

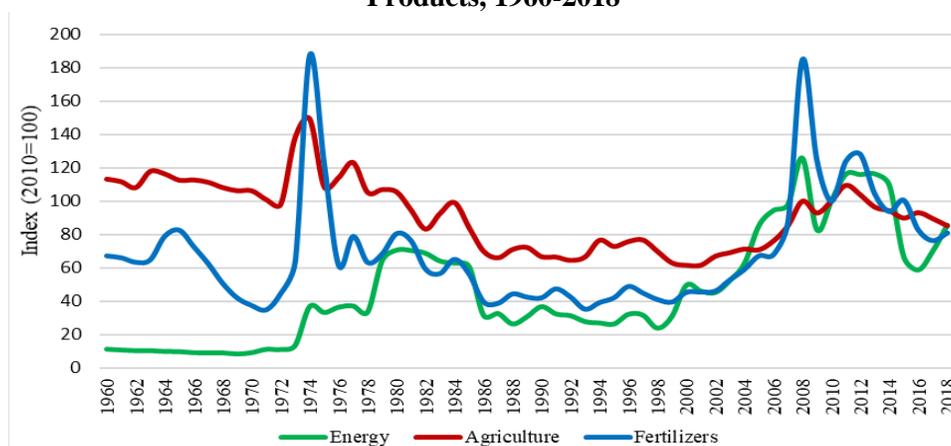
Chapter 7. Agriculture

Uzbekistan’s public spending on agriculture is substantial – 1.8 percent of GDP in 2018 – with limited impact on farm incomes, sustainability, and competitiveness. Most funds are directed to the production of cotton and wheat, preserving a status quo rather than accelerating agriculture’s transformation into higher value-added activities that are part of food value chains. The mix of farm support instruments consists of subsidized credit, provision of irrigation, and inspections, the impact of which are largely offset by the lack of other programs and low – although substantially increased of late -- state procurement prices for cotton and wheat. Globally, farm support is more balanced between direct payments to farmers and general support services. The policy options proposed in this chapter include phasing out indirect farm taxation, strengthening the current support instruments, investing in modernization of irrigation and drainage infrastructure, and increasing spending on public programs that are essential for long-term agricultural development but are currently underfinanced.

CONTEXT

This is the first ever agriculture public expenditure review for Uzbekistan carried out by the World Bank. Public expenditures in other countries matter a lot for agricultural growth and developmental outcomes, while in Uzbekistan, there seems to be a disconnect between large agricultural public spending on one side, and agricultural growth and other developmental outcomes, on the other.¹ The question is, therefore, how to increase the impact of agricultural public spending.

Figure 7.1. World Market Prices of Agriculture and Non-Agriculture Products, 1960-2018



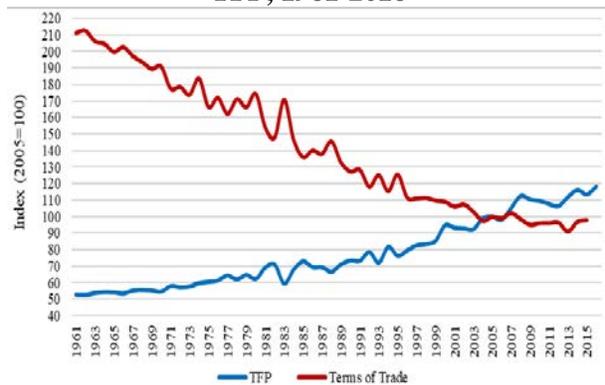
Source: World Bank Commodity Markets Database.

¹ In 2017, the agricultural growth slowed down to 2 percent, from 6 percent during 2014-2016. In 2018, the agricultural growth dropped to only 0.3 percent.

The biggest “farm problem” in the world is price disparity. In the long run, prices of agricultural products have tended to grow more slowly or decline faster than prices of farm inputs. Farmers are said to face declining terms of trade. Even when agricultural prices spiked as was the case in 2008-2009, prices of fertilizers and energy spike even more (Figure 7.1).

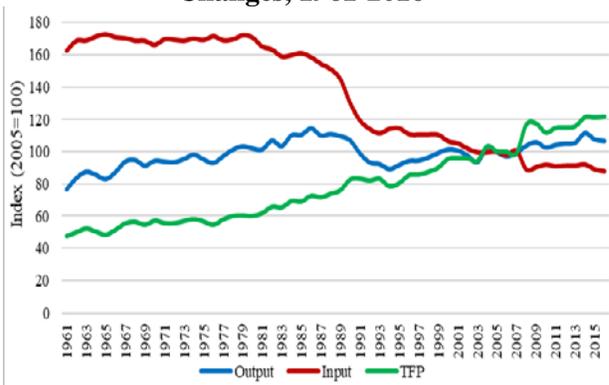
Farmers have responded by using lower amounts of more expensive inputs, increasing the efficiency of using inputs, and selecting more profitable products. In the US, for example, the ratio of farm output to farm input prices declined annually by 1.4 percent during 1961-2016 (Figure 7.2). Yet, total factor productivity (TFP) grew by 1.4 percent during this period. In Germany, a combination of more efficient use of inputs and increasing TFP kept farm output stable during 1961-2016 (Figure 7.3). Because the number of farmers in Germany declined over time, the income per farmer grew even if total output remained unchanged. Thus, an increase in TFP and a reduction in input use made it possible for farmers around the world to keep growing despite the price disparity.

Figure 7.2. US: Price Disparity and Agricultural TFP, 1961-2016



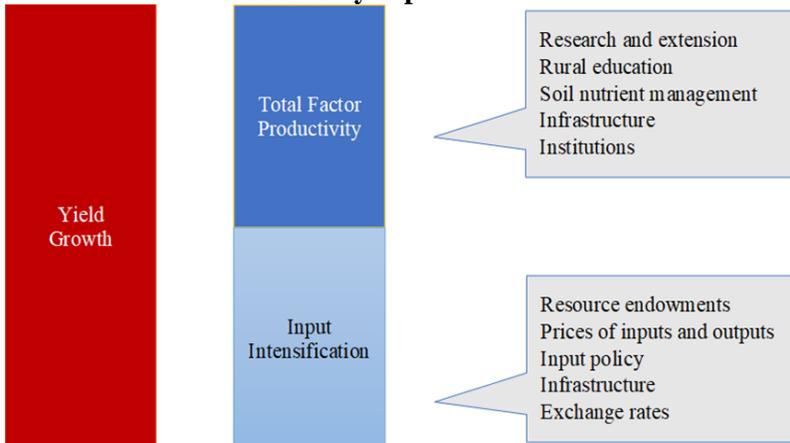
Source: World Bank using data from the US Department of Agriculture.

Figure 7.3. Germany: Input, Output, and TFP Changes, 1961-2016



Source: World Bank using data from the US Department of Agriculture.

Figure 7.4. Growth Driven by TFP is More Sustainable Than That Driven by Input Intensification



Source: World Bank.

Productivity expansion is crucial for agricultural growth. The growth in TFP comes from the knowledge gained to use inputs better, grow better varieties, and connect better to markets. This, in turn, requires investments in agricultural research and development (R&D) and other public goods such as extension, education, infrastructure, and institutions. This is the link between growth and public expenditures.

Having the right level and mix of public expenditures is critical for helping farmers. Several lessons are relevant.

Lesson 1: Public expenditures matter for agricultural growth. A study of ten Latin American countries found that a 10 percent increase in agricultural public expenditures lifted agricultural growth by 0.6 percent during 1985–2000.² The rationale for public investments derives from two fundamental sources: economic inefficiencies resulting from market failures and inequalities in the distribution of goods and services. The benefits from public goods for agriculture, which stimulate growth, can be grouped into four pathways:

- **Generating technology:** Investments in R&D are among the most important public goods and a critical component of agricultural public spending. The returns to R&D include benefits not only to the farm sector but also to the food industry and consumers in the form of more abundant food at lower prices. The private sector tends to underinvest in agricultural R&D, requiring governments to correct this market failure.
- **Disseminating knowledge and building more human capital:** Human capital-enhancing effects can be associated with public spending on extension, training, and information services that transfer knowledge and skills to those engaged in farming.
- **Reducing transaction costs:** Rural roads are a critical element of public infrastructure for agricultural growth. Similarly, institutional investments to overcome barriers to collective action and reduce transaction costs to improve collection, storage, input and output quality control, and price information can optimize supply chain management.
- **Attracting private capital:** The crowding-in effects of agricultural public spending on private capital come about to the extent that public and private investments are complements in production. Examples are public investment: in (i) large irrigation infrastructure such as dams and canals, which then make it profitable for farmers to make small on-farm investments in water management and a wider range of production technologies; and (ii) input quality assurance systems, which help build farmers trust in quality of inputs, leading to higher demand and stronger response from their use.

Lesson 2: To generate long-term agricultural growth, spending on agriculture needs to be done in a fiscally responsible manner. Excessive agricultural public spending can lead to high budget deficits that can create various types of macroeconomic imbalances such as higher inflation and misaligned exchange rates, causing lower economic growth and weaker demand for farm products. Thus, expansion of agricultural public expenditures needs to be balanced with prudence and fiscal discipline.

Lesson 3: Not all public expenditures are productive. Many empirical studies find a low impact of aggregate spending on agricultural growth, implying that all investments are not equal.³ Governments sometimes spend on things that are not public goods, for example output and input subsidies and subsidized credit. In addition, even when clear failures exist in particular markets,

² López (2005): Why Governments Should Stop Non-Social Subsidies: Measuring the Consequences for Rural Latin America: University of Maryland at College Park, Revised version: February 4, 200.

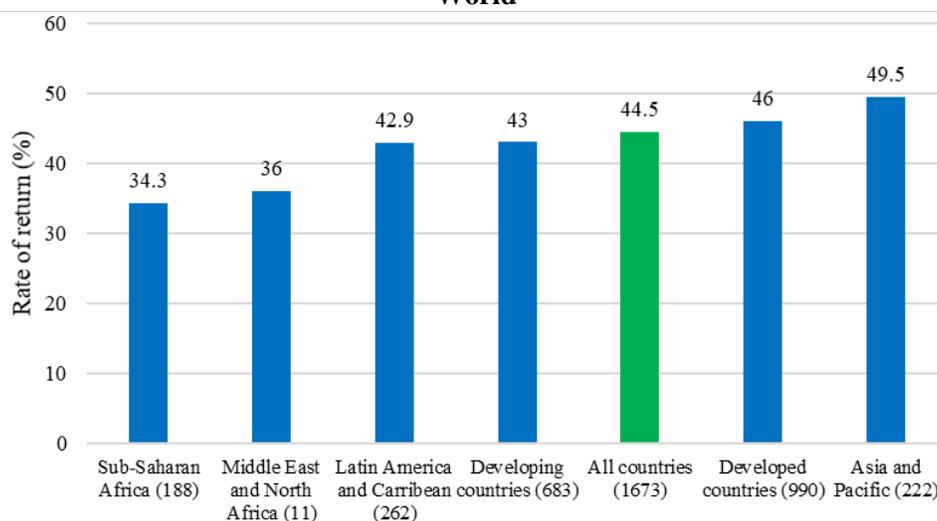
³ Mogues T., B. Yu, S. Fan and L. McBride (2012): The Impacts of Public Investment in and for Agriculture: Synthesis of the Existing Evidence. International Food and Policy Research Institute Discussion Paper 01217, Washington, D.C.

public spending will not necessarily improve the situation. Interventions can sometimes lead to government failures, which exacerbate original problems caused by market failures and produce unintended adverse effects.

The above-cited study of the ten LAC countries during 1985–2000 found that agricultural public spending on public goods was much more productive than public spending on private goods.⁴ The study found that reallocation of 10 percentage points of total public expenditures from subsidies to public goods increased per capita agricultural income by 2.3 percent. This was obtained without increasing total expenditures. Those impacts were significant mainly because they captured both the positive effect of increasing the budget for public goods and reducing the distortions created by subsidies, which negatively affected the quantity and quality of private investments.

Lesson 4: Public spending on agricultural R&D generates high rates of return around the world. The recent study found the rates of return of such investments to average 45 percent, showing high impacts in both developing and developed countries (Figure 7.5). No country in the world could generate long-term growth in agricultural TFP without such investments; they are key to increase yields, and to develop and support adoption of location-specific technologies in farm and off-farm segments of food value chains. Therefore, developed countries spend on average 2.5 percent of agricultural gross domestic product (GDP) on such investments, and many developing countries increasingly prioritize them over other spending.

Figure 7.5. Rates of Return of Agricultural R&D Investments Around the World



Source: IFPRI.⁵

Lesson 5: The economic composition of spending is critical for achieving high impacts. For example, when an entire budget for extension services is spent on salaries and there is no fuel for motorbikes and vehicles for farm visits, large spending on extension is not effective. Likewise,

⁴ López (2005): Why Governments Should Stop Non-Social Subsidies: Measuring the Consequences for Rural Latin America: University of Maryland at College Park, Revised version: February 4, 200.

⁵ IFPRI (2012): ASTI Global Assessment of Agricultural R&D Spending: Developing Countries Accelerate Investments. Washington, D.C.

inadequate spending on operations and management (O&M) for rural roads and irrigation investments reduces the economic value of these assets, leading to higher budget outlays in the longer run. The lesson from around the world is that the agricultural budget needs to be well balanced across subcategories (wages, nonwage recurrent, and capital expenditures) to make agricultural programs effective.

Lesson 6: Quality of implementation affects the outcomes of even justifiable public programs. When delivering public programs, attention needs to be given to: unit costs and value for money; implementers' capacity; a targeting strategy to identify and reach intended beneficiaries; collaboration of various departments within and between ministries; division of labor between central and local governments; and establishment and use of effective monitoring and evaluation. It is also important to pay attention to budget execution, which shows the absorption capacity of the government to utilize allocated funds.

Lesson 7: Investments in public goods combined with better policies and institutions bring about the highest results. Improvements in policy environment through trade and regulatory reforms augment public spending by enhancing incentives for producers and innovators to take advantage of public goods, thereby crowding in private investments. On the other hand, distortions such as input and output subsidies and credit subsidies usually crowd out private investments. A review of the drivers of agricultural growth in East Asia during its economic boom years found that policy and institutional reforms were the strongest contributors to agricultural growth and poverty reduction, outpacing investments in key public goods.⁶

The above global lessons provide a framework for thinking about growth and spending when conducting a review of public spending in agriculture. An adequate, fiscally prudent level of public expenditures, allocated to growth-inducing programs and implemented effectively, would help generate sustainable agricultural growth. Removal of policy constraints and strengthening of institutions would augment public spending. Yet increasing spending on agriculture without improvements in allocative and technical efficiency of public expenditures and in the unproductive agricultural policy environment would bring very little economic and social benefits.

AGRICULTURAL PUBLIC EXPENDITURES: GLOBAL DEVELOPMENTS

This section presents agricultural public expenditures in selected countries. We use the OECD's classification of functions by the government (COFOG). Agriculture spending by the government includes outlays on crops, livestock, fisheries, forestry, and irrigation. It does not include spending on rural development, although many ministries of agriculture have programs aiming at rural development. The comparator data we use covers both OECD and non-OECD countries ().⁷

⁶ World Bank (2017): Myanmar AgPER: Increasing the Impact of Public Spending on Agricultural Growth. World Bank Report AUS17689, Washington, D.C.

⁷ In 2016, in OECD countries the share of agriculture in GDP was on average 3 percent and farm employment 6 percent. For comparisons, in non-OECD countries these figures were 7 percent and 17 percent.

Table 7.1. GDP per Capita in 2018 in Current US Dollars and in PPP US Dollars

OECD Countries			Non-OECD Countries		
	Current US\$	PPP (current international \$)		Current US\$	PPP (current international \$)
Australia	57,374	51,663	Brazil	8,921	16,096
Canada	46,233	48,130	China	9,771	18,237
Chile	15,923	25,223	Colombia	6,668	15,013
EU	36,570	43,738	Costa Rica	12,027	17,671
Japan	39,290	42,797	Israel	41,715	39,919
Korea	31,363	40,112	Kazakhstan	9,813	27,880
Mexico	9,673	19,845	Philippines	3,103	8,951
New Zealand	41,945	41,005	Russia	11,289	27,147
Turkey	9,370	28,069	South Africa	6,374	13,687
USA	62,795	62,795	Ukraine	3,095	9,233
			Vietnam	2,567	7,448

Source: World Bank World Development Indicators.

Over time, GDP growth in OECD countries has exceeded the growth in agricultural public expenditures. Total agricultural public expenditures increased from \$76 billion in 1986-88 to \$163 billion in 2015-17 (Table 7.2). As GDP grew faster, the share of agricultural public expenditures to GDP declined more than by half during 1986-2017, although the total level of spending more than doubled in nominal terms. In 1986-88 the agricultural public expenditures averaged 0.40 percent of GDP, while in 2015-17 it amounted to only 0.18 percent. The share of agricultural public expenditures in gross agricultural output (GAO) remained stable at 14 percent.

Table 7.2. OECD Countries: Level of Agricultural Public Expenditures, 1986-2017

	1986-88	1995-97	2015-2017
Agricultural public expenditures, nominal \$ billion	76	123	163
in percent of GDP	0.40	0.31	0.18
in percent of GAO	13.8	16.7	14.2

Source: OECD.

The reduction in the share of agricultural public expenditures in GDP has also been observed in non-OECD countries. They, as a group, reduced agricultural spending from 0.97 percent of GDP in 1995-97 to 0.71 percent of GDP in 2015-17 (Table 7.3). Without China, which spends more on agriculture than other non-OECD countries, the decline was even bigger, from 0.89 percent to 0.34 percent. Non-OECD farmers depend less on public support than OECD farmers as reflected in the low share of agricultural public expenditures in GAO. This is especially true when China is excluded from the aggregate numbers.

Table 7.3. Non-OECD Countries: Level of Agricultural Public Expenditures, 1995-2017

	1995-97	2015-2017
Agricultural public expenditures, nominal \$ billion	28 [16]	118 [18]
in percent of GDP	0.97 [0.89]	0.71 [0.34]
In percent of GAO	1.7 [11.1]	6.6 [4.4]

Source: OECD.

Note: Figures in parenthesis are without China.

Agricultural public expenditures vary by country. Among the non-OECD countries, which are more suitable peers for Uzbekistan, agricultural public expenditures in GDP ranged from 0.1 percent of GDP in Israel to 0.8 percent in China in 2017 (Table 7.4.). In terms of GAO, the lowest dependency of farms on budget support is in Costa Rica and the largest dependency in Kazakhstan. As with the OECD countries, the share of agricultural support in the non-OECD countries has declined over time. Most non-OECD countries spent more on agriculture in 1995-97 than in 2015-2017. For example, Russia spent 1.8 percent of GDP and Ukraine 1.2 percent.

Table 7.4. Non-OECD Countries: Agricultural Spending by Country

	% of public spending in GDP		% of public spending in GAO	
	1995-1997	2015-2017	1995-1997	2015-2017
Brazil	0.7	0.2	14.4	3.4
China	1.1	0.8	0.7	7.2
Colombia	0.4	0.3	3.6	4.7
Costa Rica	0.1	0.2	0.8	2.0
Israel	0.4	0.1	11.2	5.5
Kazakhstan	0.1	0.9	0.4	10.0
Philippines	0.4	0.6	3.2	6.2
Russia	1.8	0.3	18.1	6.9
South Africa	0.4	0.2	6.3	2.8
Ukraine	1.2	0.3	4.8	2.7
Vietnam	1.0	0.4	4.0	2.6

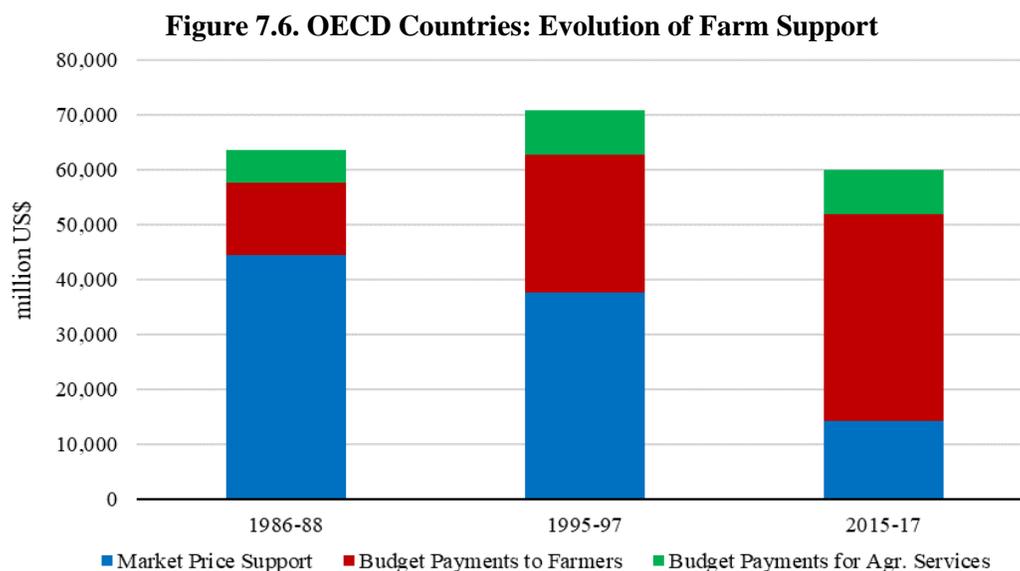
Source: OECD.

Agricultural support instruments can be divided into three groups. They are: market price support (MPS), direct payments to farmers (DPF), and general support services (GSS). In brief:

- MPS is paid by consumers. It represents the difference between domestic and international prices. When domestic prices are above international prices, due to import tariff or non-tariff barriers, MPS is positive. When domestic prices are below international prices, due to the fixed prices for example, MPS is negative. When MPS is negative, farmers face implicit taxation.

- DPF to farmers are paid by taxpayers. They can include: (i) payments based on outputs, inputs, capital investments, and on-farm services; (ii) coupled payments per hectare or animal; (iii) decoupled payments per hectare or animal;⁸ and (iv) other payments.
- GSS is also paid by taxpayers. They include: (i) agricultural knowledge and innovations; (ii) inspections and control; (iii) development and maintenance of infrastructure; (iv) marketing and promotion; (v) cost of public stockholding; and (vi) other programs.

In OECD countries, the importance of different support instruments has changed over time. Total weighted-average farm support decreased from \$64 billion in 1986-88 to \$60 billion in 2015-17 (Figure 7.6). The share of MPS accounted for 70 percent of total support in 1986-88, declining to 24 percent in 2015-17. It implies that domestic farm output prices have gradually declined to align with international prices. MPS was replaced by the increased spending on DPF, the share of which increased from 21 percent to 63 percent of total farm support. The share of GSS grew from 9 percent to 14 percent.



Source: OECD.

Notes: 1/ Figures are weighted averaged by GAO.

2/ The sum of total agricultural budget can be found in Table 7.2.

The structure of DPF includes a mix of measures, importance of each item has also changed over time. In 1986-88, 38 percent of the weighted-average DPF budget was spent on output and input subsidies (Table 7.5). In 2015-17 the share of these payments dropped to 11 percent. These subsidies were replaced by decoupled payments per hectare or animal. Decoupled payments are less distortive than payments for inputs and outputs and coupled payments because they allow farmers to respond to market opportunities rather than respond to the government decisions. They can be considered as income support payments. That is why the OECD countries made these

⁸ Coupled payments require production of subsidized product, while decouple payment does not require production of specific product. Farmers can produce what they and market want while receiving decoupled payment for compliance with good agricultural practices, for example, as in the EU.

changes. In addition, the OECD countries continued spending on capital formation and on-farm services, e.g. two programs with the largest impact on structural transformation. In 1986-88, when farms were less capitalized, the share of these programs was 20 percent, and in more recent years (2015-17), the share of these payments declined to 14 percent.

Table 7.5. OECD Countries: Evolution of the Structure of Direct Payments to Farmers
(in percent)

	1986-1988	1995-1997	2015-2017
Payments based on output	22	9	3
Payments based on variable input use	16	13	8
Payments for fixed capital formation	13	9	8
Payment for on-farm services	7	7	6
Payments per hectare or animal (coupled)	38	52	34
Payments per hectare or animal (decoupled)	1	7	39
Payments based on non-commodity criteria	2	4	2

Source: OECD.

The structure of GSS has also evolved over time in response to the needs of farmers and the society. The OECD countries increased spending on GSS programs as these investments have empirically shown the high rates of economic return (recall Figure 7.5). They boosted investments in agricultural R&D and extension/advisory services (knowledge and innovations), the share of which grew from 18 percent in 1986-88 to 31 percent in 2015-17 (Table 7.6). Development and maintenance of infrastructure remains important, accounting for 45 percent of total GSS budget in 2015-17, but it dropped from its peak in the 1990s. With consumers paying more attention to quality, safety and sustainability of farm and food products, the OECD countries invested more in inspections & control and marketing & promotion, while phasing out strategic food reserves, which became obsolete with the growing income of population, open markets, and changed focus in attaining food security from supply of food to food utilization, food safety, and price stability.

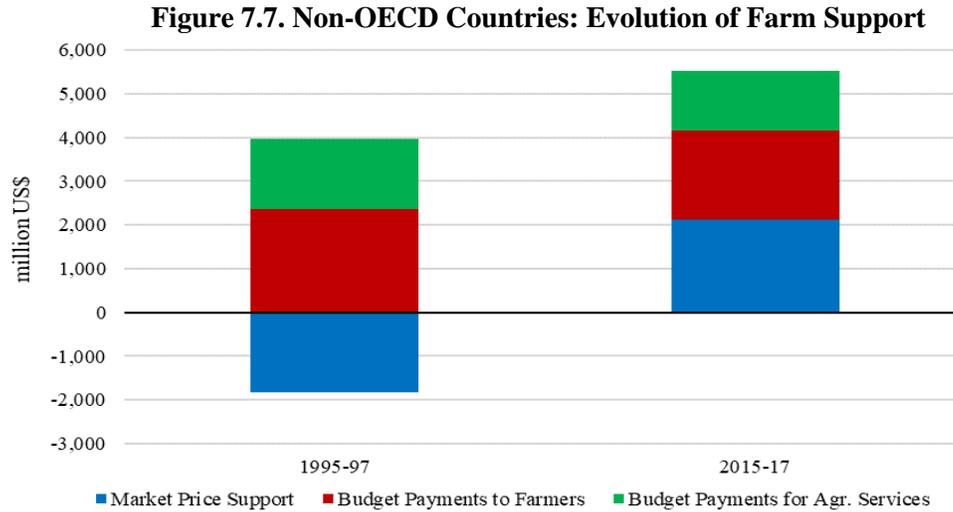
Table 7.6. OECD Countries: Evolution of the Structure of General Support Services
(in percent)

	1986-1988	1995-1997	2015-2017
Agricultural knowledge and innovations	18	18	31
Inspections and control	4	4	9
Development and maintenance of infrastructure	41	54	45
Marketing and promotion	9	12	10
Cost of public stockholding	23	8	1
Miscellaneous	5	4	4

Source: OECD.

In non-OECD countries, the farm support instruments have also evolved over time, with even more dramatic changes than in OECD countries. In 1995-97, farmers in non-OECD countries (without China) were implicitly taxed and their MPS was negative (Figure 7.7). In 2015-17 they switched from taxing farmers to supporting farmers by high prices, the same as in OECD. The weighted-average MPS changed from \$2 billion tax in 1995-97 to \$2 billion support in 2015-17. Total farm support consisted of 39 percent of MPS, 37 percent of DPF, and 24 percent of GSS

in 2015-2017. Note that the share of MPS in total farm support in non-OECD countries (39 percent) significantly exceeded such a share in OECD countries (24 percent).



Source: OECD.

Note: Figures are weighted averaged by GAO.

Regarding the DPF, non-OECD countries in 2015-17 resembled the OECD countries in 1996-98. They spent a lot of funds on payments based on variable input use and did not provide decoupled payments (Table 7.7 7.7). But they spent a lot of funds on promoting fixed capital formation to accelerate structural change and moved to per hectare/animal coupled payments, which are less distortive than payments based on output.

Table 7.7. Non-OECD Countries: Evolution of The Structure of Direct Payments to Farmers
(in percent)

	1995-1997	2015-2017
Payments based on output	11	7
Payments based on variable input use	49	36
Payments for fixed capital formation	33	40
Payment for on-farm services	2	3
Payments per hectare or animal (coupled)	1	11
Payments per hectare or animal (decoupled)	0	0
Payments based on non-commodity criteria	4	2

Source: OECD.

In 2015-17, non-OECD countries spent almost half of GSS budget on agricultural knowledge and innovations. In 1995-97 this share was only 30 percent (Table 7.8 7.8). This is the sign of the increased recognition of the role agricultural knowledge and innovations play in increasing TFP and

strengthening food value chains. Over time, more funds were also being spent on inspections and control, while less on infrastructure and *ad hoc* miscellaneous programs.

Table 7.8. Non-OECD Countries: Evolution of the Structure of General Support Services
(in percent)

	1995-1997	2015-2017
Agricultural knowledge and innovations	30	47
Inspections and control	5	9
Development and maintenance of infrastructure	40	33
Marketing and promotion	1	2
Cost of public stockholding	7	5
Miscellaneous	16	5

Source: OECD.

The key conclusions from analyzing agricultural public expenditures in OECD countries are:

- Agricultural public expenditures are growing in nominal terms, but they are low and declining in relative terms. Average agricultural budget in 2015-17 accounted for 0.2 percent of GDP and 14.0 percent of GAO.
- Over time farm support became less distortive by moving from MPS, input and output subsidies and coupled payments to decoupled income payments and general support services.
- Recognizing the role of government to strength capacity and skills of farmers, about 7 percent of DPF was spent on on-farm services that reduce the cost of technical assistance, accounting, marketing, sanitary and phytosanitary measures, and training.

The key take-aways from analyzing agricultural public expenditures in non-OECD countries are:

- Very few countries left in the world which tax farmers through low prices.
- Average agricultural budget in 2015-17 (without China) accounted for 0.7 (0.3) percent of GDP and 6.6 (4.4) percent of GAO.
- Agricultural budget is well balanced between DPF and GSS. Spending on output and input subsidies declined, while more is being allocated to capital formation and direct coupled payments.
- About 3 percent of DPF is allocated to on-farm services.
- GSS is diverse, with increasing relative budget on knowledge & innovations and inspection & control and declining relative budget on infrastructure.

PUBLIC EXPENDITURES ON AGRICULTURE IN UZBEKISTAN

Agricultural programs in Uzbekistan are executed and financed by many ministries and agencies. In 2017, the Ministry of Agriculture and Water was split in two ministries, namely Ministry of Agriculture (MOA) and Ministry of Water Resources (MOWR), and during that split many MOA departments became separate agencies, committees, and inspections. This AgPER covers the public expenditures executed by MOWR, MOA, MOF (State Fund for Agricultural

Support), Cabinet of Ministers (Veterinary Committee and State Plant Quarantine Inspection), Ministry of Innovative Development and Ministry of Education (research and education), and other state institutions. The agricultural public expenditures include tax expenditures/exemptions. The review period is from 2016 to 2018.

In nominal terms, the agricultural budget increased by 45 percent during 2016-2018. It was 5.0 trillion Soms in 2016 and 7.2 trillion Soms in 2018 (Table 7.9 7.9). But in real terms, adjusted for inflation, it stayed flat. In US\$ it even declined, following the liberalization of exchange rate in 2017. As a share of GDP, it averaged 2 percent, which 10 times more than the average spending as a share of GDP in OECD countries and 3 times more than in non-OECD countries. On Figure 7.8. Uzbekistan stands out as the largest spender on agriculture. As a share of GAO, the agricultural budget averaged 3 percent, showing the low dependency of farms on public support. The above estimates for Uzbekistan do not even include projects supported by development partners, which amounted \$2.5 billion (or 21 trillion Soms) and which are discussed later.

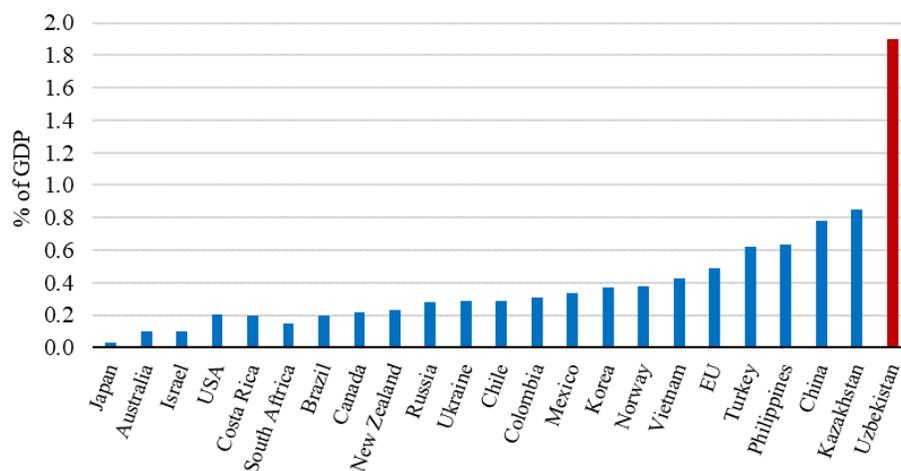
Table 7.9. Uzbekistan: Level of Agricultural Public Expenditures, 2016-2018

	2016	2017	2018
Agricultural public expenditures, nominal billion Soms	4,982	5,663	7,225
Agricultural public expenditures, real billion Soms	4,982	4,585	4,992
Agricultural public expenditures, nominal million \$	1,542	710	881
in percent of GDP	2.1	1.9	1.8
In percent of GAO	2.6	2.9	3.6

Source: World Bank using the MoF data.

Note: Average inflation in 2016 was 8 percent, in 2017 was 12.5 percent and in 2018 was 18.4 percent. Exchange rate in 2016 was 3,231 Soms/\$, in 2017 was 8,120 Soms/\$, and in 2018 was 8,201 Soms/\$.

Figure 7.8. Agricultural Public Expenditures in Selected Countries, 2017
(in percent of GDP)



Source: OECD and MoF.

As the above analysis shows, public expenditure is only one part of farm support, another part is MPS. Uzbekistan is one of the very few countries, who still has a negative MPS caused by the low fixed state procurement prices for cotton and wheat (see Table 7.17 for details of MPS calculation). This negative MPS almost fully negates the impact of public expenditures. In 2016, public expenditures, along with tax expenditures, amounted to 4,982 billion Soms (Table 7.10

7.10). But effective farm support was only 1,791 billion Soms. In 2017, MPS even exceeded public expenditures.

Table 7.10. Uzbekistan: Estimates of Farm Support, 2016-2018

	2016	2017	2018
MPS (cotton and wheat)	-3,191	-10,987	-6,890
DPF (direct payments to farmers)	506	614	866
GSS (general support services)	4,407	5,049	6,192
Tax expenditures/exemptions	69	104	167
Total (billions of Soms)	1,791	-5,220	335

Source: World Bank using the MoF data.

Most public expenditures are allocated to GSS, largely for irrigation and drainage. In 2018, GSS accounted for 86 percent of agricultural public expenditures. DPF accounted for 12 percent and tax expenditures accounted for the remaining 2 percent.

The largest share of funds is being executed by MOWR, which implements irrigation and drainage programs. In 2018, MOA was only the third largest ministry in terms of agricultural budget, trailing behind MOWR and MOF (Table 7.11).

Table 7.11. Uzbekistan: Agricultural Public Expenditures by Ministry

	2016	2017	2018
MOWR	3,036	3,419	4,100
MOA	733	848	655
MOF	231	317	766
Cabinet of Ministers (Veterinary and Plant Quarantine)	0	0	289
Forestry	52	59	69
Research and Education (various ministries)	400	492	410
Other (various ministries)	462	528	732
Total	4,913	5,663	7,058

Source: World Bank using the MoF data.

There are only two kinds of DPF in Uzbekistan. The first is the payments to farmers producing cotton and wheat on low-fertility soils for the state procurement. The second is the subsidized credit (working capital advance at the concessional interest rate) for producers of cotton and wheat under the state procurement system. Regarding the subsidized credit, farmers only benefit from the concessional interest rate, while credit principle must be repaid.⁹ These two payments equaled 506 billion Soms in 2016 and 866 billion Soms in 2018 (Table 7.12). These payments accounted for all support under DPF, which starkly contrast the DPF structure in IOECD and non-OECD countries.

⁹ The benefit to farmers is estimated as loan amount multiplied by interest rate difference (20percent-3percent) and adjusted for 8 months of using the loan (8/12).

Table 7.12. Uzbekistan: Evolution of the Structure of Direct Payments to Farmers

	Uzbekistan, billion Soms			Uzbekistan,	OECD,	Non-OECD,
	2016	2017	2018	percent	percent	percent
Payments based on output				0	3	7
Payments based on variable input use	506	614	866	100	8	36
Payments for fixed capital formation				0	8	40
Payment for on-farm services				0	6	3
Payments per hectare or animal (coupled)				0	34	11
Payments per hectare or animal (decoupled)				0	39	0
Payments based on non-commodity criteria				0	2	2
Total	506	614	866	100	100	100
in percent of GDP	0.2	0.2	0.2			

Source: World Bank using the MoF and OECD data.

Subsidized credit is provided to cotton and wheat farmers by the State Fund for Agricultural Development under the MOF. In 2016, the total credit amounted to 2.2 trillion Soms (\$683 million). In 2018, it grew to 6 trillion Soms (\$728 million), and in 2019 it is projected to increase to 11 trillion Soms (\$1,258 million). The key problem with the current arrangement is the foregone opportunity for commercial banks to earn on lending to cotton and wheat producers and build business relations with them. Moving to a more market-oriented system, when commercial banks provide credit while an interest rate difference is financed by the national budget, would take time to address liquidity constraints.

Similarly, to DPF, GSS in Uzbekistan are heavily skewed towards one program: development and maintenance of irrigation infrastructure. This program accounted for 71 percent of total GSS budget during 2016-2018 (Table 7.13 7.13), which is twice as much than the averages for OECD and non-OECD comparators. Only 10 percent of GSS budget was spent on agricultural knowledge and innovations. Spending on agricultural research and education in 2018 was only 0.02 percent of GAO, in contrast with 1 percent for developing countries and 2.5 percent for developed countries. There was no budget for marketing and promotion for agriculture.

Table 7.13. Uzbekistan: Evolution of the Structure of General Support Services

	Uzbekistan, billion Soms			Uzbekistan,	OECD,	Non-OECD,
	2016	2017	2018	percent	percent	percent
Agricultural knowledge and innovations	399	492	448	10	31	47
Inspections and control	309	346	332	7	9	9
Development and maintenance of infrastructure	3,160	3,598	4,471	71	45	33
Marketing and promotion	0	0	0	0	10	2
Cost of public stockholding	0	0	0	0	1	5
Miscellaneous	539	621	951	12	4	5
Total	4,407	5,049	6,192	100	100	100
in percent of GDP	1.8	1.7	1.5			

Source: World Bank using the MoF and OECD data.

Spending on irrigation and drainage (I&D) alone accounted for 1.3 percent of GDP in 2016-2018. This is a large amount in terms of GDP for Uzbekistan and for any country in the world. But a big challenge is that the current level of expenditures falls short of the expected requirements for both capital and recurrent expenditures. The level of capital expenditures is also below

international standards. More than a third of I&D budget is spent on covering electricity cost of water pumping (Table 7.14). Continued underinvestment into I&D infrastructure and management would eventually lead to progressively higher losses of irrigated land.

Table 7.14. Uzbekistan: Irrigation and Drainage Budget

	2016	2017	2018
Capital investments in irrigation	500	443	731
Capital investments in drainage	404	454	541
O&M	2,105	2,483	2,804
including the cost of electricity	1,292	1,489	1,592
Total (billions of Soms)	3,009	3,380	4,076
in percent of GDP	1.2	1.1	1.0

Source: World Bank using the MoF data.

The current level of capital expenditures has been too low to start modernization of irrigation and drainage infrastructure and management. The actual capital I&D investments in 2018 were 1,274 billion Soms or \$35/ha, assuming the irrigated area of 4.2 million ha (Table 7.14). Requirement is to spend at least \$250/ha without irrigation modernization. To secure reliable, adequate, and flexible irrigation water supply, the capital investments would need to increase to \$1,400/ha, and the modernization of the entire I&D infrastructure over 2015-2030 would cost between \$5.5 billion and \$16 billion. More is also required for O&M spending. Actual budget (without electricity cost) is \$40/ha, while the requirement is \$80/ha.

In addition to public expenditures (DPF and GSS), agriculture benefits from tax expenditures. In 2016, tax expenditures for agriculture equaled 69 billion Soms (Table 7.15). In 2018, this figure grew to 667 billion Soms, or 0.04 percent of GDP and 1.1 percent of total tax expenditures in Uzbekistan. Major agricultural tax expenditures were aimed at reducing the cost of hiring cotton pickers and promoting water-saving technologies.

Table 7.15. Uzbekistan: Tax Expenditures in Agriculture

	2016	2017	2018
Exemption from including social fees in wages of cotton pickers	0	12.7	326.2
Exemption from income tax of individuals picking cotton	66.9	100.8	163.1
Exemption from mandatory social insurance deductions for cotton pickers	0	0	173.9
Exemption from taxes of adopters of water saving technologies	1.6	3.2	3.8
Exemption from taxes for multipurpose farms	0	0	0
Total (billion Soms)	68.5	116.7	667.0
in percent of GDP	0.03	0.03	0.04

Source: World Bank using the MOF and State Tax Committee data.

At last, agriculture also benefits from projects financed by international organizations. They are recorded separately from national public expenditures, and in many cases implemented separately from the national programs. As a result, the lessons learned from many innovative projects do not trickle down to technical departments in MOA and MOWR. As of early 2019, total budget of ongoing agricultural projects was \$2.5 billion (Table 7.16). Further \$862 million were in pipeline for preparation. Most funds are used for projects in horticulture and livestock subsectors, and in irrigation, and many of them finance credit lines. It is not possible at this moment to estimate annual budget allocations for these projects, especially for credit lines with

concessional interest rates, to add them to the public expenditures financed from the national budget, but they may constitute significant resources benefiting agriculture in Uzbekistan.

Table 7.16: Uzbekistan: Donor-Financed Support To Agriculture

Functional breakdown	Ongoing projects	Project in pipeline
Irrigation and drainage	845	0
Horticulture	1,153	297
Livestock	379	100
Regional initiatives	49	0
Other functional areas	58	465
Total (millions of US dollars)	2,485	862

Source: World Bank using the EU estimates.

POLICY OPTIONS

Large agricultural support in Uzbekistan has not led to solid development outcomes, even though Uzbekistan’s public expenditures on agriculture as a share of GDP are three times larger than most non-OECD countries and ten times more than most OECD countries. The proposed recommendations aim to help the authorities achieve better results:

- Align domestic farm-gate prices for cotton and wheat with world market prices to eliminate the negative MPS and ensure that public expenditures can generate impacts on the ground.
- Develop a strategy for modernization of irrigation and drainage infrastructure and management in a cost-effective manner to reduce a long-term budget for this purpose.
- Expand a menu of DPF measures from mainly credit lines to support fixed capital formation through matching grants (not credit), the use of on-farm services, and adoption of climate-smart technologies (the EU-type cross-compliance) to accelerate structural transformation.
- Increase significantly the public expenditures for GSS programs, especially for agricultural R&D and extension/advisory services to drive TFP growth. These programs require not only more budget but better human capacity to effectively deliver services to farmers and agribusinesses.
- Reduce the “miscellaneous” programs by avoiding ad hoc programs and using more strategic budget planning and management.

Table 7.17: Uzbekistan: MPS Estimates

	2016	2017	2018
Cotton			
Raw cotton production, tons	2,842,196	2,900,200	2,465,170
Domestic cotton price, Soms/ton	1,218,000	1,880,000	3,250,000
Export parity price of cotton, Soms/ton	1,760,734	4,734,766	4,723,666
Price difference, Soms/ton	-542,734	-2,854,766	-1,473,666
MPS for cotton, millions of Soms	-1,542,555	-8,279,392	-3,632,836
Wheat			
Wheat production, tons	6,940,000	6,900,000	6,000,000
Wheat output for the state procurement, tons	2,761,000	2,850,000	3,102,000
State procurement wheat price, Soms/ton	503,000	550,000	750,000
Market wheat price, Soms/ton	1,100,000	1,500,000	1,800,000
Price difference, Soms/ton	-597,000	-950,000	-1,050,000
MPS for wheat, millions of Soms	-1,648,318	-2,707,500	-3,257,100
Total MPS, millions of Soms	-3,190,873	-10,986,891	-6,889,936

Source: World Bank using the data from the State Statistics Committee, MOA, and MOF.