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Agricultural support in selected Eastern European and Eurasian countries

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ABSTRACT

The goal of this article is to assess the agricultural policies of eight countries from the former Soviet Union. They hold great potential for agricultural production, and some are relatively unanalysed from the point of view of agricultural policy. The analysis was conducted using qualitative and quantitative evidence. The key challenges facing the region are food security and competitiveness. Policy approaches range from strong interventionism to almost complete liberalisation. Budgetary support is relatively low compared to EU and OECD averages. Transfers to producers dominate (especially input subsidies and on-farm investment support) in all countries, and support to rural development and general services is weak. While prices for crops are near world prices, prices for animal products are fairly high in some countries, indicating high developmental needs. It is possible to discern four broad clusters of countries.

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Introduction

Since the early 1990s, the CIS 8 countries (Armenia, Azerbaijan, Belarus, Georgia,[1] Kazakhstan, Moldova, Russia and Ukraine) have undergone the transition from a centrally planned to a market-oriented economy. In the context of agricultural production and trade, economic and institutional reform entailed the abolition of central controls and planning, privatisation of production assets and land reform, reductions in government intervention in internal markets, price and trade liberalisation, and economic stabilisation (Buchenrieder, Hanf, & Pieniadz, 2009; Csaki & Forgacs, 2008; Lerman, 2009; Lerman, Csaki, & Feder, 2004).

Despite the fact that the agricultural sector is very important in these countries (employing over half the workforce in Georgia and contributing about 20% of GDP in Armenia (FAO, 2013a)), which is in itself justification enough for detailed policy analysis, there is a lack of recent comprehensive analyses dealing with the changes in agricultural policy and their impact on production and trade. The state of agriculture and agricultural policy is monitored by the OECD for Russia, Ukraine and Kazakhstan in the framework of the Producer Support Estimate (PSE) calculations (see OECD, 2015a, 2015c). Many studies and analyses are also published by the FAO (e.g. country-specific agroindustry briefs; see FAO, 2013b–i), but there

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is no complete systematisation and quantification of budgetary transfers and market support to agriculture for those countries that are not observed by the OECD. Using available data from the literature and those collected in the framework of the AGRICISTRADE project, we have attempted to fill this gap by broadening the extent of existing OECD and FAO analyses, systematising and qualifying agricultural budgetary transfers, and assessing the effects of policy on producer price levels in order to present and compare agricultural policy.

We assess the following areas: the focus of agricultural policy, its key instruments, evaluation of market price support, and systematisation and quantification of budgetary transfers. The aim was to find out whether and how policies tend to converge or diverge, also taking into consideration new geopolitical developments. By this we refer not only to the recent conflict in Ukraine, but also to the less noticeable, yet important gradual clustering of countries and their policies into political/economic groups, based on their political and trade bloc status, market and budgetary support and some agro-food sector characteristics. We posit that while countries are still moving away from the uniform pre-transition pattern, discernible groups of countries are slowly taking shape.

The main methodological research priority was to estimate the market price and budgetary support to agricultural producers in the countries outside the OECD's agricultural policy monitoring system, and to compare these results with data on countries included in the OECD's monitoring.

The article is structured as follows. The first section briefly outlines the main characteristics relevant to the agricultural sectors of the countries in question. In the second section we describe the methodological approaches used in our analysis. In the third section, we offer an assessment of support to agriculture based on the OECD PSE approach, including market price support and budgetary transfers to producers, summarised in a cross-country analysis. In the final section, we provide general conclusions.

Country overview

The countries under analysis are a very heterogeneous group in every respect: size, population, natural conditions, etc. GDP per capita differs by an order of magnitude, though differences are generally diminishing. Incomes have increased significantly over the last 10 years, most notably in Azerbaijan (an average of 13% real GDP growth) on account of increased oil production and high oil prices. The contribution of the agricultural sector to value-added is highly variable, ranging from about 4% in Russia to about 20% in Armenia. Similarly, employment in agriculture varies, accounting for as much as 52% of the workforce in Georgia and with significant shares in the other countries. The share of agriculture in both these indicators has been falling over the last two decades, but this trend has slowed recently due to the effects of the economic crisis.

All the countries in the region except Ukraine, Moldova and Belarus are net food importers, with the largest deficits in animal production, as well as fruit and vegetables.

Agricultural productivity, here observed through yields, is quite variable, but there are notable improvements in some sectors and countries. Certain countries are still achieving yields at the level of developing countries; Ukraine and Belarus stand apart from the rest somewhat in this respect.

Farm structure is distinctly dual in some countries – a legacy of Soviet times – while in others it is highly fragmented (e.g. average farm size in Georgia is around 1.2 ha) as a result

Table 1. Macroeconomic and sector-specific data for the CIS 8.

	Average	Armenia	Azerbaijan	Belarus	Georgia	Kazakhstan	Moldova	Russia	Ukraine
GDP/capita at current prices (USD)	2004–2006	1639	1700	3118	1478	15,230	834	5476	1833
	2011–2013	3539	7567	7078	3451	16,916	2083	13,904	3863
Agricultural share in total GVA (%)	2004–2006	n/a	15.9	9.8**	n/a	6.8	19.1	4.7	10.3
	2011–2013	21.9*	9.4	9.0	8.9	5.1	14.3	3.9	9.3
Agricultural share in total employment (%)	2004–2006	46.4	38.6	11.7	56.7	32.5	37.9	10.0	18.9
	2011–2013	37.5	37.6	9.9	52.0	25.4	27.6	7.3	17.2
Trade balance – agricultural, forestry and fishery products (mill. USD)	2004–2006	−253	−295	−441	−315	−1142**	75	−13***	1152
	2011–2013	−723	−1111	1935	−829	−3984	28	−26,996	5796
Wheat yield (t/ha)	2004–2006	1.9	2.6	3.1	1.7****	0.9	2.5	1.9	2.8
	2011–2013	2.9	2.6	3.3	1.9	1.2	2.3	1.9	3.2
Cow's milk yield (kg/cow)	2004–2006	2015	613	3464	1043	1912	2605	3240	3664
	2011–2013	2185	696	4446	988	1911	3471	3543	4296

Source: AGRICISTRADE database.
*2013 data; ** 2005–2006 average; *** OECD data, in BN USD; ****2006 data.

of the way they chose to privatise. In this respect, Belarus stands out, as most agricultural land is still managed through agricultural cooperatives and collective farms. Large agricultural enterprises of different organisational forms are common in the other large states, with average farm sizes reaching 6000 hectares in Kazakhstan.

Material and methods

In the qualitative part of our research, we analysed the conceptual framework of national agricultural policy measures, relying mostly on official strategic documents and country reports prepared by experts within the AGRICISTRADE project. This was supplemented with reports and policy analyses issued by various international organisations (e.g. FAO, 2013b–i; OECD, 2011, 2015c; USDA, 2012), as well as scientific publications.

The systemisation and qualification of policy instruments and measures is generally based on the OECD PSE/CSE approach to policy analysis (OECD, 2015a), whose indicators are designed to reflect the level of support, not its impact, which also depends on other factors. The methodology rounds policy measures into two main groups:

- Measures affecting domestic market prices and creating a gap between the domestic market price and the reference price of a specific commodity.
- Measures creating budgetary transfers, either as explicit expenditure or as revenue forgone (OECD, 2010).

Since for most countries not all data needed for the calculation of indicators according to the OECD methodology (OECD, 2015b) were available, *price protection* was assessed using simplified measures (see Box 1 in Appendix for comparison) using the Nominal Protection Rate (NPR) with the following formulae:

$$\%NPRi = \frac{PP_i}{RP_i} * 100 - 100$$

$$\%NPR_c = \frac{\sum PP_i * QP_i}{\sum RP_i * QP_i} * 100 - 100 \quad (1)$$

where:

i	= individual commodity
c	= country aggregate
%NPR	= Nominal Protection Rate
PP	= Producer price
RP	= Reference price
QP	= Quantity of Production

The quantitative assessment of price protection is based on the calculation of the percentage ratio between the price received by farmers and the reference price for the selected set of commodities. The NPRs by country were calculated only for commodities which represent at least 1% of the total value of production (VP). The choice of prices for

comparison was based on data availability. The data on domestic producer prices mainly reflect the price levels registered by official national statistics (Belarus, Kazakhstan, Moldova, Russia and Ukraine). In Armenia, Azerbaijan and Georgia there are no official national statistics on producer prices and therefore FAOSTAT data were used, which are probably not entirely representative and reliable. For comparison with domestic prices, several external reference prices were taken into consideration. For Russia, Ukraine and Kazakhstan, NPRs were calculated using the countries' own reference prices at farm gates as assessed by the OECD. For Armenia, Azerbaijan, Belarus, Georgia and Moldova, for which these data are not available, NPRs were estimated based on Russian (RP R) and EU reference prices (RP EU) and the average of these two (RP EU, RU) (see Figure 1). NPR values significantly differ from reference prices, as good data on these are exceedingly difficult to acquire. No country-specific adjustments of margins (transportation or marketing margins) were made.

It is important to note that the NPR, defined as the simple percentage ratio between domestic and reference price, measures distortions caused by direct sector- or product-specific interventions (e.g. price or market regulations, import/export taxes/subsidies), as well as distortions which are the result of macroeconomic policies (e.g. exchange rate), interventions in other sectors and non-policy factors (e.g. market failures) (Liefert, 2009; Liefert & Liefert, 2008; Thomson & Metz, 1998).

Budgetary support was analysed by group of measures respecting the basic OECD PSE/CSE classification scheme (budgetary transfers to producers, general services and consumers) (see OECD, 2010) and compared using relative indicators. The basic relative indicator used for comparison of the level of support was the value of transfers relative to the value of agricultural production. It was calculated at PSE/GSSE category level and then aggregated at higher levels:

$$\%\ PSE\ BOTj = \frac{PSE\ BOT_j}{VP} * 100$$

$$\%\ PSE\ BOT = \sum \%\ PSE\ BOT_j$$

$$\%\ GSSE\ BOT_j = \frac{GSSE\ BOT_j}{VP} * 100$$

$$\%\ GSSE\ BOT = \sum \%\ GSSE\ BOT_j$$

$$\%\ CSE\ BOT = \frac{CSE\ BOT}{VP} * 100$$

$$\%\ TotalBOT = \%\ PSE\ BOT + \%\ GSSE\ BOT + \%\ CSE\ BOT \quad (2)$$

where:

j	= individual PSE or GSSE category.
VP	= Value of Production (agricultural output).
PSE BOT	= Budgetary and Other Transfers to producers.

GSSE BOT = Budgetary and Other Transfers to general services.
CSE BOT = Budgetary and Other Transfers to consumers.
Total BOT = Total Budgetary and Other Transfers.

For Kazakhstan, Russia and Ukraine, the primary source of data was the OECD PSE/CSE database. For the rest of the countries, data were taken from the consolidated databases for each country, established as a part of the AGRICISTRADE project (AGRICISTRADE database, 2015). Data were collected by national experts and originate from various sources, mainly national statistics and state administration bodies. Datasets cover different time periods and are not complete in terms of measures covered for all countries.

Total transfers to producers[2] were estimated by simply adding the relative indicators of market price support and budgetary support:

$$\%\, TTP_c = \%\, MPD_c + \%\, PSE\ BOT_c$$

$$\%\, MPD_c = \frac{\sum MPD_i}{\sum VP_i} * 100 = \frac{\%\, NPR_c * 100}{\%\, NPR_c + 100}$$

$$MPD_i = PP_i - RP_i \tag{3}$$

where:

c = country aggregate
i = individual commodity
MPD = Market price differential
PSE BOT = Budgetary and Other Transfers to producers
VP = Value of Production (agricultural output)
%NPR = Nominal Protection Rate
PP = producer price
RP = reference price

Results

Price support

The comparison of producer prices and reference prices reveals quite a diverse picture across both commodities and countries. In 2011–2012, which are the only years with complete data for all countries, prices received by farmers were generally above world price levels in Kazakhstan and Russia, and (taking into account available data) also in Armenia, Azerbaijan and Georgia. A generally lower price level can be found in Belarus, Moldova and Ukraine.

At the sector level, higher price protection of livestock than of crops is characteristic of the region. Domestic prices of livestock commodities were either higher than or close to the reference price levels in all observed countries, except in Belarus, where protection rates were negative for both crops and livestock commodities. Protection rates for crops were positive only in Kazakhstan, Armenia and Azerbaijan, and close to zero in Georgia. Price protection for specific products varies greatly (see Table 2 below) and it is difficult to draw

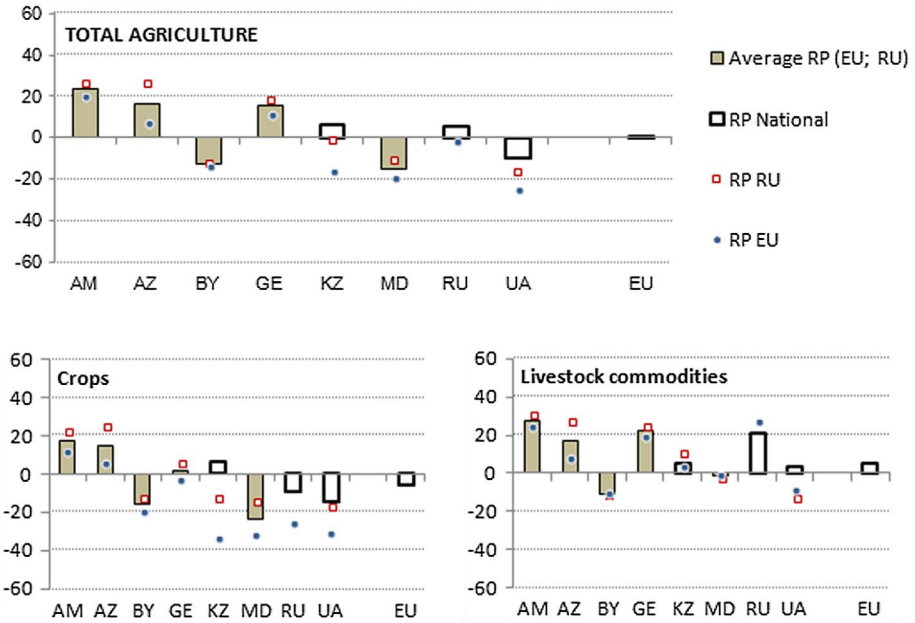

Figure 1. CIS 8: Aggregate percentage ratio between the producer price and reference price (%NPR) by country, 2011–2012 average, different reference prices (national, EU, Russia, and average EU and Russia).

definite conclusions, but for most countries, pork and poultry seem to be the most protected, while potatoes, beef and sheep meat, as well as wheat and maize, are the least protected.

The displayed NPR values also show the dependence (and therefore relativity) of the estimate of market price support on the choice of reference prices. For non-OECD-monitored countries we took three different reference prices (for Russia, the EU and an average of the two); therefore, NPR values can vary greatly in individual cases.

Budgetary transfers

The relative level of budgetary support to agriculture in the CIS 8 region is quite variable. In 2011–2012, it ranged from around 1% of the total value of agricultural production in Armenia and 3% in Moldova, to almost 15% in Belarus. In the other countries, this figure is between 6% and 11%. In the EU, by comparison, budgetary transfers to agriculture amounted to around 22% of the total value of production in 2011–2012.

Transfers to individual producers dominate in all countries, with shares in overall budgetary transfers to agriculture ranging from 56% in Kazakhstan to 87% in Belarus (85% in the EU). Support to general services accounts for 20–40% of total budgetary transfers in most countries; only in Belarus is this share smaller (12%) and below the EU average (14%). Budgetary support to consumers generally has the smallest share of total budgetary support and is non-existent in Armenia, Moldova and Ukraine; in other countries it accounts for between 1% (Belarus) and 7% (Russia) (1% in the EU).

The relative level of budgetary support to producers is by far the highest in Belarus (13% of VP), followed by Russia (7%), Azerbaijan (6%), Ukraine (5%), and Georgia and Kazakhstan (4%). In Armenia and Moldova it is considerably lower (around 1% and 2% of VP, respectively).

Table 2. Overview of the relative position of producer prices in relation to reference prices for selected representative commodities by country, 2011–2012.

Producer prices	Armenia	Azerbaijan	Belarus	Georgia	Kazakhstan	Moldova	Russia	Ukraine
Higher (NPR ≥ 10%)	Wheat Barley Beef Pork Poultry Eggs	Wheat Barley Potatoes Poultry Milk Eggs	Pork	Wheat Barley Beef Pork Poultry Eggs	Wheat Sunflower Beef Pork	Pork Poultry	Beef Pork Poultry Milk	Sugar Poultry
Rather aligned (NPR ±10%)	Sheep meat Milk	Maize	Sugar Beef Poultry	Sunflower Milk Maize	Potatoes Poultry Sheep meat Milk Eggs	Sugar Sunflower	Sunflower	Pork Eggs
Lower (NPR ≤ −10%)	Potatoes	Beef Sheep meat	Wheat Maize Barley Potatoes Milk Eggs	Potatoes Sheep meat	Maize Barley	Wheat Maize Potatoes Beef Sheep meat Milk Eggs	Wheat Maize Barley Sugar Potatoes Eggs	Wheat Maize Barley Potatoes Sunflower Beef Milk

Source: own calculations.

Table 3. CIS 8: The relative level of budgetary and other transfers (BOT) to agriculture by country (% of the total value of agricultural production); 2011–2012.

	AM	AZ	BY	GE	KZ	MD	RU	UA	EU
Transfers to producers (PSE BOT)	1.0	6.1e	12.7	4.3	4.2	1.6	6.8	5.2	18.5
Payments based on output (A2)	–	–	–	0.7	0.9	–	0.3	0.1	0.2
Payments based on area/animal/receipts/income (C)	–	0.5	–	–	0.9	0.1	0.1	1.1	4.0
Subsidies to variable inputs and services (B1+B3)	1.0	4.5e	6.3	0.5	1.4	0.1	3.1	3.6	1.7
Transfers reducing investment cost (B2)	–	1.2e	6.4	3.1	1.0	1.4	3.3	0.3	1.7
Other producer support (D+E+F+G)	–	–	–	–	0.0	–	–	–	11.0
Transfers to general services (GSSE BOT)	0.3	:	1.8	1.4	3.0	1.2	3.0	2.0	2.9
Agricultural knowledge and innovation system (H)	0.1	:	0.5	0.1	0.4	0.2	1.0	0.9	1.3
Inspection and control (I)	0.1	:	0.2	0.2	1.9	0.7	0.6	0.5	0.2
Development and maintenance of infrastructure (J)	0.0	:	0.5	0.5	0.5	0.3	0.5	0.4	0.9
Marketing and promotion (K)	–	:	–	0.4	0.1	–	0.0	0.0	0.6
Other general support (L+M)	–	:	0.6	0.2	0.1	0.1	0.8	0.1	0.0
Transfers to consumers from taxpayers (CSE BOT)	–	:	0.1	0.2	0.2	–	0.7	–	0.2
Total budgetary and other transfers (Total BOT)	1.2	:	14.6	5.8	7.5	2.8	10.5	7.2	21.7

Note: Abbreviations in brackets correspond to OECD PSE/CSE categories; e…Estimated.
Source: Own calculations based on AGRICISTRADE database (AM, AZ, BY, GE, MD) and OECD PSE/CSE database (KZ, RU, UA, EU).

Only in Belarus is it comparable with the EU (almost 19% of VP on average), while the other countries are far behind. In all countries in the region, budgetary transfers to producers are provided exclusively in production-coupled forms of support (40% in the EU), mainly as input subsidies. In Armenia, Moldova and Belarus, this is generally the only form of budgetary support to producers, while in Russia, Azerbaijan, Georgia and Ukraine, they account for 95, 90, 80 and 80%, respectively. Subsidies to variable and fixed inputs are the largest support item in Kazakhstan too, but with a smaller contribution to total budgetary transfers to producers (below 60%). In Kazakhstan, more than 40% of support is granted in the form of direct payments (half as output payments to livestock producers and half as per hectare payments for crops). These are also quite important in Ukraine (per animal for cattle producers), Georgia (wine grape) and Azerbaijan (per hectare for wheat and rice). In Russia, direct payments are less significant (predominantly output payments linked to livestock products).

In most countries, the relative level of support to general services accounts for 1–3% of the total value of agricultural production (around 3% in the EU); in Armenia, it is practically insignificant. In Kazakhstan, Moldova and Armenia, budgetary support to public services, institutions and infrastructure is granted predominantly for inspection and control, in Georgia for infrastructure and in Ukraine and Russia for knowledge generation. In Belarus and Russia, a fairly large portion of general support is non-specified (miscellaneous). Compared with the EU, countries in the region generally provide more support for veterinary, phytosanitary and food safety activities, and less for other general services for agriculture.

Estimation of total transfers to producers

Taking into account both aspects of policies, market measures and budgetary support, we can conclude that in the most recent years for which data are available for all observed countries (2011–2012), agricultural producers were generally supported in Armenia, Azerbaijan, Georgia, Kazakhstan and Russia, and taxed in Moldova and Ukraine. In Belarus, overall total support to producers seems to be close to zero.

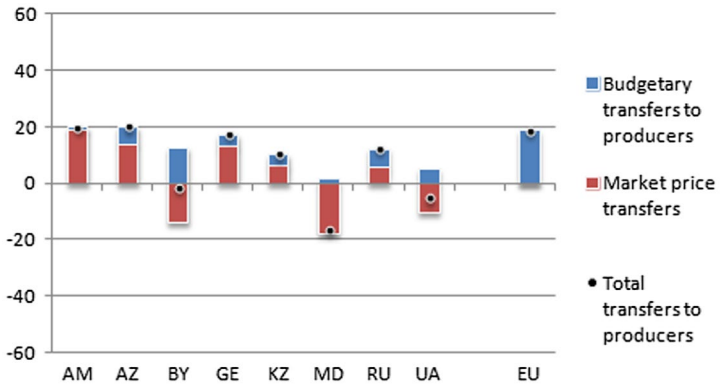

Figure 2. Estimated level and composition of total transfers to producers (% of total value of agricultural production), 2011–2012 average.

The aggregate level of support to producers was predominantly influenced by (positive or negative) market price transfers, though budgetary support also played quite an important role in most countries. In Russia, budgetary transfers to producers contributed about half of the overall level of support, while in Belarus relatively high budgetary support more or less compensated for the overall negative price transfers.

The relative level of total transfers to producers is only close to the EU average in Armenia, Azerbaijan and Georgia, countries for which the estimated price support is the most uncertain due to unreliable data on domestic prices and the effect of overvalued exchange rates (Armenia). In other countries in the region, support to producers is below the EU level and closer to zero (like Australia, New Zealand, Brazil, Chile, South Africa and others) or even negative support (OECD, 2016; Sedik, Lerman, & Uzun, 2013).

Conclusions

For the CIS 8, agriculture still represents an important percentage of both GDP and employment, and is an important labour sink (Lerman, Csaki, & Feder, 2004; Swinnen, Van Herck, & Vranken, 2010; see Table 1) and social safety net. The sector is strategically important in all the observed countries, but policies have diverged significantly since the dissolution of the Soviet Union. What they do have in common, especially if strategic documents are taken into account, is a development orientation; and although it is probably intended as more than just words on paper, the choice of instruments to achieve this objective is country-specific and constrained by limited budgetary funds for agricultural policy.

Market-price instruments take a wide range of forms, from still heavily controlled and managed agricultural markets in Belarus, to levels of market deregulation exceeding even those of developed countries, mostly in the smaller countries (Armenia, Azerbaijan, Georgia and Moldova). Russia is halfway between the two extremes, while Ukraine and Kazakhstan are closer to the smaller countries.[3] Yet it seems that this openness can be easily disrupted in times of crisis, when these countries can be quick to reach for extreme measures like export bans.

The level of import protection ranges from low or modest, mostly in the form of non-tariff barriers (e.g. Armenia, Moldova), to heavy-duty tariffs and tariff quotas (Russia, Belarus,

Kazakhstan), in certain cases even bans, culminating in the 2014 Russian food embargo. While some countries are attempting to enhance exports (e.g. Armenia and to a lesser extent Moldova), others are working primarily on domestic food security, closing their borders (using various bans, grants or permits) or promoting export only in instances of large surpluses (e.g. Russia). Non-tariff barriers, such as sanitary and phytosanitary measures, demanding import procedures and licensing (see also OECD, 2015c) are also common. Russia in particular often resorts to these measures, especially with regard to livestock products, e.g. bans due to (alleged) concerns regarding sanitary and phytosanitary requirements (OECD, 2015c).

In the entire region, the key budgetary instruments for this mostly development-oriented agricultural policy are input subsidies, both for variable and fixed inputs, which is typical of policies in emerging and developing countries. Payments per output, per animal and per hectare are more pronounced in Kazakhstan and Ukraine, as well as (more recently) in Russia.

The choice of producer support is regionally specific and largely based on budgetary revenue forgone; tax concessions (Ukraine, Azerbaijan) and concessional credit (Russia and Kazakhstan), complemented by bank guarantees (Belarus), play an important role. This leads us to posit that agricultural policy in the majority of the CIS 8 might be influenced by the needs and interests of large farms (Anderson & Swinnen, 2008; Lerman, 2004). Again, it is too early to give a clear general assessment without additional deeper political-economic analyses.

Political and economic regionalisation are generating new trade patterns, and this process has started to intensify since 2014. The Eurasian Economic Union (EEU), leading towards harmonisation of member states' trade policies (customs and tariff regulations, a common system of non-tariff regulations) (OECD, 2015c), and preferential trade agreements with the EU (EC, 2015), play key roles in this respect. External trade data (UNCTADSTAT, 2016) demonstrate that the countries of the region, except Belarus and to a certain extent Armenia, have been diversifying away from the Russian market. Time will tell whether the EEU will lead to significant trade diversion or trade creation.

Regarding price levels, the first impression is that the three countries that have implemented radical land reform and established a fragmented land ownership structure (Armenia, Azerbaijan, Georgia) exhibit higher price levels than reference. Conversely, countries where the market structure is dominated by larger enterprises (Belarus, Kazakhstan and Ukraine) have lower levels of domestic prices (Table 2, Figure 1). Russia, which is also dominated by large enterprises, falls somewhere in between.

The general price level is not very telling in itself, however, because of major differences in the prices of crop and livestock products within each country (Figure 1). The external trade balance and level of productivity of individual product groups probably exert a significant influence. The region has a number of important net exporters of grains (Russia, Ukraine and Kazakhstan), resulting in a lower price level. In the case of livestock products, on the other hand, net exports are limited to a few rare cases, and even then only regionally (Belarus). In addition to the net trade status of a product and the predominant size of farms, price levels are influenced by exchange rates (over- or under-valued currencies), purchasing power, the development of local markets and agricultural policy. They are significantly influenced by policy in Belarus, while this influence is less pronounced in other countries. Normally, external trade policy has a moderate effect, though it can have a very important role (through export duties, non-tariff barriers and even export bans) in extraordinary circumstances or when

politically motivated. This is undoubtedly reflected in the occurrences since 2014. It must be emphasised that these relations between different factors and price ratios are the result of a simple causal analysis and require more specific and in-depth analysis. They are to be taken as hypotheses which are yet to be confirmed or discarded, but are certainly worth further investigation.

The evaluation of aggregate producer support based on our calculation of NPRs and analysis of budgetary transfers (Tables 2 and 3; Figure 2) allows for a more accurate clustering of countries according to the nature of their agricultural policy:

- *Transcaucasus countries*: Armenia, Azerbaijan and Georgia. Even accounting for the somewhat questionable quality of data, these are undoubtedly the countries with the highest relative levels of support in the region. The rate of support is about 20% of the value of agricultural production, at a level comparable with the EU, Turkey and China, if PSE is compared (OECD, 2016), but very different in composition to the EU. The vast majority of support (practically all in Armenia and Georgia) is provided in the form of market price transfers as a result of higher producer prices compared with world levels, and to a much lesser extent in the form of budgetary transfers. They are typically net food importers. Agriculture is dominated by small farm structures whose productivity and efficiency are quite problematic. The prevailing weak market integration of producers and to some extent the exchange rate policy also have a specific impact on higher price levels. Rural areas are at an economic disadvantage and (regardless of the fact that GDP per capita in Azerbaijan is one of the highest in the region) the purchasing power of the population is low. All these factors probably contribute to the fact that support to agriculture through prices is the highest in the region.
- *Russia and Kazakhstan*. Support is about 10% of the value of agricultural production (close to the USA, Mexico and Canada, if PSE is compared; OECD, 2016), market price transfers are positive and the share of budgetary transfers to producers is already significant (about half of support). Both countries are also in the Eurasian Economic Union, are grain exporters and have farm structures consisting predominantly of large enterprises which significantly influence the form and extent of agricultural protection. The purchasing power of the population is higher than in the first group.
- *Ukraine and Moldova*. Both have a negative value of transfers to agricultural producers, especially Moldova with about 20% of the value of production and very limited budgetary support. Ukraine also taxes its producers, but at a lower level than Moldova; the situation is slightly improved by budgetary transfers. Both countries are experiencing a deep economic – and in Ukraine also political – crisis, contributing to the diminishing purchasing power of the population and serious problems with the financing of budgetary support. Ukraine and Moldova are also characterised by a dual farm structure. A common feature of the two countries is that they are tied to the EU through trade agreements and political orientation. Agriculture is also a highly significant export activity for both.
- *Belarus*. As a country with a very specific political context, Belarus stands apart from the rest. Substantial and regionally the highest (comparable to the EU, Turkey and China; OECD, 2016) budgetary support to agriculture is entirely offset by large negative market transfers, resulting in zero total transfers. The country has retained a distinctive planning and regulating attitude towards agriculture, but has a strong export orientation,

particularly towards the traditionally preferred EEU market. Factor productivity is among the highest in the region (comparable to Ukraine in certain sectors) and the purchasing power of the population is also relatively high due to low average price levels.

The main purpose of this article was to analyse the content and scope of agricultural policy in the region. This work should be regarded as preliminary, and as an attempt to increase the body of knowledge about agricultural policy in the CIS 8. Gaps in the literature, weak permanent monitoring systems, the complexity of issues, and poor data availability limit the scope of our work. The authors are fully aware of this and wish to stress that the results should be interpreted with caution, though we deem the analysis sufficient to present the rough characteristics of price competitiveness and price protectionism. This applies in particular to price comparisons, as well as the analysis of causes and effects on prices.

Notes

1. The article focuses on countries covered in the EU FP7 project AGRICISTRADE (http://www.agricistrade.eu), which is why countries that might otherwise be considered a part of the same region, like the Central Asian countries, were omitted. Most of the addressed countries are members of the Commonwealth of Independent States (CIS). Georgia withdrew its membership in 2008, so this article in fact covers CIS 7 plus Georgia. For simplicity, we will refer to them as the CIS 8.
2. %TTP is an indicator which serves as an estimate of aggregate support to producers; it is an analogue of %PSE, but not identical to it (see Box 1 for an explanation of the difference). The reason for calculating this simplified indicator instead of %PSE is the low quality or lack of certain data. Therefore the numerical values of the two indicators cannot be compared directly (the same is true of NPC and NPR). However, the comparison between our calculations and PSE calculations done by the OECD for some of the countries indicates that both methods yield similar trend values and rankings of countries.
3. All countries in the region except Belarus and Russia are marked by dual farm structure. It would be interesting to analyse the correlation between market price support and farm structure.

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Appendix

Box 1. Relations between some OECD PSE indicators and indicators used in the study.

OECD indicators	Indicators used in the study
Producer NPC for individual commodities	Percentage Nominal Protection Rate (%NPR) for individual commodities
$\text{Producer NPC}_i = \frac{PP_i + \frac{PO_i}{QP_i}}{RP_i}$	$\%NPRi = \frac{PP_i}{RP_i} * 100 - 100$
PP_i = producer price of commodity *i* PO_i = sum of payments of commodity *i* based on output (PSE sub-category A.2) QP_i = quantity produced of commodity *i* RP_i = reference price of commodity *i*	*i* = individual commodity PP_i = producer price of commodity *i* RP_i = reference price of commodity *i*
Producer NPC for a specific country	Percentage Nominal Protection Rate (%NPR) for a specific country
$\text{Producer NPC}_c = \frac{VP_c + PO_c}{VP_c - TP_c - TPT_c}$	$\%NPR_c = \frac{\sum PP_i * QP_i}{\sum RP_i * QP_i} * 100 - 100$
VP_c=total value of production of country *c* PO_c = total sum of transfers in PSE sub-category A.2 for country TPC_c = total Transfers to Producers from Consumers for country *c* TPT_c = total Transfers to Producers from Taxpayers for country *c*	*c* = country aggregate *i* = individual commodity PP = Producer price RP = Reference price QP = Quantity of Production

Producer NPC is expressed as a coefficient (for example: 1.2); %NPR is expressed as % (for example: 20%).The difference is in the numerator; in the %NPR the numerator includes only the value of production, while in the OECD indicator the numerator includes the value of production and the Total sum of transfers in PSE sub-category A.2. The relation between indicators is as follows:

$$\text{producer NPC} * 100 - 100 \geq \%NPR$$

Percentage Producer Support Estimate (%PSE)	Total transfers to producers in % of the total value of agricultural production (%TTP)
$\%PSE_c = \frac{PSE_c}{GFR_c} * 100$	$\%TTP_c = \%MPD_c + \%PSEBOT_c$
where $PSE_c = MPS_c + BOT_c$	where $\%MPD_c = \frac{\sum MPD_i}{\sum VP_i} * 100$
$GFR_c = VP_c + BOT_c$	$MPD_i = PP_i - RP_i$
$MPS_c = \sum(MPD_i * QP_i - LV_i - EFC_i)$	$\%PSEBOT_c = \frac{\sum PSEBOT_j}{VP_c} * 100$
GFR_c = gross farm receipts of country *c* VP_c = total value of production of country *c* BOT_c = budgetary and other transfers to producers MPD = market price differential of commodity *i* QP_i = quantity produced of commodity *i* LV_i =price levies for commodity *i* EFC_i = excess feed cost for commodity *i* (livestock commodities only)	*c* = country aggregate *i* = individual commodity for commodities for which %NPRs has been calculated MPD = market price differential PP = producer price RP = reference price j = individual PSE category PSE BOT = budgetary and other transfers to producers VP = value of Production (agricultural output)

The difference is in the numerator and in the denominator; the numerator in %TTP includes total MPD, while in %PSE, MPD is reduced by Price Levies and Excess Feed Cost. In the denominator, %TTP includes only the value of production, while the %PSE denominator includes Gross farm receipts (Value of production + BOT). The indicators are not directly comparable, but both generally show the same directions.