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Agricultural Incentives in the Kyrgyz Republic under the Influence of Changing Macroeconomic Conditions[a]

[a]This paper summarizes work that was published in a much more comprehensive report elsewhere (ZHUNUSOVA and HERRMANN 2014)

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Abstract

Together with the rest of the economy, the agricultural sector in Kyrgyzstan has undergone crucial reforms during the transition period following the collapse of the Soviet Union. The policies influencing agricultural incentives, i.e. farmgate prices, have also changed substantially. Recent macroeconomic developments, such as the booming gold mining sector and an increasing inflow of workers' remittances on the one hand, and increasing import prices on the other hand, are also likely to have an impact on agricultural incentives through the influence on the exchange rate. This paper aims at investigating the impact of both direct agricultural policies and changing macroeconomic conditions on agricultural incentives for the case of Kyrgyzstan. Nominal Rates of Assistance (NRAs) are estimated in order to quantify direct distortions of agricultural prices resulting from the policies in the agricultural sector. NRA estimates show that domestic prices for major food crops in Kyrgyzstan are raised beyond world market prices due to a general encouragement of food-crop production based on food self-sufficiency goals. Relative to food crops, export crops tend to be penalized by lower and less stable NRAs as well as by poor market integration. In the second step, the True Protection Concept is employed in order to analyse relative incentives between importable, exportable and nontradable sectors in the Kyrgyz economy. The true-protection analysis shows that around half of the burden of the price increase for importables is shifted to the exportables sector, including agricultural exportables. This means that if prices in the importable sector increase in response to exogenous factors or certain trade policies, domestic exporters, both agricultural and non-agricultural, would be taxed implicitly. Since the Kyrgyz government seeks to promote exports, findings from the present study may serve as a background for future trade and agricultural policy development.

Keywords: agricultural incentives, true protection concept, Kyrgyz Republic

1 Introduction and Research Questions

The agricultural sector continues to play an important role in the economy of Kyrgyzstan by employing one third of economically active population and contributing 15% of GDP as of 2013, although this figure has decreased significantly compared to 1990-s (it was about 50% in 1996). All economic sectors, including agriculture experienced crucial reforms during the transition period after the dissolution of the Soviet Union. Significant reform steps included privatization of land, de-collectivization of large-scale state and collective farms, liberalization of prices and removal of direct subsidies to farmers.

According to the Kyrgyz Agrarian Concept, agricultural policies in the KR follow four main goals: food provision, stability of agricultural markets, achieving competitiveness and improving trade, and environmental preservation and food safety (GOVERNMENT OF THE KYRGYZ REPUBLIC 2004). Despite the abolition of direct subsidies to farmers, the government continued to provide different types of support, e.g. the distribution of seeds or fuel under prices lower than on the market, or subsidized interest rates of credits for farmers (AZHIBEKOV 2011). If the government's policies have an impact on agricultural prices, they also influence farmers' incomes and their decisions on agricultural production and land use. Evaluation of the size of price incentives or disincentives caused by implemented policies is of high relevance for agricultural policy-making. The results of such an analysis could be used as a basis for future policy discussions, as they can help to understand the implications of different policy instruments.

It is the goal of this contribution to summarize some major results from a study in which

agricultural distortions in the Kyrgyz economy arising from both direct agricultural policies and from changing economy-wide conditions were analyzed in greater detail (ZHUNUSOVA and HERRMANN 2014). This summary was presented at the Regional Economic Cooperation in Central Asia (ReCCA) Conference in Halle in November 2014. As a small open economy, the Kyrgyz Republic is highly influenced by developments in the international markets. It is very likely that these macroeconomic variables influence agricultural incentives, too. For example, earnings from gold exports are a significant source of foreign exchange inflow in the country, as well as migrant remittances from abroad, whereas oil imports constitute a substantial part of the import bill. In 2012, the share of workers' remittances from abroad in GDP exceeded 30% accounting for the inflow of more than two billion US$ (WORLD BANK 2014). Thus, changes in prices of gold on the export side and oil prices on the import side can have an impact on the foreign exchange markets in the country and on prices of other tradable goods, including agricultural products. Using the concept of true protection, it is possible to investigate the relationship between prices in different sectors in the economy and to explore implications of a price change in one sector on prices in another sector, i.e. to deal with relative incentives in the economy. This concept is based on the seminal work of DORNBUSCH (1974) and SJAASTAD (1980), and its extension by GREENAWAY and MILNER (1987).

2 Data and Methods

Our analysis contains two parts. First, we look at the effect of direct policies in the agricultural sector on prices of commodities i.e. agricultural incentives. In doing so, we estimate Nominal Rates of Assistance (NRAs) following the methodology employed in the World Bank's research project "Distortions to Agricultural Incentives".

Estimates of NRAs reflect direct distortions to agricultural incentives. Direct agricultural distortions arise because of sector-specific policies of the government (KRUEGER et al. 1988). Price-distorting measures can be implemented at the border point, e.g., through imposition of import tariffs or export subsidies. If a country is trying to protect a certain import-competing sector, an import tariffs can be used, or export subsidies could be applied to promote important export sectors. A direct production subsidy or a production tax can also be imposed by the government. A total NRA is the sum of distortions imposed both at the border point and in the domestic market.

NRAs were estimated for seven major agricultural commodities for the period of 2001 to 2011 following the methodology described in ANDERSON (2009: 575). The formula below is used for calculating NRAs for individual agricultural commodities:

$$NRA = \frac{P_{FG} - (P_W \cdot E - C_T - C_H - C_M)}{P_{FG}} \quad (1)$$

where PFG is the farmgate price of a commodity in Kyrgyz Soms (KGS); Pw is the world price or the reference prices for the commodity in USD; E is the nominal exchange rate between the KGS and US$; CT, CH, and CM stand for transport, handling/processing and marketing costs respectively, associated with the delivery of a product from the farmgate point to the border or vice versa.

In the second part, we look at the relative incentives in the economy and analyze the potential impact of price changes in different sectors on agricultural incentives using the true protection

concept. In the literature on true protection, Sjaastad's incidence parameter ω is often used to measure the incidence of protection across sectors (for a survey and further applications, see WIEBELT et al. (1992): 136-170):

$$\omega = \frac{\Delta(P_H/P_X)}{P_H/P_X} \Big/ \frac{\Delta(P_M/P_X)}{P_M/P_X} \tag{2}$$

where PM (PX) measures the price index in the import (export) sector, PH is the price index in the nontradable or home-good sector, ω is the percentage change of the price ratio between nontradables and exportables due to a one-percent change in the price ratio between importables and exportables. ω ranges between 0 and 1 and, the higher the ω, the more is the burden of import protection or an exogenous import price boom shifted to the export sector. Under the extreme case of ω=1, only the export sector would experience unchanged prices, whereas prices in the importable and nontradable sectors would rise by the same rate under either import price protection or an import price boom. With ω=0, the burden of import protection or the import price boom would be placed on the exportable and nontradable sector equally.

The regression model in the three-sector equilibrium model estimated in our study is formulated as:

$$\ln(P_H/P_X) = \alpha_1 + \omega \ln(P_M/P_X) + \alpha_2 Z + \mu_1 \tag{3}$$

where Z is a vector of exogenous shifters and μ1 is a random error term.

Often, more disaggregation is needed and the exportable sector is divided into the nonagricultural and agricultural export sector. Price indices are PXNA and PXA respectively. Then, the regression model could be changed to:

$$\ln(P_H/P_{XA}) = \alpha_1 + \omega_1 \ln(P_M/P_{XA}) + \omega_2 \ln(P_{XNA}/P_{XA}) + \alpha_2 Z + \mu_2 \tag{4}$$

Z is again a vector of shifters and μ2 is the random error term. Now, two incidence parameters are included: ω1(ω2) measures the percentage change of the price ratio between nontradables and agricultural exportables due to a one percent change in the price ratio between the importables (nonagricultural exportables) and agricultural exportables.

Data are acquired from the National Statistical Committee and the National Bank of the Kyrgyz Republic. Producer Price Indices (PPI) and Consumer Price Indices (CPI) reported for different sectors of the economy are used to calculate price indices for exportable, importable and nontradable sectors used in the regression models. Weights used for deriving average price indices for each year are calculated on the basis of the Balance of Payments information from the National Bank of the Kyrgyz Republic. The data are on a quarterly basis from the fourth quarter of 2002 to the first quarter of 2013.

3 Main Results and Discussion

The estimates of Nominal Rates of Assistance obtained for seven agricultural commodities for the period of 2001 to 2011 are presented in Table 1.

Table 1: Nominal Rates of Assistance, %

Commodity	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Wheat	56	63	52	34	52	43	31	35	27	8	29
Potatoes	72	63	-8	12	12	52	55	37	52	62	51
Tobacco	-77	-131	-108	-149	-141	-117	-127	-152	-211	-238	-188
Cotton	-17	-10	-4	34	22	38	33	31	29	24	52
Maize	41	16	36	18	21	41	52	18	-13	-5	27
Milk	18	10	4	-39	-63	-34	-14	-15	-45	-69	-71
Wool	35	0	-44	-42	-69	-3	32	21	26	-34	84

Source: ZHUNUSOVA and HERRMANN (2014), Table 2.

NRA estimates show that there are deviations of prices in the domestic market from world market prices in both positive and negative directions. Estimates for food crops such as wheat, potatoes or maize are generally positive over the considered time period indicating at a support from the government apparently following food self-sufficiency objectives. Furthermore, according to the NRAs, farmers growing tobacco are prone to the highest price distortions compared to other crops. These distortions are likely to come from the existing system, where only few corporations are entitled by the government to purchase the raw tobacco from farmers and to further market and export this commodity. As detailed information on domestic trade costs is lacking, the implications derived from the magnitude of estimated distortions have to be made carefully. But the conclusion seems safe from both the summary of agricultural policies and the estimates of NRAs that the governmental support to farmers in total and to specific branches of the agriculture is not based on a steady medium-run market price policy. There are many individual policy actions for individual years or a few years which were then revised again. Despite this discontinuous policy approach, food crops seem to be favored compared to export-oriented agricultural products based on the sum of agricultural policy measures and a lack of market integration of the exportables. Political instability in the KR which has caused frequent changes in the government composition, i.e. 15 times over the last 23 years, was obviously a major obstacle for consistent policy development and implementation not only in the agricultural sector, but also in the rest of the economy.

Various regression models were estimated to evaluate the incidence of protection in the Kyrgyz Republic and two of those are presented in Table 2. In the first model, aggregate price ratios are used to investigate the effect of the price ratio of importables to exportables on the relative price between the nontradable and the exportable sectors. In the second model, agricultural and non-agricultural sectors are considered separately, where the price ratio of nontradables to agricultural exportables is used as a dependent variable and the effect of import protection and non-agricultural export promotion on agricultural export incentives is evaluated. In both models, a significant share of the variation of the dependent variable can be explained by the regression equation.

Table 2: Regression Estimates of True Protection Models, 2002-2013[a]

Independent variables:	Dep. Variable: ln*(Ph/Px)*	Dep. Variable: ln*(Ph/Pxa)*
ln*(Pm/Px)*	0.522*** (0.066)	
ln*(Pm/Pxa)*		0.41*** (0.085)
ln*(Pxna/Pxa)*		0.36*** (0.076)
$\ln(BT/GDP)_{t-1}$	-0.001 (0.012)	-0.002 (0.012)
Constant	-0.321*** (0.054)	-0.212*** (0.048)
F-test	32.23***	25.31***
Durbin-Watson Statistic	1.88	1.61
Adjusted R^2	0.62	0.65
Number of observations	40	40

[a] The Cochrane-Orcutt procedure is applied in both models. *** indicates p-value at the 1% confidence level. Standard errors are in parentheses. Source: ZHUNUSOVA and HERRMANN (2014), Table 3.

According to the first equation in Table 2, a one-percent change in the price ratio between importables and exportables raises the price ratio between nontradables and exportables by 0.52%. A protection of the import-substituting sector induces an implicit tax for the exports sector equal to 52% of the import protection. All other prices would rise more in percentage terms than those of the exportable sector. We can conclude for the Kyrgyz economy that protection in the importable sector or an exogenous upward shift on prices of importables will lead to higher percentage increases of the prices in the nontradable compared to the exportable sector. This implies that an import price boom will place the highest relative burden on the export sector.

It is interesting to look at the second equation additionally in which nonagricultural and agricultural exportables are distinguished. The result reveals that both incidence parameters are significantly positive. A one-percent increase in the price of importables as opposed to agricultural exportables raises the price ratio between nontradables and agricultural exportables by 0.41%.

4 Conclusions

The goal of this paper was to analyze the impact of changing macroeconomic conditions on agricultural incentives in the Kyrgyz Republic. The true-protection concept was employed in order to analyze the implications of changing macroeconomic conditions and economy-wide policies on agricultural incentives in Kyrgyzstan.

Regression results demonstrate that a significant part of the increase in the prices in the importable sector is shifted on to the exportable sector as an implicit tax. That is, a one-percent change in the price ratio between importables and exportables raises the price ratio between nontradables and exportables by 0.52 %. When nonagricultural and agricultural exportables are distinguished in the regression model, the results show that agricultural tradables are implicitly taxed with protection in the manufactured sector or if an exogenous import price boom occurs. This means that, e.g., a price boom on the gold market will deteriorate the price of agricultural exportables not only relative to the booming sector but also relative to the nontradable sector.

Strong intersectoral linkages between the prices in the nontradable and tradable sectors have straightforward implications for designing future policies, as they indicate the extent by which each sector would be affected by a certain commercial policy or a general macroeconomic development that affects prices in the importables sector. Since the Kyrgyz government seeks to promote exports, findings from the present study could serve as a useful scientific background for

future trade and agricultural policy development.

5 References

ANDERSON, K. (Ed.). (2009). Distortions to Agricultural Incentives: A Global Perspective (1955 - 2007), Washington DC: World Bank.

AZHIBEKOV B.A. (2011). Improving State Support of Agricultural Sector of the Kyrgyz Republic. (in Russian: *Sovershenstvovanie gosudarstvennoi podderjki agrarnogo ssektora Kyrgyzskoi Respubliki. Dissertatsiya na soiskanie uchenoi stepeni kandidata ekonomicheskih nauk).* Candidate of Sciences Dissertation, Bishkek: Kyrgyz Economic University.

DORNBUSCH, R. (1974). Tariffs and Non-Traded Goods. Journal of International Economics 4: 177-185.

GOVERNMENT OF THE KYRGYZ REPUBLIC (2004). Agrarian Policy Concept of the Kyrgyz Republic to 2010. Approved by the Resolution of the Government of the Kyrgyz Republic No. 465 on June 22, 2004.

GREENAWAY, D., C.R. MILNER (1987). 'True Protection' Concepts and Their Role in Evaluating Trade Policies in LDCs. The Journal of Development Studies, 23 (2): 200-219.

KRUEGER, A. O., M. SCHIFF, A. VALDÉS (1988). Agricultural Incentives in Developing Countries : Measuring the Effect of Sectoral and Economywide Policies. The World Bank Economic Review, 2(3): 255–271.

SJAASTAD, L. (1980). Commercial Policy, "True" Tariffs, and Relative Prices. In: Black, J. and B. Hindlay (eds.), Current Issues in Commercial Policy and Diplomacy (Papers of the Third Annual Conference of the International Economics Study Group). London, Basingstoke, pp. 26-51.

WIEBELT, M., R. HERRMANN, P. SCHENCK and R.THIELE (1992). Discrimination Against Agriculture in Developing Countries? (Kieler Studien, No. 243), Tuebingen: J.C.B. Mohr (Paul Siebeck).

WORLD BANK (2014). Annual Remittances Data. (Updated as of April 2014). Available via: http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/0,,contentMDK:22759429~pagePK:64165401~piPK:64165026~theSitePK:476883,00.html [Accessed on 29 Apr 2014]

ZHUNUSOVA, E.,R. HERRMANN (2014): Agricultural Incentives in the Kyrgyz Republic under the Influence of Domestic Policies and Changing Macroeconomic Conditions. In: Ira Pawlowski (ed.): Natural Resources and Human Welfare in Central Asia. Cuvillier Verlag Göttingen, pp. 151-181.