organisation for Economic Co-operation and Development (OECD).** 2018. The economic effects of public stockholding policies for rice in Asia. P. 30 (citing Presidential instructions 8/2008 and 7/2009). Paris, OECD Publishing. **https://doi.org/10.1787/9789264305366-en**
		2012	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/52. 21 September 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/248280/r/G/AG/NIDN52.pdf**
		2013	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/53. 21 September 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/248281/q/G/AG/NIDN53.pdf**
		2014	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/54. 21 September 2018. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/248289/q/G/AG/NIDN54.pdf**
		2015	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/55. 24 September 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/248300/q/G/AG/NIDN55.pdf**
		2016	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/56. 24 September 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/248301/q/G/AG/NIDN56.pdf**
		2017	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/57. 24 September 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIDN57.pdf**

		2018	**World Trade Organization (WTO).** 2019. Committee on Agriculture. Notification - Indonesia - Domestic support. G/AG/N/IDN/67. 17 October 2019. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NIDN67.pdf&Open=True** **World Trade Organization (WTO).** 2021. Report by the Secretariat: Indonesia. Revision. Trade Policy Review. WT/TPR/S/401/Rev.1, p. 159. 5 February 2021. WTO. [online]. **https://docsonline.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/TPR/S401R1.pdf&Open=True**
		2019	**World Trade Organization (WTO).** 2021. Report by the Secretariat: Indonesia Revision. Trade Policy Review. WT/TPR/S/401/Rev.1, p. 159. 5 February 2021. WTO. [online]. **https://docsonline.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/TPR/S401R1.pdf&Open=True**
		Notes	For 2018, administered price data (IDR 7,300/kg) is taken from the WTO Notification for that year (i.e., WTO, 2019 above). It should be noted that the Trade Policy Review (WTO, 2021 above) reports administered prices for three periods (January, February-March, and March – December), and IDR 7,300/kg corresponds to the value for January only.
Indonesia	Paddy	2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019	**Badan Pusat Statistik.** 2021. Average price of grain by quality group and HPP at farmer level and milling level (Rupiah/kg), 2000-2020. In: *Producer Prices, Badan Pusat Statistik.* [online]. [Cited 17 June, 2021]. **https://www.bps.go.id/statictable/2014/10/20/1596/rata-rata-harga-gabah-menurut-kelompok-kualitas-dan-hpp-di-tingkat-petani-dan-tingkat-penggilingan-rupiah-kg-2000-2020.html**
		Notes	Indonesia's paddy price refers to the HPP government purchase price at the farmer level.
Jordan	Wheat	2008	**World Trade Organization (WTO).** 2011. Committee on Agriculture. Notification - Jordan - Domestic support. G/AG/N/JOR/14. 10 October 2011. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NJOR14.pdf&Open=True**
		2009 2010	**World Trade Organization (WTO).** 2013. Committee on Agriculture. Notification - Jordan - Domestic support. G/AG/N/JOR/16. WTO. 1 October 2013. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NJOR16.pdf&Open=True**

		2011 2012	**World Trade Organization (WTO).** 2015. Committee on Agriculture. Notification - Jordan - Domestic support. G/AG/N/JOR/17. 10 March 2015. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NJOR17.pdf&Open=True**
		2013	**World Trade Organization (WTO).** 2017a. Committee on Agriculture. Notification - Jordan - Domestic support. G/AG/N/JOR/19. 24 January 2017. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NJOR19.pdf&Open=True**
		2014	**World Trade Organization (WTO).** 2017b. Committee on Agriculture. Notification - Jordan - Domestic support. G/AG/N/JOR/20. 24 January 2017. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NJOR20.pdf&Open=True**
Pakistan	Wheat	2008/09 2009/10 2010/11 2011/12 2012/13 2013/14 2014/15 2015/16 2016/17 2017/18 2018/19	**Ministry of National Food Security and Research (MNFSR).** 2020. Yearbook 2019-20. P. 10. In: *Government of Pakistan Ministry of National Food Security and Research Economic Wing.* [online]. Islamabad. **http://www.mnfsr.gov.pk/userfiles1/file/YearBook2019-20.rar**
The Philippines	Rice	2008 2009 2010	**World Trade Organization (WTO).** 2013. Committee on Agriculture. Notification - Philippines - Domestic support. *WTO.* G/AG/N/PHL/42. 18 March 2013. [online]. **https://docsonline.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NPHL42.pdf&Open=True**
		2011	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Philippines - Domestic support. G/AG/N/PHL/48. 15 February 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NPHL48.pdf&Open=True**
		2012	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Philippines - Domestic support. G/AG/N/PHL/49. 15 February 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NPHL49.pdf**
		2013	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Philippines - Domestic support. G/AG/N/PHL/50. 15 February 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NPHL50.pdf**

		2014	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Philippines - Domestic support. G/AG/N/PHL/51. 15 February 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NPHL51.pdf**
		2015	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Philippines - Domestic support. G/AG/N/PHL/52. 15 February 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NPHL52.pdf**
The Philippines	Paddy	2013	**National Food Authority.** 2014. NFA Annual Report 2013. Annual Accomplishment Report. P. 6. *Government of Philippines, National Food Authority.* [online]. **https://nfa.gov.ph/images/files/Transparency/AAR2013.pdf**
		2014	**National Food Authority.** 2015. NFA Annual Report 2014. Annual Accomplishment Report. P. 5. *Government of Philippines, National Food Authority.* [online].
		2015	**National Food Authority.** 2016. NFA Annual Report 2015. Annual Accomplishment Report. P. 4. 9 March 2016. *Government of Philippines, National Food Authority.* [online]. **https://nfa.gov.ph/images/files/Transparency/AAR2015.pdf**
		2016	**National Food Authority.** 2017. NFA Annual Report 2016. Annual Accomplishment Report. P. 4. 6 March 2017. *Government of Philippines, National Food Authority.* [online]. **https://nfa.gov.ph/images/files/Transparency/2016AAR030717.pdf**
		2017	**National Food Authority.** 2018. NFA Annual Report 2017. Annual Accomplishment Report. P. 4. 7 March 2018. *Government of Philippines, National Food Authority.* [online]. **https://nfa.gov.ph/images/files/Transparency/2017AAR030518.pdf**
		2018	**National Food Authority.** 2019. NFA Annual Report 2018. Annual Accomplishment Report. P. 6. 21 February 2019. Government of Philippines, National Food Authority [online]. **https://nfa.gov.ph/images/files/Transparency/2018AAR.pdf**
		2019	**National Food Authority.** 2020. NFA Annual Report 2019. Annual Accomplishment Report. P. 5. 14 February 2020. *Government of Philippines, National Food Authority.* [online]. **https://nfa.gov.ph/images/files/Transparency/NFA-Accomplishment-Report-2019.pdf**
The United Republic of Tanzania	Maize	2010/11 2011/12 2012/13 2013/14 2014/15	**Pierre, G., Pauw, K. & Magrini, E.** 2017. *The effect of the National Food Reserve Agency on maize market prices in Tanzania*. Policy report. MAFAP (Monitoring and Analysing Food and Agricultural Policies). Rome, FAO. 30 pp. **http://www.fao.org/3/ca2283en/CA2283EN.pdf**

Tunisia	Wheat	2008 2009	**World Trade Organization (WTO).** 2011. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/40. 8 April 2011. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NTUN40.pdf&Open=True**
		2010 2011 2012 2013	**World Trade Organization (WTO).** 2015. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/45. 24 August 2015. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN45.pdf&Open=True**
		2014	**World Trade Organization (WTO).** 2016. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/47. 8 April 2016. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN47.pdf&Open=True**
		2015	**World Trade Organization (WTO).** 2016. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/49. 15 June 2016. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN49.pdf&Open=True**
		2016	**World Trade Organization (WTO).** 2018. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/52. 5 February 2018. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN52.pdf&Open=True**
		2017	**World Trade Organization (WTO).** 2019. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/56. 6 November 2019.WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN56C1.pdf&Open=True**
		2018	**World Trade Organization (WTO).** 2019. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/58. 5 November 2019. WTO. [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN58.pdf&Open=True**
		2019	**World Trade Organization (WTO).** 2021. Committee on Agriculture. Notification - Tunisia - Domestic support. G/AG/N/TUN/60. 23 February 2021. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NTUN60.pdf&Open=True**
Saudi Arabia	Wheat	2008	**World Trade Organization (WTO).** 2011. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/4. 19 April 2011. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NSAU4.pdf&Open=True**
		2009	**World Trade Organization (WTO).** 2011. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/6. 19 September 2011. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NSAU6.pdf&Open=True**

2010	**World Trade Organization (WTO).** 2012. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/7. 16 May 2012. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/G/AG/NSAU7.pdf&Open=True**
2011	**World Trade Organization (WTO).** 2014. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/8. 26 February 2014. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU8.pdf&Open=True**
2012	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/13. 26 February 2020. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU13.pdf&Open=True**
2013	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/14. 26 February 2020. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU14.pdf&Open=True**
2014	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/15. 27 February 2020. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU15.pdf&Open=True**
2015	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/16. 27 February 2020. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU16.pdf&Open=True**
2016	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/17. 27 February 2020. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU17.pdf&Open=True**
2017	**World Trade Organization (WTO).** 2020. Committee on Agriculture. Notification - The Kingdom of Saudi Arabia - Domestic support. G/AG/N/SAU/18. 27 February 2020. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/NSAU18.pdf&Open=True**
2019	**World Trade Organization (WTO).** 2021. Report by the Secretariat: the Kingdom of Saudi Arabia. Revision. *Trade Policy Review.* WT/TPR/S/407. 27 January 2021. *WTO.* [online]. **https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/TPR/S407.pdf&Open=True**

Zambia	Maize	2008 2009 2010 2011 2012 2013 2014 2015 2016	**Food Reserve Agency.** 2017. Market information. In: *Food Research Agency, Organizational Structure, Food Reserve Marketing.* [online]. [Cited 6 June 2019]. **http://fra.org.zm/organisational-structure/food-reserve-marketing/market-information/**
		2017	**FAO.** 2017. Zambia sets floor prices for 2017 crops. 1 August 2017. In: *Food Policies, Food Price Monitoring and Analysis.* [online]. **http://www.fao.org/giews/food-prices/food-policies/detail/en/c/1027695/**
		2018 2019	**FAO.** 2019. Zambia increases maize purchasing price. 8 July 2019. In: *Food Policies, Food Price Monitoring and Analysis.* [online]. **http://www.fao.org/giews/food-prices/food-policies/detail/en/c/1201259/**
		Notes	Data for 2017 – 2019 was available in KW/ 50 kg bags and converted to tonnes.

ANNEX A

Country Experiences

This section presents a review of public stockholding measures in selected countries in Asia and the Pacific, Latin America and the Caribbean, Near East and North Africa, and Sub-Saharan Africa, presenting several country cases from each region. Experiences from North America and Europe are also discussed from a historical perspective. The country cases are intended to serve as illustrative examples of the objectives of public food stockholding in different geographic and historical contexts, and of how food procurement, stockholding and release operations tend to be organized.[31] The objective is to showcase the diversity of the instruments used and the scope of such programmes, focusing mainly on key staples such as cereals. An attempt has been made to focus on recent data, and on national sources of information to the extent possible (mainly national websites and publications; presentations of relevant ministries at FAO or other international forums; and country responses to points raised by Members under the WTO Committee on Agriculture review process), or on institutional reviews that involve significant engagement and inputs from national sources (e.g. WTO Trade Policy Reviews; OECD Agricultural Policy Reviews; certain FAO publications), while also citing other sources. It must be noted that information was available to varying degrees for different countries.

Asia and the Pacific

China Rice and Wheat	The objectives of reserves maintained by the central and local authorities are "to regulate the supply and demand of grains, stabilize the grain market, and cope with major natural disasters or emergencies" (WTO, 2018c). The China Grain Reserves Corporation (SINOGRAIN) is the institution tasked with procuring grains, managing stocks and controlling trade. The National Development and Reform Commission (NDRC), in consultation with the Ministry of Agriculture and Rural Affairs (MARA) and other government institutions, sets minimum purchase prices of rice and wheat on an annual basis, taking into consideration production and marketing costs (Kimura, 2019).[32] Minimum prices are only applied to the main wheat and rice-producing regions, they differ for each type of grain, they are announced before the sowing season, and they only apply for a limited time until several months after the harvest (OECD, 2017a; OECD, 2020). SINOGRAIN is obliged to undertake intervention purchases in case the market price drops below minimum price for three consecutive days. This has happened on several occasions for wheat, with procurement estimated to be 34 percent of total production between 2006 and 2008, whereas the share of rice production procured has been smaller (ICTSD, 2016; Fang 2010). The volume of purchases differs from year to year, depending on purchase prices relative to the market prices. China has recently announced a move towards determination of the size of reserve stocks on a "scientific" basis (Kimura, 2019). In 2020, ceilings on procured volumes of wheat and rice were established for the first time, which are nevertheless estimated to be significantly higher than procured volumes in previous years (OECD, 2020). Government held stocks of rice and wheat are released through auctions, when the market price or demand is high (Yu, 2017). Only a small proportion of total procurement tends to be auctioned, due to high auction prices or inconsistent product quality (Kimura, 2019). As part of its overall agricultural policy reform, China also aims to improve its stock release mechanism (Kimura, 2019).

[31] This review does not aim to provide an exhaustive overview of all the public stockholding policies in the region, or of all the commodities covered by the stockholding programmes in the countries that are covered.

[32] China's price support policy has undergone several changes in the last fifteen years. In 2004 the government began issuing support prices for Indica and Japonica rice and extended the scheme to include wheat in 2006. While these remain in place for rice and wheat, since 2016, several agricultural products, including maize, were removed from the list of products subject to price controls. Intervention prices for key crops such as soybeans and maize have been replaced by direct payments based on area planted.

India Rice and Wheat	The Food Corporation of India (FCI), set up in 1965, maintains public stocks with the following objectives: "to provide farmers remunerative prices; to make food grains available at reasonable prices, particularly to vulnerable section of the society; to maintain buffer stocks as a measure of food security; and to intervene in the market to ensure price stabilization" (FCI, 2019). The FCI falls under the authority of the Department of Consumers Affairs, Food and Public Distribution, and undertakes its purchasing, storage distribution and sales functions together with other central and state agencies (OECD and ICRIER, 2018). The government announces minimum support prices (MSPs) for 24 crops based on recommendations by the Commission for Agricultural costs and Prices (CACP), which in turn are based on several considerations, particularly cost of production, as well as supply and demand and price trends, among others (WTO, 2021a). [33] Procurement by FCI and state agencies at the MSP (plus any applicable bonus) is open-ended i.e., guaranteed to be purchased, as long as the quality requirements are met. These agencies procure when the price of the products falls below the MSP, although in practice, this is effectively implemented only for a few products and in a few regions (WTO, 2021a).[34] On average between 2000/01 and 2015/16, the share of total production procured was 26 percent for wheat and 30 percent for rice (OECD and ICRIER, 2018). "Operational stocks" are held for the distribution of grains through social safety net programmes (the Targeted Public Distribution System [TPDS] and Other Welfare Schemes [OWS]), and "food security stocks" are held to meet shortfalls in procurement and to smooth out inter- or intra-year supply fluctuations. The central government determines minimum stock levels in each quarter, with actual stocks generally above these levels (OECD and ICRIER, 2018). The central Government releases stocks for public distribution e.g., through the TPDS, by selling grains to the state governments at "Central Issue Prices" (CIP), which are lower than the MSP (WTO, 2021a). State governments are then responsible for transporting these to "fair price shops" for distribution to beneficiaries at or below the CIPs (WTO, 2021a). The National Food Security Act of 2013 aims to provide subsidized food to 75 percent of the rural population and up to 50 percent of the urban population, with each person in a priority household entitled to receive 5kg of food grains/person/month, and the poorest households, to 35kg of food grains/household/ month at subsidized prices (WTO, 2021a). Eligibility for subsidized and/or free food distribution was expanded during the COVID-19 pandemic (Box 4). The remainder of food stocks can be sold through auction to private traders under the Open Market Sales Scheme.

[33] The MSPs recommended by CACP are submitted for approval to the Cabinet Committee on Economic Affairs (chaired by the Prime Minister), which may modify or add a "bonus" to the MSP for certain crops. Additionally, states may also choose to pay a bonus above the MSP set by the central government, particularly for wheat and paddy (OECD and ICRIER, 2018).

[34] Several marketing reforms were introduced in 2020, namely: the Farmers' Product Trade and Commerce (Promotion and Facilitation) Act 2020 (FPTC Act); the Farmers' Empowerment and Protection Agreement on Price Assurance and Farm Services Act 2020 (FAPAFS Act); and the Essential Commodities (Amendment) Act. The implications of these laws for the implementation of procurement operations are the subject of considerable public debate.

Indonesia Rice	Public stocks are managed by Badan Urusan Logistik (BULOG), a state-owned company established in 1967, which administratively falls under the Ministry of State-Owned Enterprises.[35] Its three functions include implementing the policy of purchasing rice with Government Purchase Price (HPP) provisions; providing and distributing subsidized rice for low-income groups with the implementation of the RASKIN/RASTRA Program; and providing and distributing rice to maintain the stability of rice prices, deal with emergencies, disasters and food insecurity, by managing the Government Rice Reserves (CBP) (BULOG, 2021). The purchase price, or Harga Pembelian Pemerintah (HPP) of rice is announced through "presidential instructions", with the prices differing by the production form (wet paddy, dry paddy or rice sold at farmgate), and by quality (water level and maximum broken level) (Nuryati, 2016), and set based on the previous domestic market price as well as farmers' cost of production (WTO, 2014b).[36] BULOG can only procure paddy or rice when the market price is lower than, or equal to the HPP (WTO, 2021b). The priority source of procurement is domestic production, although BULOG can also import rice for government stocks, if the domestic production cannot fulfil the minimum stock levels (Nuryati, 2016; WTO, 2021b). BULOG is required to maintain a minimum year-end stock of 1 to 2 million tonnes (OECD, 2020), for the following purposes: rice distribution to low-income groups, market operations to maintain price stability, emergency purposes, ASEAN reserves, and international cooperation and assistance (WTO, 2021b). The release of rice stocks has been affected by several changes in recent years to the country's domestic food aid programme. Until 2019, part of the rice stocks held by BULOG were distributed through the Beras untuk Keluarga Miskin (Rice for the Poor) (RASTRA) programme (previously known as RASKIN). Managed by the Coordinator Ministry of Welfare, under RASKIN, eligible households were entitled to receive 15 kg of rice per household, per month at 20 to 30 percent of the market price, while under RASTRA, each household received 10 kg of rice for free (WTO, 2021b). In 2017, Indonesia started a pilot programme of electronic food vouchers – the BantuanPangan Non Tunai (BPNT) – which, by 2019 was expanded to the entire country, almost entirely replacing RASTRA, except in selected remote regions (OECD, 2020). Under the BPNT, managed by the Ministry of Social Affairs, eligible households receive an amount per month into a purchasing card that can be used to buy food, including rice, commercially from any retailer.[37] As a result of these policy changes, the volume of rice stocks distributed under RASTRA had been declining, from 3.2 million tonnes in 2015, to 1.2 million tonnes in 2018, and only 354 825 tonnes in 2019 (OECD, 2020; WTO, 2021b). Changes have also been introduced to the policies for managing consumer prices, potentially affecting BULOG's stock release functions for price stabilization purposes. Previously, BULOG would release stocks to decrease prices if the consumer prices increased by 10 percent or more compared to the average consumer price of the medium quality rice three months before (Nuryati, 2016; WTO, 2021b). Since 2017, maximum retail prices (MRP) capping the retail price of both medium and premium quality rice have been introduced (OECD, 2020; WTO, 2021b).

[35] Prior to the reforms of 1997, the head of BULOG reported directly to the president of Indonesia.

[36] Prior to 2005, BULOG used a price band on rice. After 2005, the policy shifted towards a procurement/floor price (ICTSD, 2016).

[37] Initially, the amount was IDR 110 000 to buy rice and eggs, and since 2020, the BPNT has been transformed to the "Nine Basic Food Items Subsidy Program" which gives increased amount of assistance for a wider set of foods (WTO, 2021b).

Pakistan Wheat	The government's wheat policy aims to balance support to farm incomes with price stability and affordable flour and bread prices for consumers (WTO, 2015a). Wheat stocks are held by the Pakistan Agricultural Storage and Services Corporation (PASSCO), a public company set up in 1973, attached to Ministry of National Food Security and Research, as well as food departments of provincial governments. Among the key objectives of PASSCO are: "provision of food security at national level, by maintaining strategic reserves of wheat and other specified commodities; maintain SAARC Food Bank Reserve Stock; extend welfare to farmers by providing support to farmers, stabilizing prices and releasing wheat to deficit provinces as well as the armed forces; undertake import/export of different grains when called upon" (PASSCO, 2021). Stocks may be comprised of both domestically procured wheat as well as imports. The federal government establishes the procurement price at the beginning of each marketing year. Procurement aims to target poor farmers through verification of land records, and subsequent distribution of procurement bags (only those farmers receiving the bags are eligible to sell their produce to the government) (WTO, 2015b). The federal government establishes wheat procurement targets for provincial and federal agencies, which have generally amounted to 30 percent of domestic wheat production (which represents most of the marketable supply) (WTO, 2015a). The government uses commercial loans to finance the purchase (as well as storage and sale operations), with the government procurement agencies and provincial food departments using government guarantees to obtain loans from private banks (Prikhodko and Zrilyi, 2013). Stocks comprise "operational reserves", which are sold to millers on an as-needed basis, and "strategic holdings", which are managed to support prices (Prikhodko and Zrilyi, 2013). The government generally aims to maintain one million tonnes as strategic reserve (WTO, 2015a). Grains are stored in the government-owned or rented private storage facilities, or in temporary storage facilities. Stocks are mainly released to registered millers at below-market prices, which are announced in advance of the season (the government may also lower the release price during the marketing year). In order to lower consumer prices, the government also sets ceilings on the sales price of flour processed from subsidized wheat (Prikhodko and Zrilyi, 2013).

The Philippines Rice	The National Food Authority (NFA), set up in 1985 and linked to the Department of Agriculture, was transformed in 2019, from a "trading and regulatory agency" to a "buffer stocking agency", which aims to "procure palay locally and maintain the optimal level of buffer stock at all times" and "manage efficiently and effectively the acquisition, quality maintenance and disposition of the buffer stock during emergencies and calamities" (NFA, 2021).[38] While previously, procurement of stocks was both from the domestic market at the NFA support prices, as well as imports carried out by NFA when there was an actual or projected shortage of rice (OECD, 2017b), the new law stipulates that the NFA shall source its buffer stock solely from local farmers (NFA, 2021).[39] This law also defines "buffer stock" as the "optimal level" of rice inventory to be used for emergency situations and to sustain the country's disaster relief programs; "optimal level" being tentatively defined as the equivalent of 15 days, at any given time (NFA, 2021).[40] In practice, the role of these stocks tends to be that of "intervention stocks" rather than only "emergency buffer stocks", with two main functions; namely supporting domestic prices by procuring at administered prices, and reducing consumer prices by releasing stocks at subsidized prices (OECD, 2020). Procurement is done at support prices (recommended by the Food Security Committee and ultimately approved by the President), which are determined based on the domestic cost of production plus a mark-up, and this has generally exceeded the prevailing market price (OECD, 2017b).[41] In addition to the support price, the NFA provides three types of procurement incentive payments (a drying incentive; a delivery incentive; a cooperative incentive). If the market price rises above the NFA support price, farmers can buy back the quantity that they earlier sold to NFA (under the Farmers Option to Buy Back Programme) to sell to private buyers at the prevailing market price. Under its rice distribution programme, the government sets two release prices: one at the wholesale level, whereby NFA sells to licensed and accredited retailers; and the second at the retail/consumer level, with NFA selling directly to end-consumers (OECD, 2017b).[42] Rice distribution is focused at the rice-deficit provinces, and those classified under the Accelerated and Sustainable Anti-Poverty Programme (ASAPP), with NFA rice distribution making up on average 13 percent of total rice consumption between 1990 and 2014. Emergency interventions are also key outlets for stock release.

[38] The NFA was preceded by the National Grain Authority, set up in 1972, to develop and promote key grains in the country. Over time, its mandate expanded to including processing and storage of grain, and eventually to cover more products and promote food security and price stability for rice, leading to the establishment of the NFA. Until the "Rice Tariffication and Liberalisation Law", effective 2019, the NFA had broader functions, including a food safety regulatory function, which involved responsibility for issuing licenses and permits, and registering the importation of rice (OECD, 2020).

[39] Previously, only a small share of total production has been procured from domestic farmers (at most 5 percent in the last ten years) (OECD, 2017b).

[40] Previously, three main kinds of stocks were held: 1) "strategic rice reserve", equivalent to a minimum of 15 days of rice consumption for food security purposes in case of emergencies; 2) "government rice buffer stock", equivalent to 30 days of national rice consumption, for stabilisation purposes in deficit areas and during lean periods; and 3) "ASEAN Plus Three Emergency Rice Reserve", equivalent to 12 000 tonnes, as per its commitment under the ASEAN Integrated Food Security Framework (OECD, 2017b).

[41] It is unclear whether any changes have been introduced to these stock procurement functions.

[42] It is unclear whether any changes have been introduced to these stock distribution functions.

Latin America and the Caribbean

Brazil

Maize, Wheat, Beans and Rice

The main objectives of public stockholding programmes in Brazil include the stabilization of prices for staple crops and the provision of support for smallholder farmers.

Since 1966, Brazil operates the Minimum Price Guarantees Programme (*Programa de Garantia de Preços Mínimos – PGPM*), the overarching national policy aimed at stabilizing agricultural prices and guaranteeing rural incomes (European Commission, 2018; WTO, 2018d). The PGPM is implemented through different price support programmes, and covers a broad range of crops including rice, wheat, maize, and soybeans. PGPM programmes include direct government purchases (the Federal Government Acquisition Programme - AGF); premiums to commercial buyers who pay minimum prices to supply producers (Premium for Product Outflow or PEP, and Outflow of Product Value or VEP); and public and private options contracts backed by private risk premium options (Public Option Contracts or COV, Private Option Risk Premium or PROP, Agricultural Products' Sale Option Private Premium or PEPRO) (WTO, 2017f).

Guaranteed minimum prices are set annually by the Brazilian National Monetary Council (CMN) on the basis of the agricultural production costs in the different regions, as well as several factors affecting domestic and international market prices. Food reserves for both emergency purpose and price stabilization are managed by the national food supply agency, *Companhia Nacional de Abastecimento* (CONAB).

CONAB buys agricultural products from the producers at a guaranteed minimum price, thus supporting farmers' income and increasing the public stocks. Moreover, CONAB grants a premium to wholesalers who decide to pay farmers a reference price (PEP), and grants premiums to buyers who agree to pay a minimum price to agricultural producers (VEP) (WTO, 2017f).

Furthermore, CONAB runs the Food Acquisition Programme (PAA), a programme aimed at purchasing food from family farms at market prices. Established in 2003 as part of the "Zero Hunger" Strategy with the aim of fighting for food insecurity and strengthening smallholder farmers, the food procured by PAA is used to build stocks and supply public food distribution programmes. The main group targeted by the PAA for assistance is family farmers classified as such by the National Programme for the Strengthening of Family Agriculture (*Programa Nacional de Fortalecimento da Agricultura Familiar* – PRONAF) (Krivonos and Dawe, 2014).

Bolivia (Plurinational State of)

Rice, Soy, Maize and Wheat

Responding to the high and volatile food prices and the challenges associated with ensuring that domestic markets are adequately supplied, in 2007 the government of the Plurinational State of Bolivia established the Enterprise for Support in Food Production (EMAPA). One of the main objectives of EMAPA is to contribute to the stability of the domestic agricultural market, and to support marketing of agricultural production (EMAPA, 2020). It operates strategic food reserves purchasing from farmers and releasing stocks to prevent price spikes, in particular of rice, wheat, maize and soybean (EMAPA, 2017).

EMAPA subsidizes the production of some basic foods through its "fair price" marketing scheme (WTO, 2017g; WTO, 2018e). EMAPA buys products at prices 15 percent above those established at the storage centres or the equivalent. If the price at the storage centre is below the production cost, EMAPA pays the producer a "fair price", equivalent to the sum of the production cost and a margin of up to 15 percent of the cost (WTO, 2017g; WTO, 2018e). Furthermore, EMAPA transform the grains into flour and sells the product at a capped price to the population (including bakeries) through their own selling points ("SuperEmapas") or other channels (EMAPA, 2018).

Regarding its results over the last decade, between 2008 and 2017 EMAPA indicated that it bought and stocked almost 2 million tons of grains, namely 412 000 tons of rice, 165 000 tons of soy, 780 000 tons of maize, and 594 000 tons of wheat, increasing fourfold the country's food stocks (EMAPA, 2017).

Chile Wheat	COTRISA is a state-owned enterprise in charge of buying, selling, packaging, storing, transporting, distributing, delivering and trading, on its own account or on behalf of others, wheat, maize and other cereals (WTO, 2015c). COTRISA supports the implementation of public policies that provide for the functioning of the grains internal market and the improvement of the marketing conditions of small producers (COTRISA, 2021). For instance, COTRISA oversees the implementation of the Wheat Purchase Programme (PCT), a national policy supporting the agricultural sector by means of purchasing wheat (including from small producers) when domestic prices lose competitiveness, taking as reference international prices and import costs (ODEPA, 2018). By doing so, COTRISA aims at mitigating the distortions caused by internal shocks that occur in the grain markets, which may affect the bargaining power of small producers. COTRISA is also active in initiatives that allow for the provision of grain storage facilities where packaging, storage and purchase management services can be provided (COTRISA, 2017).
Ecuador Maize and Rice	In 2007, the government of Ecuador created the *Unidad Nacional de Almacenamiento* (National Storage Unit, UNA) to increase the production and ensure food supply for consumers. UNA is a state-owned enterprise that belongs to the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP). It manages the strategic food reserves, purchases grains from farmers at guaranteed prices, and is responsible for further marketing agricultural products (Demeke *et al.,* 2014). UNA has a storage capacity of around 231 000 tonnes (UNA, 2021). By purchasing agricultural commodities at administrated price, UNA became of particular importance in supporting small and medium agricultural producers (MAGAP, 2016). Such administrated prices are set by the government in each marketing season to ensure that in a case of market shocks, producers can cover the cost of production and yet receive a minimum profit. These are usually agreed in consultation with the producer and the industrial sectors. However, if a consensus on the prices is not reached, MAGAP establishes them (WTO, 2019b).
Colombia Maize and Rice	Colombia implemented the *Incentivo al Almacenamiento de Arroz* (Rice Storage Incentive scheme) with the objective of promoting storage of rice by private companies or the producers themselves (Ministerio de Agricultura y Desarrollo Rural de Colombia, 2020). Similarly, in 2016, a price incentive programme for producers of modified maize entered into force, allowing producers to protect themselves against international price shocks, and to stabilize in turn production and earnings. Similarly, Colombia makes use of a Price Stabilization Funds (FEPs), an instrument created to deal with global price fluctuations of several commodities. The funds come from parafiscal levies, mainly charged on producers, but which stay outside the domestic budget. These are then reinvested by the private sector to the benefit of those businesses from which they were sourced (WTO, 2018f).
Dominican Republic Rice	Since 2005, the Dominican Republic has run the *Programa Nacional de Pignoraciones*, supporting storage of rice at times of lower producer prices (the government fixes a price band every year for those participating in the programme) (Demeke *et al.,* 2014).

Near East and North Africa

Egypt

Wheat

Agricultural policies in Egypt aim at boosting domestic production and ensuring sufficient food supplies through imports. In fact, although important reforms took place in the 1980s and 1990s to liberalize the country's agricultural sector, guaranteed minimum prices are still in place.

To encourage domestic production of wheat, and to build up public stocks of basic foodstuff, the State purchases the cereal from farmers through the General Authority for Supply of Commodities (GASC) (McGill *et al.,* 2015; WTO, 2018g). Then, the government subsidizes the prices of both wheat and bread by means of different systems, including a ration card system (WTO, 2018g), although efforts are underway to streamline the subsidy system.

Regarding production, the government fixes the guaranteed prices and purchases the crop from farmers before the sowing period, so that farmers can decide on whether to produce wheat. The admin price is usually higher than the average import price. Farmers can then decide whether to sell to the State at regulated prices or to the private sector at market prices. While there is no obligation for the producers to sell to the State, the latter has the obligation to buy at administrated prices if the farmer prefers to do so. Overall, around 35 percent of the production is purchased by the government (WTO, 2018g).

GASC mainly operates through the Principal Bank of Development and Agricultural Credit (PBDAC), which is the largest single buyer of domestic wheat, and the Egyptian Holding Company for Silos and Storage (EHCSS). Besides them, GASC operates the Food Industries Holding Company (FIHC), an umbrella organization that includes public mills, oversees the milling process and coordinates the delivery of wheat to government mills (McGill *et al.,* 2015).

In 2017, the government announced a change to its flour and bread subsidy policy. Previously, the government would subsidize flour and bread production, as well as the final sale of bread. With the policy change, the transactions between state-run buyers and millers, and millers and bakers would be at market prices, while bread would still be sold at a subsidized price (with government paying bakers the difference) (FAO, 2017d).

Jordan

Wheat

Similar to other countries of the region, the objective of Jordan's agricultural policy is primarily to balance the interests of farmers and consumers. This is achieved through the provision of subsidized basic foods such as barley, milk, sugar, and wheat to ensure food security to poor people, and payments of input subsidies and price support to farmers (Sharma, 2016).

Both domestic production and imports are used to replenish stocks. Jordan maintains a strategic food reserve equivalent to six months of domestic consumption of wheat, and two months of domestic consumption of barley (WTO, 2016a).

As in many other countries in the region, the government of Jordan, through the Ministry of Industry, Trade and Supplies, purchases wheat from domestic producers at administered prices and sells them at subsidized prices to millers. However, the level of support varies from one year to the next, since administered prices stem from a calculation based on international prices, shipping costs, and a producer margin. The MITS is also responsible for importing wheat and barley, which accounts for almost all the domestic consumption needs (WTO, 2016a).

Until 2017, wheat was sold to mills at a cost price to produce flours, which in turn were sold to bakeries, whose bread was sold to consumers at a fixed subsidized price. As of 2018, the government replaced its subsidy programme with a targeted assistance system, removing direct subsidies to bakeries to keep the prices low, and distributing direct cash subsidy (called "bread subsidy") to beneficiaries (FAO, 2018).

Tunisia Wheat	In Tunisia one of the objectives of the agricultural policy is to ensure food security and to protect farmers' incomes (World Bank, 2014). As such, the government intervenes both during surplus as well as during deficit production years, procuring grains (for an amount that accounts for almost the totality of all domestic consumption) and releasing the stock as necessary (AfDB, 2012). In this regard, the government maintains strategic stocks aiming at covering about ten months of domestic consumption. State interventions in the grain markets are also meant to control consumer prices, fulfilling a double role in balancing the interests of farmers through market price support and that of consumers through the provision of subsidized food (Sharma, 2016). The Grain Board is responsible for the imports and for the domestic purchase of wheat, and acts as the intervention agency for barley (WTO, 2016b). Domestic purchases take place at administrative price, set by the government according to the international prices, production costs, and the situation of the domestic market (World Bank, 2014). After that, the cereals (both domestic and imported) are sold to the processing plants (mills and semolina factories) at a fixed price (WTO, 2016b).
Saudia Arabia Wheat	Like other countries of the area, Saudi Arabia relies on global markets to guarantee supplies of staples to the domestic market and meet in turn its food security targets. To reduce such dependence, the Ministry of Agriculture aimed in the past to achieve self-sufficiency for targeted products, in particular wheat. Pursuing this objective, in the early 1990s, Saudi Arabia became a major exporter of wheat. However, because of the high levels of inputs needed and the water scarcity, in 2008 the government made the decision to end the purchases of wheat production, thus reducing procurements of domestically produced wheat by 12.5 percent per year and replacing them with imports. As a consequence, support to produce domestic wheat ended in 2016. However, such decision was reversed in 2018, when the country reintroduced purchases of domestic wheat (WTO, 2016c; WTO, 2021c). Until November 2015, the Grain Silos and Feed Mills Organization (GSFMO) was the responsible agency for importing, purchasing domestically produced wheat, and milling wheat in the country. GSFMO owned silos with total capacity of 2.7 million tonnes. After 2015, the Saudi Grains Organization (SAGO) was created, and replaced the GSFMO. SAGO purchases and stores wheat, mills it for human consumption, and is responsible for the strategic stockpile of 4 months' consumption (WTO, 2016c; WTO, 2021c). SAGO is the only authorized buyer for domestic wheat. It is also the only authorized importer of wheat. However, in the future, private flour mills will be able to apply for import licences from SAGO (WTO, 2021c). To fill its stocks, SAGO imports wheat directly from several countries through public tenders. Imports are used for immediate supplies to the market and to maintain reserves to ensure its food security objectives. Wheat is used for supplying bakeries with wheat flour at a subsidized/ capped price (USDA, 2019).

Sub-Saharan Africa

Mali Rice, Millet and Sorghum	The storage policy and the role of Office of Agricultural Products of Mali (OPAM) have evolved significantly over the last 15 years.[43] Currently, there are two kinds of public stocks: a) the "Stock National de Securite" (SNS), mainly comprised of millet and sorghum, is aimed at responding to food emergencies during years of deficit or major crises; 2) the "Stock d'Intervention de L'Etat" (SIE), mainly comprised of rice, is aimed at regulating markets and reducing market distortions through the purchase of rice during the harvest period, for stabilizing prices or providing transfers. The SIE is also intended to strengthen SNS functions. For both stocks, procurement is mainly from domestic producers and producer organizations (although in the early years of SIE, imports made up a significant share of purchases). For SNS, the purchase decision is triggered by the release of stocks, and for SIE, purchases are made following tenders or take-over bids. The government sets an "optimal" level of SNS stocks at 35 000 tonnes of cereals, aimed to meet the cereal needs of vulnerable areas in the event of an average crisis for a period of 3 months. The optimal level of the SIE is 25 000 tonnes. For both SNS and SIE, procurement often exceeds these optimal levels of stocks (Gourichon and Pierre, 2017). Stocks are released by SNS through free food distributions, intervention sales at "moderate prices" during emergencies, and as sales for technical rotation. SIE stocks are mainly released in the form of intervention sales, which are made in two-tonne batches to individual consumer groups in areas with low cereal supplies or during lean periods. SIE stocks can also be released through free food distribution in the event of a crisis (Gourichon and Pierre, 2017). Stocks are also maintained at the local level – "cereal banks" – by roughly 700 municipalities, managing and selling small quantities (Galtier, 2019).
the United Republic of Tanzania Maize	The National Food Reserve Agency (NFRA), has a mandate to ensure availability of food in times of shortage by procuring, reserving and recycling food stocks in an efficient manner (Pierre *et al.,* 2018). NFRA sets an annual procurement price prior to the harvest, based on estimated costs of production. This price tends to be above the prevailing domestic market price in the surplus producing regions, and lower in the maize deficit regions (Pierre *et al.,* 2018). On average between 2010/11 and 2014/15, NFRA procurement represented roughly 22.5 percent of total marketed production (assumed to be 40 percent of total maize production). Current storage capacity is equivalent to roughly 5 percent of production. Stocks are released through three main channels (Pierre *et al.,* 2018). The first channel is based on annual vulnerability assessments, which classify people from all districts in the country as either food secure, or acutely or moderately food insecure. Those classified as acutely food insecure receive food grains for free (5 percent of total NFRA disbursement), whereas for those facing moderate food insecurity, maize is released at highly subsidized prices (33 percent of total NFRA disbursement). The second channel of stock release related to NFRA's food aid functions, whereby maize is sold to institutions at a slight premium (e.g., WFP, representing 21 percent of total NFRA disbursement, and prisons, representing 5 percent of total NFRA disbursement). The remaining 36 percent of disbursements are at slightly subsidized prices to millers. In regions with high prices, private millers are identified who can procure, mill and distribute maize, with specified quantities and flour retail prices (generally below prevailing market prices).

[43] Prior to 2002, the objectives of the storage strategy were mainly price stabilization, which was achieved by guaranteeing a minimum price to producers in surplus grain production regions and providing subsidized food to regions with a deficit. Since the formulation and validation of Mali's National Food Security Strategy (SNSA), OPAM's mission was revised to focus on emergency food aid, operationalized through the SNS. However, following food insecurity issues in 2006, the SIE was set up, initially for food aid purposes but eventually assuming market regulatory functions (Gourichon and Pierre, 2017).

Zambia Maize	The Food Reserve Agency, established in 1995, aims to ensure "national food security and provide market access for rural-based smallholder farmers by maintaining a sustainable national strategic food reserve" (WTO, 2016d). Its mandate includes procurement, stockholding and release functions, including engagement in maize marketing (WTO, 2016d).[44] Prices are fixed through a process involving key stakeholders, including the Stock Monitoring Committee (chaired by the Ministry of Agriculture) and the Zambia National Farmers Union, and in general, prices are set in consideration of production costs (WTO, 2016d). At the beginning of a crop marketing season, a pan-territorial and pan-seasonal price is announced, intended to serve as the minimum price, which has often been above the average wholesale price (Chapoto, 2019). FRA's storage capacity is 1.3 million tonnes, above half the amount that is required to meet the demand in the country (ICTSD, 2016). Reserves are maintained in different parts of the country. Before any buying session, the FRA publishes the precise dates in local newspapers, in addition to the amount to be purchased and the prices. FRA procurement accounted for an estimated 43 percent of total marketed surplus in 2015, reaching roughly 90 percent in 2011 (Chapoto, 2019). In deficit production years, the FRA can also import crops. Specific sales modalities are elaborated by the FRA each time a commodity sale programme is initiated, including the selection criteria for beneficiary processors and communities (WTO, 2016d). FRA releases maize stocks at subsidized prices to large-scale processors, who are required to reduce the wholesale price of maize meal to pass on the subsidy to consumers (Chapoto, 2019). Stocks are also sold at below market prices directly to vulnerable communities through the "Community Maize Sales Programme" (WTO, 2016d); to WFP; and may be exported to neighboring countries (Chapoto, 2019).

[44] Initially, its mandate was mainly to manage strategic commodity reserves to meet acute supply shortfalls, with purchasing and sales operations mainly done by the private sector using a tender process (Chapoto, 2019). However, since 2005, the FRA's mandate as expanded to include provision of market access for smallholder farmers (Chapoto, 2019).

Europe and North America

European Union

Public food stocks were maintained in the European Union as a result of farm income support measures that were in place between 1962 (adoption of the EU Common Agriculture Policy - CAP) and 1992 (reform of CAP). These measures aimed to "encourage farmers to produce food by guaranteeing internal prices and incomes, bringing economic growth and encouraging the development of a wide range of quality food products at reasonable prices for European consumers" (European Commission, 2017).

Farmers received a fixed minimum price for their products, such that when the internal price fell below the intervention price, the intervention agencies in the member states bought up any surplus, thereby increasing demand and stabilizing prices (Deuss, 2015).[45] However, as there were no limits on acreage or production, by the 1980s, the policy led to significant surpluses of the commodities receiving support and to rising fiscal costs, both in terms of the stockholding expenses, but also in the subsidization of exports.[46]

Through a CAP reform process initiated in 1992, the European Union support prices for agricultural products such as beef and cereals were gradually reduced, lowering incentives for overproduction and obviating the need for public stocks. At the same time direct payments were introduced based on historical levels of production (by area or livestock numbers) to prevent a fall in farm incomes (European Commission, 2017). Further reforms in 2003 saw the introduction of the Single Farm Payment, with the goal of breaking the link between direct payments and the type of products and amounts produced – "decoupling", although it was still based on historical reference amounts of direct payments.[47] Reforms applied since 2015 allowed EU Member States to combine different direct payment schemes adapted to the national context (European Commission, 2017).[48] Negotiations are ongoing to shape the next version of the CAP, which is expected to come into force in 2022 (OECD, 2020).

It also needs to be noted that in addition to purchases into public intervention, the EU policy also included provisions on private storage aid for certain products. Under these provisions, the products remained in private ownership with aid provided to cover the cost of storage for agreed periods. After that period, the products could be released onto the market (Matthews, 2013).

[45] These domestic price targets were above world prices, necessitating import controls such as "variable levies" imposed on imports, to ensure that they would not undercut domestic price targets for agricultural products (Elliott, 2004).

[46] Export subsidies were used to compensate exporters for the gap between the internal price and the lower world market prices. As a result, the EU had moved from being a large net importer to a net exporter of a number of commodities such as beef, butter, sugar and wheat, leading to increased frictions with the European Union's main trading partners (Elliott, 2004; European Commission, 2017).

[47] Under the single payment scheme, farmers were allotted payment entitlements based on historical reference amounts received during the period 2000 to 2002, with the payment established at both the farm level, and the regional level. At the farm level for instance, the entitlement was calculated by dividing the reference amount of payment by the number of eligible hectares in the reference year (OECD, 2004).

[48] The support schemes are divided into compulsory (basic payment, green payment and young farmers scheme), and voluntary schemes (coupled support, support in natural constraint areas, redistributive payment), all of which are subject to cross-compliance with other EU rules, or a simplified scheme for small farmers.

United States of America

In the 1930s, during a collapse in global prices and farm incomes, the United States of America implemented a policy that aimed to raise farm prices through a reduction in food supply (as opposed to the more direct form of farm income support in the European Union). The manner in which the policy was implemented resulted in the accumulation of public food stocks.

Reduction in production was achieved by introducing payments to farmers to participate in acreage control programs (Stubbs, 2021). The Commodity Credit Corporation (CCC) was established to "stabilize, support and protect farm income and prices; assist in maintaining balanced and adequate supplies of agricultural commodities; and facilitate the orderly distribution of commodities" (Stubbs, 2021). In order to support farm incomes, the CCC made non-recourse loans at higher than market prices to farmers i.e., the loans could be satisfied by forfeiting the commodity pledged as collateral when prices dropped below the "loan rate" (Stubbs, 2021; Elliot, 2004). In this way, the loan rate became a floor price in the domestic market, and the CCC acquired stocks by taking title to farmers' grain if they failed to redeem their loan (Sumner and Josling, 1998). During the 1950s and 1960s, government stocks were often released on world markets or in domestic commodity feed programs (e.g., for dairy products).

This form of commodity-specific price support and supply control was gradually reformed, given the changing structure of the agriculture sector. By the 1960s, rising productivity, driven by rapid adoption of mechanical and chemical technology, led to growing surpluses. At this time, while some elements of supply control were retained, price support was reduced and new income support payments (deficiency payments) were introduced to protect farm income (Dimitri, Effland and Conklin, 2005).[49] By 1985, the agricultural policy of the United States of America aimed at creating incentives to encourage the marketing of commodities rather than forfeiting them to government-held surpluses, effectively reducing the role of the CCC in commodity storage and price setting (Dimitri, Effland and Conklin, 2005; Sumner and Josling, 1998).[50, 51]

Market prices have generally been above loan rates for cereals and oilseeds since the mid-1990s. This, combined with the implementation of marketing loans in the 1990s meant that CCC inventories have been close to zero since 1995. In this context, a major reform was introduced with the 1996 Farm Bill, whereby new forms of income support payments not directly tied to farmers' current production decisions ("decoupled" payments) replaced older income support schemes, although the new payments were still tied to historical levels of production (Dimitri, Effland and Conklin, 2005).[52] This was a significant shift away from relatively distorting forms of support, however, after a series of changes introduced in the subsequent Farm Bills of 2002 and 2008, the Farm Bill of 2014 introduced a reversal towards subsidy payments that are tied to current market conditions through a series of risk coverage and income protection programs (see for example, Smith, 2014). The Farm Bill of 2018 largely continues programmes implemented under the previous Farm Bill (OECD, 2019).

[49] Deficiency payments would compensate farmers for domestic sales below the target prices (Elliott, 2004). Other elements of supply control included the farmer-owned reserve program (operated between 1977 and 1996), whereby the Commodity Credit Corporation (CCC) provided farmers with a three-year contract that granted them a loan and some money towards storage costs, in exchange for accepting conditions over when the stored grain could be sold on the open market (Murphy, 2009).

[50] In 1985, there was a shift from deficiency payments to direct "contract payments", and a shift from non-recourse loans to "marketing loans" that allowed producers to repay their loans at the lower of the loan rates plus interest or the world market price (Sumner and Josling, 1998).

[51] Moreover, in order to encourage exports, similar to the European Union, the United States of America provided export subsidies through the Export Enhancement Program (EEP), whereby payments were made to exporters to compensate them for the difference between the higher domestic prices and the lower world market prices (Sumner and Josling, 1998).

[52] Rather than the old system of deficiency payments and commodity loans linked to target prices, farmers would sign "production flexibility contracts" – later renamed to "direct payments" in 2002 – that would allow them to plant whatever they wanted in response to market signals, and they would no longer be guaranteed a minimum price, but rather, payment would be made based on historical acreage enrolled in subsidy programs, which would be reduced over time (Elliott, 2004).

ANNEX
B

Prices

Table B.1. Administered prices in national currencies, nominal

Countries for which data was available by marketing year					
Country	Commodity	Units	2008/09	2009/10	2010/11
Brazil	Maize	BR/tonne	230.68	267.22	256.15
	Wheat	BR/tonne	546.67	532.86	564.66
India	Paddy (Common)	INR/quintal	900.00	1 050.00	1 000.00
	Rice (Common)	USD/tonne*	293.54	316.32	329.24
	Wheat	INR/quintal	1 080.00	1 100.00	2 400.00
Pakistan	Wheat	PKR/40kg	950.00	950.00	950.00
The United Republic of Tanzania	Maize	TZS/tonne	-	-	316 262

Countries for which data was available by marketing year					
Country	Commodity	Units	2008	2009	2010
China	Paddy (Japonica)	CNY/50kg	82.00	95.00	105.00
	Paddy (early Indica)	CNY/50kg	77.00	90.00	93.00
	Paddy (mid-to-late Indica)	CNY/50kg	79.00	92.00	97.00
	Rice (Japonica)	CNY/tonne	-	-	-
	Rice (Indica)	CNY/tonne	-	-	-
	Rice (Japonica), estimated	CNY/50kg	117.14	135.71	150.00
	Rice (Indica), estimated	CNY/50kg	111.43	130.00	135.71
	Wheat	CNY/tonne	1 490.00	1 700.00	1 760.00
Ecuador	Maize	USD/45,36kg**	13.75	12.60	13.25
	Paddy	USD/90.71 kg**	23.00	27.00	27.00
Egypt	Wheat	LE/tonne	2 553.30	1 613.30	1 813.30
Indonesia	Paddy	IDR/kg	2 200.00	2 400.00	2 640.00
	Rice	IDR/kg	4 300.00	4 600.00	5 060.00
Jordan	Wheat	JOD/tonne	329.17	308.70	271.40
The Philippines	Paddy	PHP/kg	-	-	-
	Rice	PHP/kg	23.85	26.15	26.15
Tunisia	Wheat (Durum)	TND/tonne	400.00	430.00	580.00
	Wheat (Common)	TND/tonne	350.00	350.00	450.00
Saudi Arabia	Wheat	SRI/tonne	1 000.00	1 000.00	1 000.00
Zambia	Maize	KW/tonne	1 100.00	1 300.00	1 300.00

Source: Bibliography, section Data sources for administered prices.

* This is in USD/tonne and not national currency as it refers to rice prices notified by India to the WTO, which are in USD/tonne.

** In the national data sources, prices are expressed in USD.

Countries for which data was available by marketing year								
2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
	271.33	304.66	316.41	316.41	326.80	338.17	354.60	230.68
460.83	-	561.38	581.45	608.76	665.05	672.83	653.19	546.67
1 080.00	1 250.00	1 310.00	1 360.00	1 410.00	1 470.00	1 550.00	1 750.00	1 815.00
338.06	344.67	324.79	333.66	323.06	328.75	360.72	375.41	384.01
1 285.00	1 350.00	1 400.00	1 450.00	1 525.00	1 625.00	1 735.00	1 840.00	1 925.00
2 685.00	1 200.00	1 200.00	1 300.00	1 300.00	1 300.00	1 300.00	1 300.00	-
413 941	429 269	510 046	505 756	-	-	-	-	-

Countries for which data was available by marketing year								
2011	2012	2013	2014	2015	2016	2017	2018	2019
128.00	140.00	150.00	155.00	155.00	155.00	150.00	130.00	130.00
102.00	120.00	132.00	135.00	135.00	133.00	130.00	120.00	120.00
107.00	125.00	135.00	138.00	138.00	138.00	136.00	126.00	126.00
3 714.00	4 000.00	4 286.00	4 429.00	4 429.00	4 429.00	-	-	-
3 000.00	3 517.00	3 831.00	3 917.00	3 923.00	3 906.00	-	-	-
-	-	-	-	-	-	214.29	185.71	185.71
-	-	-	-	-	-	190.00	175.71	175.71
1 860.00	2 040.00	2 240.00	2 360.00	2 360.00	2 360.00	2 360.00	2 300.00	2 240.00
16.50	12.90	15.90	15.90	15.90	14.90	14.90	13.50	15.25
31.00	33.25	34.50	34.50	34.50	35.00	35.50	32.50	-
2 346.70	2 520.00	2 586.70	2 740.00	2 760.00	2 773.30	3 700.00	3 800.00	4 433.33
2 640.00	3 300.00	3 300.00	3 300.00	3 700.00	3 700.00	3 700.00	3 700.00	3 700.00
5 060.00	6 600.00	6 600.00	6 600.00	7 300.00	7 300.00	7 300.00	7 300.00	8 030.00
400.00	450.00	370.00	370.00	-	-	-	-	-
-	-	17.00	17.00	17.00	17.00	17.00	17.00	19.00
17.00	17.00	17.00	17.00	17.00	-	-	-	-
600.00	600.00	650.00	650.00	650.00	700.00	750.00	750.00	820.00
450.00	450.00	480.00	480.00	580.00	520.00	540.00	540.00	590.00
1 000.00	1 000.00	1 000.00	1 000.00	1 000.00	-	-	-	1 250.00
1 300.00	1 300.00	1 300.00	1 400.00	1 500.00	1 700.00	1 200.00	1 500.00	2 200.00

Table B.2. Administered and world market prices in USD/tonne, nominal

Commodity	Country	2008	2009	2010	2011
Maize	**Ecuador**	303.13	277.78	292.11	363.76
	Brazil*	120.36	142.19	149.27	-
	The United Republic of Tanzania*	-	-	214.19	264.57
	Zambia*	250.28	264.16	269.17	259.76
	US No.2, Yellow	223.66	165.48	185.27	291.96
Wheat	**Brazil***	285.23	283.54	329.05	254.19
	India*	235.01	233.72	253.26	256.72
	Pakistan*	312.25	284.59	276.91	292.09
	China	214.43	249.97	266.03	291.22
	Tunisia (Durum)	324.64	318.45	405.20	426.20
	Tunisia (Common)	284.06	259.21	314.38	319.65
	Jordan	463.84	434.79	382.25	563.38
	Saudi Arabia	266.67	266.67	266.67	266.67
	Egypt	470.00	290.97	322.54	395.54
	US No.2, Hard Red Winter	340.96	235.19	241.55	329.86
Paddy and rice	**India* Paddy (Common)**	195.84	223.09	216.46	215.77
	India* Rice	293.54	316.32	329.24	338.06
	Indonesia Paddy	226.83	230.99	290.42	301.01
	Indonesia Rice	443.35	442.74	556.63	576.94
	Philippines Paddy	-	-	-	-
	Philippines Rice	538.09	548.45	579.70	392.49
	China (Japonica) Paddy	236.02	278.13	310.18	396.20
	China (Indica) Paddy	224.50	266.42	280.64	323.46
	China (Japonica) Rice	-	-	-	574.79
	China (Indica) Rice	-	-	-	464.29
	China (Japonica) Rice, estimated	337.17	397.32	443.11	574.79
	China (Indica) Rice, estimated	320.72	380.59	400.91	464.29
	Ecuador Paddy	253.56	297.65	297.65	341.75
	Viet Nam 25 percent Broken	570.50	383.99	387.00	467.04
	US Long Grain, 4 percent	803.59	545.30	510.48	577.25
	US Medium Grain, 4 percent	978.93	1068.30	736.79	820.76

*Countries that reported administered prices by marketing year. For these countries, prices are reported here for the first year of the respective marketing year e.g., the administered price for 2008/09 has been reported here for 2008. These prices have been converted to USD using an average of the annual average exchange rates for the two years within the marketing year e.g., the exchange rate used for the 2008 value is an average of the exchange rates of 2008 and 2009.

2012	2013	2014	2015	2016	2017	2018	2019
284.39	350.53	350.53	350.53	328.48	328.48	297.62	336.20
132.06	135.13	111.41	92.81	97.80	98.80	93.34	84.25
270.90	313.80	277.54	-	-	-	-	-
246.59	225.10	189.37	158.40	171.50	120.15	128.49	140.87
298.30	259.81	192.89	170.10	159.32	154.35	164.45	170.08
-	249.00	204.74	178.57	199.04	196.58	171.93	144.41
241.00	234.06	231.66	232.21	245.62	259.90	265.11	266.40
307.65	295.96	318.83	313.20	309.19	285.99	239.09	-
326.19	363.07	381.54	366.69	352.15	353.00	340.00	324.00
384.15	400.08	382.88	331.36	325.88	309.99	283.35	279.44
288.11	295.45	282.74	295.67	242.08	223.19	204.01	201.06
633.80	521.13	521.13	-	-	-	-	-
266.67	266.67	266.67	266.67	-	-	-	333.33
416.11	376.50	387.14	358.85	276.63	208.07	213.88	264.35
327.29	321.65	303.29	232.60	196.02	211.43	240.64	218.87
223.14	219.01	217.28	214.70	222.19	232.19	252.14	251.18
344.67	324.79	333.66	323.06	328.75	360.72	375.41	384.01
351.56	315.45	278.12	276.34	278.02	276.51	259.89	261.53
703.13	630.90	556.25	545.21	548.53	545.56	512.75	567.58
-	400.51	382.92	373.60	357.95	337.28	322.82	366.83
402.57	400.51	382.92	373.60	-	-	-	-
443.58	484.20	504.60	497.79	466.55	443.87	392.99	376.35
388.13	430.94	444.38	438.38	407.86	393.56	371.83	356.09
633.68	691.76	720.93	711.20	666.57	-	-	-
557.16	618.33	637.59	629.95	587.86	-	-	-
-	-	-	-	666.57	634.10	561.41	537.65
-	-	-	-	587.86	562.23	531.18	508.70
366.55	380.33	380.33	380.33	385.85	391.36	358.28	-
396.83	362.83	377.00	334.14	331.65	351.18	390.92	323.23
566.75	627.75	571.33	489.71	437.55	455.82	531.03	500.49
717.98	691.75	1007.00	856.58	651.00	673.23	887.51	849.85

Table B.3. Official exchange rate (LCU per USD, annual average)

Country	2008	2009	2010	2011	2012	2013
Brazil	1.83	2.00	1.76	1.67	1.95	2.16
China	6.95	6.83	6.77	6.46	6.31	6.20
Egypt	5.43	5.54	5.62	5.93	6.06	6.87
India	43.51	48.41	45.73	46.67	53.44	58.60
Indonesia	9 698.96	10 389.94	9 090.43	8 770.43	9 386.63	10 461.24
Jordan	0.71	0.71	0.71	0.71	0.71	0.71
Pakistan	70.41	81.71	85.19	86.34	93.40	101.63
The Philippines	44.32	47.68	45.11	43.31	42.23	42.45
Saudi Arabia	3.75	3.75	3.75	3.75	3.75	3.75
The United Republic of Tanzania	1 196.31	1 320.31	1 395.63	1 557.43	1 571.70	1 597.56
Tunisia	1.23	1.35	1.43	1.41	1.56	1.62
Zambia	3.75	5.05	4.80	4.86	5.15	5.40

Source: DataBank, World Bank Development Indicators (WDI) **https://databank.worldbank.org/source/world-development-indicators**

Table B.4. GDP implicit deflator index

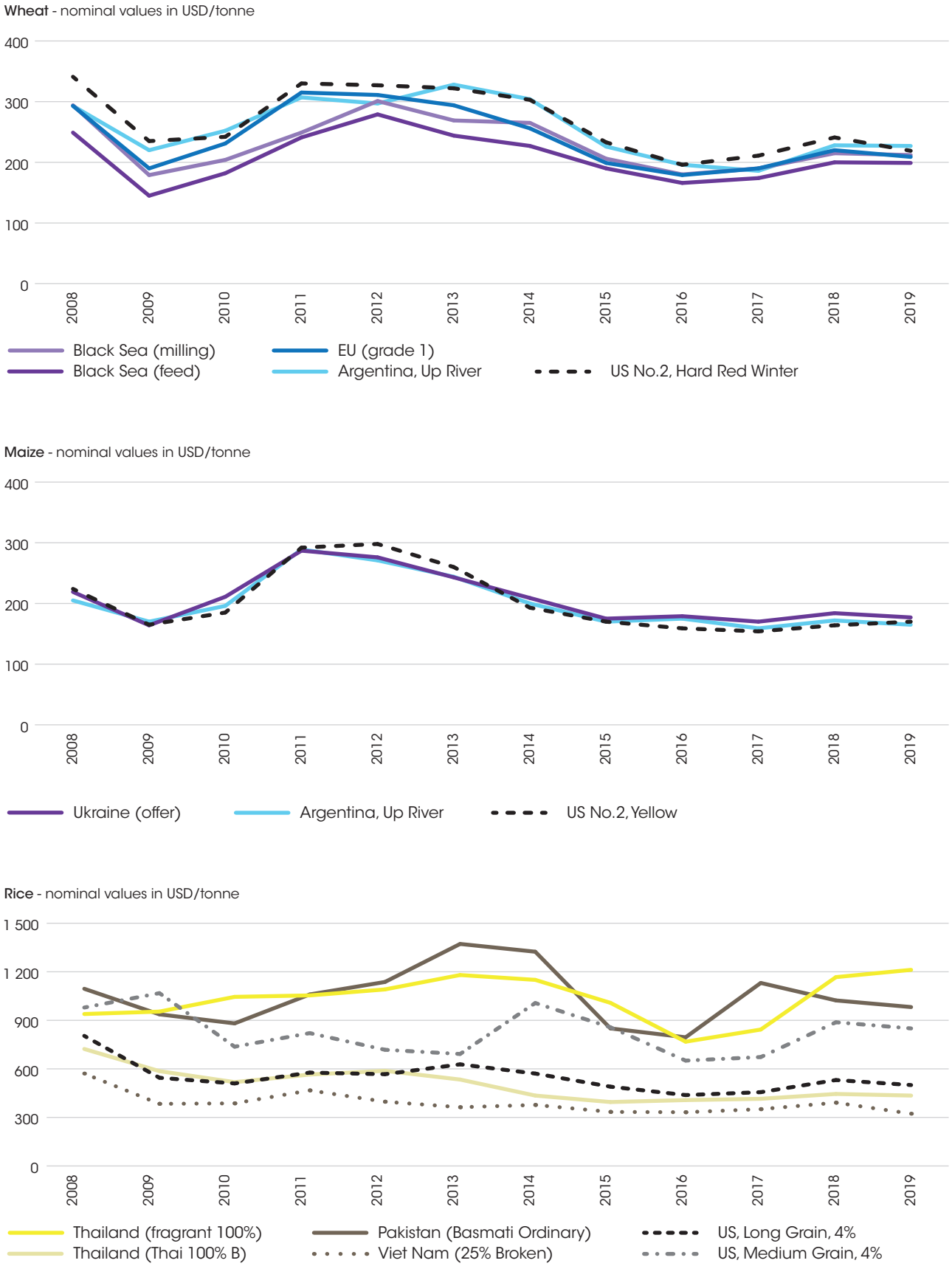
Country	2008	2009	2010	2011	2012	2013
Brazil	85.95	92.23	100.00	108.32	116.92	125.70
China	93.76	93.56	100.00	108.08	110.60	112.99
Ecuador	92.45	93.05	100.00	105.66	110.93	114.36
Egypt	81.68	90.82	100.00	111.66	133.42	145.04
Indonesia	80.13	86.76	100.00	107.47	111.50	117.04
India	84.53	90.48	100.00	108.73	117.36	124.62
Jordan	89.69	92.53	100.00	105.91	110.79	117.60
Pakistan	74.76	90.21	100.00	119.64	126.79	135.62
The Philippines	93.26	95.81	100.00	103.92	105.99	108.18
Saudi Arabia	101.24	85.33	100.00	115.53	120.17	118.71
Tunisia	93.49	96.32	100.00	104.28	109.39	113.57
The United Republic of Tanzania	83.81	91.38	100.00	112.20	123.96	135.94
United States	98.10	98.85	100.00	102.09	104.05	105.87
Zambia	83.14	87.76	100.00	111.11	118.88	130.45
World	93.77	95.94	100.00	105.42	109.19	111.65

Source: Index created using Inflation, GDP deflator (annual %) from DataBank, World Bank Development Indicators (WDI) **https://databank.worldbank.org/source/world-development-indicators**

2014	2015	2016	2017	2018	2019	2020
2.35	3.33	3.49	3.19	3.65	3.94	5.16
6.14	6.23	6.64	6.76	6.62	6.91	6.90
7.08	7.69	10.03	17.78	17.77	16.77	15.76
61.03	64.15	67.20	65.12	68.39	70.42	74.10
11 865.21	13 389.41	13 308.33	13 380.83	14 236.94	14 147.67	14 582.20
0.71	0.71	0.71	0.71	0.71	0.71	0.71
101.10	102.77	104.77	105.46	121.82	150.04	161.84
44.40	45.50	47.49	50.40	52.66	51.80	49.62
3.75	3.75	3.75	3.75	3.75	3.75	3.75
1 653.23	1 991.39	2 177.09	2 228.86	2 263.78	2 288.21	2 294.15
1.70	1.96	2.15	2.42	2.65	2.93	2.81
6.15	8.63	10.31	9.52	10.46	12.89	18.34

2014	2015	2016	2017	2018	2019
135.56	145.82	157.63	163.37	168.73	175.74
114.15	114.15	115.76	120.66	124.88	126.49
117.83	114.89	117.08	119.36	121.53	121.32
161.36	177.38	188.46	231.68	281.32	319.65
123.41	128.32	131.45	137.09	142.33	144.61
128.77	131.71	135.97	141.11	147.54	151.84
121.65	124.29	125.98	128.10	130.29	132.46
145.67	151.66	152.26	158.37	162.27	176.26
111.48	110.68	112.09	114.69	118.98	119.89
116.01	96.40	93.46	100.53	112.10	112.65
118.69	122.83	128.74	135.47	144.25	154.39
144.17	155.11	166.70	171.21	179.39	187.70
107.83	108.95	110.08	112.16	114.89	117.12
137.54	146.70	166.58	183.40	196.99	212.03
113.92	116.34	118.45	121.92	125.29	128.20

Figure B.1. International Prices for Maize, Wheat and Rice, annual average



Source: Annual averages using monthly data from FAO Food Price Monitoring and Analysis (FPMA) Tool .

Markets and Trade Division – Economic and Social Development
Markets-Trade@fao.org

Food and Agriculture Organization of the United Nations
Rome, Italy

ISBN 978-92-5-135104-8

CB7146EN/1/10.21