

ANNEX 3. MEASURING AGRICULTURAL SUPPORT

2. MEASUREMENT OF AGRICULTURAL SUPPORT IN NON-OECD ECONOMIES: SOME OLD AND NEW ISSUES

Introduction

1. The OECD indicators of agricultural support, of which the PSE and GSSE are the key ones¹, provide structure and quantify policies to support the agricultural sector. These indicators constitute a comprehensive framework for monitoring of annual and long-term developments in agricultural policies. As such, this exercise offers an important input into national policy analysis and decision making. The method allows for cross-country comparison of agricultural policies, thus helping to make national policies more transparent and facilitating a more informed policy dialogue.

2. The OECD began evaluating agricultural support for non-OECD economies in the early 1990s. This analysis now covers a number of transition economies, such as Bulgaria, Romania, Russia and Ukraine², and has recently been extended to large developing economies such as Brazil, China, and South Africa (OECD, 2006b).

3. The purpose of this document is to continue the practice of informing governments and analysts about the approaches to the measurement of agricultural support in non-OECD economies.³ It is important to stress that the evaluation of support for these countries is based on the same methodology as applied to OECD members. A consistent methodological treatment of countries is one of the key principles guiding the OECD analysis in this area. However, the evaluation of support in non-OECD economies has its specificities. First, because it often concerns policy measures that have relatively little prominence in OECD countries. Second, there is a greater need for careful interpretation of support estimates due to the fact that agricultural policies are being evaluated for the economies that undergo profound structural transformations and adjustment. Clarity about what underlies the estimates of support in non-OECD economies is important to facilitate understanding and interpretation of these estimates.

1. The Producer Support Estimate (PSE) is an indicator of the annual monetary transfers to agricultural producers from policy measures that: (i) maintain domestic agricultural prices at levels higher (or lower) than those at the country's border (Market Price Support) and (ii) provide budgetary support to producers. The General Services Support Estimate (GSSE) is the annual monetary transfers to agriculture, but not to individual producers, representing budgetary expenditures for the provision of such services as research, development, training, inspection, marketing and promotion (OECD 2004). For detailed definitions of the OECD agricultural support indicators see OECD 2006c.

2. Other non-OECD transition economies, Estonia, Latvia, Lithuania and Slovenia, are monitored as part of the European Union.

3. The OECD's experience with the measurement of agricultural support in non-OECD economies has been first reviewed by Harley (1996), and Kwiecinski and Pescatore (2000). This issue was also broadly addressed at the Global Forum on Agriculture and the Workshop *Agricultural Policies in China after WTO Accession*, both held in 2002 (Melyukhina 2002a and 2002b).

4. The document focuses on several issues that were encountered in the work on measurement of support in Brazil, China and South Africa, undertaken as part of the recently released OECD *Agricultural Policy Reviews* for the three countries (OECD, 2005a; OECD, 2005b; OECD, 2006a). Where relevant, experience with other monitored non-OECD economies is also referred to.

5. The paper first looks at the measurement and interpretation of market price transfers for non-member economies. This issue has been discussed at previous OECD meetings and in publications⁴, but deserves regular consideration due to a growing interest to support estimates for non-OECD economies and the broadening base of data users. The second part of the document discusses several salient features of estimation of budgetary support, such as assistance through preferential credit, large-scale debt forgiveness, and support associated with developmental and social assistance programmes. None of these issues are relevant exclusively for non-OECD economies, but in these economies they become more distinct and therefore deserve more attention.

Support measurement issues

Market price support

6. The traditional way of supporting (or taxing) agricultural producers has been to alter the level of market prices they receive. Various measures are applied to this effect, such as imposition of taxes on imports or exports, often in combination with domestic market interventions, or direct price administration. Capturing the implicit support (or tax) arising from such measures is thus one of the principal tasks in estimating the government's policy transfers to (from) producers.

7. When only an import tariff or an export duty is in place, the task may seem straightforward – the applied tariff represents an implicit policy transfer. However identification of an applied tariff is often complicated by practical difficulties of estimating the “average” tariff applied in the presence of tariff rate quota regimes, seasonal variations in tariff protection, preferential trade agreements, and high diversification of tariff rates for certain products. The effects of formal tariffs can be substantially modified if quantitative trade restrictions, state trading or non-tariff measures are also in place. The measurement of price policy transfers becomes further complicated when border measures are applied in combination with other price interventions. In some cases such interventions are strictly formalised as, for example, the European Union's Common Market Organisations (CMOs). However, as is often the case in non-OECD countries, domestic market interventions may have an informal or ad hoc nature, or may be the responsibility of regional administrations, with highly variable application across regions.

8. Formal policy parameters of price interventions – import tariffs or export duties, subsidies, and duties – are thus often neither accurate nor sufficient indicators of price policy transfers. Given that, the basic OECD approach to the measurement of market price support has been to estimate an *effective tariff*, or a differential between domestic and world prices, which would reflect the totality of policy interventions affecting market prices.

9. Estimates based on the measurement of price differentials mean, however, that non-agricultural policy impacts may be captured in these estimates as well. The differential between domestic and world prices is theoretically the result of government interventions preventing market forces arbitraging away the price differences between domestic and external markets. “Theoretically” in particular means assuming a perfectly competitive market structure and that market agents can immediately absorb information and implement new contracts in response to price changes. In the real world these conditions rarely hold, as markets are characterised by various imperfections, while it takes time and cost for agents to react to new

4. See, for example Melyukhina 2002a and 2002b.

market signals. Therefore, market inertia creates price differentials independently of government price interventions. The degree of such non-policy “noise” increases in the case of non-OECD countries. Markets in these economies are characterised by underdeveloped physical infrastructure, poor information and weak market institutions, which impede price arbitrage. These deficiencies are even more pronounced in the countries with large territories, like Brazil, China, or Russia, where natural vastness exacerbates the effects of weak market organisation. The consequences of deficient arbitrage in the monitored countries become particularly visible in their crop markets, when temporary deficits or excess supplies due to weather conditions produce sharp market price reactions.

10. Another factor interacting with agricultural policies, and also contributing to the emergence of differentials between domestic and world prices, is macroeconomic instability. The majority of non-OECD economies went through periods of serious macroeconomic adjustments. Such adjustments – whether controlled or crisis – brought about shocks to relative prices. For example, macroeconomic reforms in Brazil, South Africa, and Russia were associated with massive exchange rate devaluations. Following the major reforms, all these countries saw additional currency shocks of varying intensity. The exchange rate devaluations pushed world prices, expressed in local currencies, above domestic price levels, and opened wide price gaps. Such abrupt and strong price disparities, emerging due to factors not related to agricultural policies, take time to dissipate and inevitably affect the measured price gaps.

11. In principle, if the PSE is to measure transfers arising from agricultural policies, the non-agricultural policy impacts should be filtered out from the measured domestic-to-world price gaps. This task is not trivial. One possibility would be to model producer prices, which would prevail with the given agricultural policies and in the absence of other impacts, such as structural impediments to transmission of international prices to domestic markets and exchange rate shocks. Price gaps calculated on the basis of these modelled domestic prices would provide approximations of agricultural policy impacts. However, this approach involves applying assumptions about various parameters of the model, which introduces their own bias into estimations. What is also important is that the modelling approach would transform the OECD PSE from a conventional statistical measure based on observed data, to one based on non-observed variables.

12. The convention in the case of non-OECD economies has been to follow the same approach as for OECD countries that the PSE is a statistical measure based on observed data. It has been considered appropriate to apply, as it is done for the OECD countries, certain assumptions to factor out non-agricultural policy impacts from the measured market price support. These assumptions can be better explained by concrete examples:

- When for *exported commodities* it is revealed that domestic prices are below the world price levels, but no taxing agricultural measures are applied – such as export duties, export restrictions, or administrative barriers to inter-regional movement of goods⁵ – the price differentials are set to zero. The underlying assumption is that the lower domestic prices are due to factors not related to

5. Administrative barriers to movement of goods are a common practice in Russia and Ukraine, for example. Regional controls of product movements on various grounds – “regional” food security, or need to support local processors, and consequently, the local economy – are frequent in these countries. Technical barriers are also widespread, such as licensing, special permissions of local administrations to ship products outside the regions, and other administrative requirements for internal and external movement of agricultural products.

agricultural policies, which is equivalent to assuming that agricultural policies as such create a zero producer price effect.⁶

- When for *imported commodities* it is revealed that domestic prices fall below the world price levels, but these commodities effectively receive border protection and/or domestic price support – the negative price differentials are also set to zero. In this case it is assumed that the lower domestic prices are due to factors not related to agricultural policies and the net effect of market price support equals zero.⁷
- In all other cases, when positive or negative price differentials are revealed in the presence of agricultural policies respectively supporting or taxing producer prices, the measured price differentials are fully accounted for in the market price support.⁸

13. The assumptions described above are founded on standard economic principles and the facts about agricultural policy measures in particular countries. This approach permits the best approximation of measured transfers to those attributable to agricultural policies. However, because in many cases price differentials enter into the estimation of MPS directly, the MPS remains overall a composite transfer, resulting from interaction of agricultural measures, structural weaknesses and macroeconomic impacts.

Transfers from taxpayers

Preferential lending

14. One prevalent government practice in non-OECD countries is to reduce the cost of borrowing for agricultural producers. When agricultural producers are able to borrow at more favourable terms compared to other businesses, implicit policy transfers are created, which need to be accounted for in producer support.

15. In some countries, like in Russia or Ukraine, the governments do not intervene directly in lending conditions, but subsidise interest rates charged to agricultural borrowers. Usually, the lending banks receive budgetary compensation which covers part of the interest rate due on specified agricultural loans. In such cases the estimation task is straightforward, as transfers to producers associated with such support correspond to the budgetary disbursements.

16. However, some non-OECD governments operate under considerable fiscal rigidities, leading them to rely on such ways of credit support that do not imply actual budgetary disbursements. This is the

6. In the case of Brazil, such an assumption is applied in the estimation of MPS for soybeans, sugar, beef, pigmeat and poultry, all being net exports, whose domestic prices are actually below the export parity levels. In the case of China, this concerns peanuts, apples, beef, pigmeat poultry and eggs; and in the case of South Africa – grape, oranges, apples and eggs.

7. In the case of Brazil, this assumption is applied in the estimation of MPS for key imported products – wheat, rice and maize. Specifically, in years when domestic price is below the world reference price, the MPS for these commodities is assumed to equal zero, while in years when the domestic-to reference price differential is positive, it is fully accounted for in the MPS. A similar approach is applied in estimation of MPS for imported products in South Africa, such as wheat, maize, sunflower, peanuts, beef, pigmeat, and poultry.

8. In the case of Brazil, this approach is applied in the estimation of MPS for milk, and between 1995 and 1999, for sugar cane. In the case of China this occurs for wheat, maize, rice, rapeseed and soybeans; and for South Africa – sugar, milk, and sheep meat. A full accounting of price gaps is also the case for the estimation of MPS for all commodities for Russia, and Ukraine.

case of Brazil, where the government impose special conditions on lending to agricultural producers. The banks and credit co-operatives are required to allocate certain shares of their credit resources for agricultural lending at interest rates fixed by the government. Additional credit resources for agricultural lending come from special extra-budgetary funds, and are also lent at fixed interest rates.

17. When the government sets the interest rates and directs resources for lending, the estimation of the associated support is based on the measurement of a difference between the interest rate payments, which agricultural borrowers would have paid based on a “market” interest rate and the payments which they actually made based on preferential interest rates. This task demands good knowledge of agricultural lending conditions, which may vary by lending programmes and types of beneficiaries and may be subject to frequent changes. It is also important to have adequate information on allocations of preferential credit and the values of outstanding debt. A choice of appropriate “market” interest which would best represent an opportunity cost for preferential credit demands a good overall knowledge of credit market in a given country.

18. The importance of support through preferential credit can be illustrated by the fact in 2003-05 it accounted for almost one half of Brazil’s PSE and 4% of Russia’s PSE (9% in 1992-95).

Agricultural debt restructuring

19. The fundamental market reforms that the majority of monitored countries implemented in the 1990s had, as their immediate effect, a considerable deterioration of agricultural terms of trade. Brazil, Russia, Ukraine, and Romania – all saw deep farm finance crises in the first half of the 1990s (Box A.3.2.1). The governments responded by the large-scale restructurings of accumulated bad debt, often followed by another restructurings involving additional bad debts, and/or repackaging of previous schemes. All schemes incorporated concessions to debtors, such as extensions of repayment periods, reduced interest on overdue debt, and write-offs of parts of debt. These restructurings were probably the unavoidable measures of financial rehabilitation in the conditions of the cash flow problems which the agricultural sector saw at the time.

Box A.3.2.1. Agricultural debt rescheduling in Brazil and Russia

Hyperinflation plagued the Brazilian economy in the late 1980s and continued into the 1990s, with extreme volatility of inflation, the real exchange rate and relative prices. After the implementation of the Real Plan in 1994, inflation was tamed. However an exchange rate peg made the real overvalued and restrained growth in export-oriented and import-competing sectors. By 1995, the value of non-performing agricultural loans reached 30% of total outstanding agricultural credit, and the new bank lending virtually stopped. Under strong pressure from the agricultural and banking sectors, the Brazilian government decided on a broad rescheduling of agricultural debt. The repayment period for the overdue debt was extended by 20 and 24 years, depending on types of borrowers, and the interest rate was set at below-market rates. At the beginning of the 2000s, another rescheduling decision followed, this time concerning loans to small farmers and land reform beneficiaries, also providing for prolongation of repayments at reduced interest rates, partial write-offs and “good payer” rebates. At the end of 2005, the total outstanding restructured debt stood at BRL 17.3 billion (USD 7.6 billion) with overdue repayments reaching BRL 4.5 billion (USD 2.0 billion).

The Russian agricultural sector plunged into a deep finance crisis in the first half of the 1990s. Between 1992 and 1995, the share of unprofitable agricultural enterprises rose from 5% to 57%. As of January 1995, approximately 70% of agricultural enterprises had overdue debt on accounts payable, 43% on state taxes and contributions to the Pension and Social Security systems, and 28% on bank loans. The first large-scale agricultural debt rescheduling was implemented in 1994, covering the government’s directed credit to agricultural producers. Additional restructurings followed in 1998, 2001, 2002, and the most recent in 2004. These concerned overdue taxes and contributions of agricultural enterprises to the Pension and Social Security systems, providing for extension of repayments for 5 to 10 years and partial write-offs.

Source: OECD, 2005a; FSSS, 1995.

20. Estimation of subsidy arising from large-scale debt restructurings is therefore an important element of the evaluation of support in many monitored non-OECD countries. The approach to estimation is similar to that applied for preferential credit, *i.e.* the subsidy represents the difference between repayments due at “market” and at preferential interest rate. Where information is available on written-off debt and additional incentives for timely repayment, these are also accounted for. The implicit transfers to producers associated with debt rescheduling constituted 13% of the Brazil’s aggregate PSE in 2003-05. For Russia, this support accounted for 1% of the aggregate PSE in 2003-05, but was as high as 62% in 1992-95.

Alleviation of poverty and social inequality

21. Alleviation of poverty and social inequality are key issues on the policy agenda of the monitored non-OECD economies. Access to farmland and to farming activity for the disadvantaged social groups is viewed as one of the principal remedies in combating poverty and social division. Thus, Brazil and South Africa implement large-scale land reform programmes, which transfer agricultural land to the poor free of charge or at low cost. Land allotment is complemented by a plethora of programmes to subsidise investment, current production costs, and build infrastructure on emerging or existing farms run by the poor. Measures to involve the rural poor into agriculture are supported by investments in education, training and extension.

22. Programmes of this kind have a broad developmental nature and are fundamentally driven by social equity objectives. The conceptual issue is whether these programmes should be considered in the countries’ agricultural support estimates. The answer to this question is yes, if these social objectives are pursued through support of agricultural activity. This approach is consistent with the PSE definition as transfers to support agricultural producers “...*arising from policy measures which support agriculture, regardless of their nature, objectives or impacts on farm production or income*” (OECD, 2006b).

23. In some cases land and small farmer programmes may be partly financed by international donors, like, for example, the National Land Credit Programme in Brazil, supported by the World Bank, or the Land Care programme in South Africa, sponsored by the government of Australia. In this respect another specific question emerges. Should this assistance, based on taxpayer transfers originating outside the national economy framework, be included into the country’s support estimates? It has been agreed to include the support based on foreign aid, because it is the national policies that create and deliver this support. Although for the countries monitored to date international funding for domestic agricultural support is marginal, this issue may potentially have important implications for those developing countries, whose agricultural support relies heavily on official development assistance (ODA).

24. A challenge that developmental programmes pose in terms of their treatment in the PSE/GSSE is linked with the difficulties of separating clearly the elements of programmes related to agricultural production activity. Packages targeted to land reform and assistance to poor rural households are typically heterogeneous, encompassing, along with measures supporting farming, assistance for education, territorial and infrastructural development, housing and healthcare improvements; activities which go beyond the support of agricultural producers or the agricultural sector. In some cases, even if the amount of agricultural expenditures can be identified, it is too aggregated to distinguish between support to individual producers and to general services. Two examples in Box A.3.2.2 illustrate the variability of elements that may be aggregated under the budgetary lines corresponding to programmes of this kind. It is therefore important to have access to more detail on such programmes, as well as their cost elements.

Box A.3.2.2. Activities financed under some land reform and infrastructure development programmes

Among other types of assistance, land reform beneficiaries *in Brazil*, receive preferential loans under the programme "Credit for Families Settling on Agricultural Lands". These loans are given for construction of family houses, purchase of food, but also for purchase of agricultural inputs, such as fertiliser, seeds, small animals and tools. Another programme is called "Support of Municipal Projects on Development of Infrastructure and Services for Family Agriculture". It finances investments in infrastructure for collective use of families involved in small agricultural production, including electricity networks, irrigation, processing and storage, construction and overhaul of internal roads and ways of transporting harvested crops, construction and renovation of rural schools, communal centres, healthcare points, and public telephones.

A Comprehensive Development Plan for Agriculture in *China* supports (original wording): "improvement of low and medium-yielding fields; building of small-scale reservoirs; building of irrigation and drainage systems; building of electrical pumping wells; improvement of soil; purchase of agro-facilities for dry farming; building of roads; building of shelter-forests, building of agro-technical service stations and facilities for farmers' training". While part of the above mentioned (and similar) budgetary expenditures which have the objective of supporting rural infrastructure could be treated as input subsidies (e.g. "purchase of agro-facilities for dry farming"), other expenditures (e.g. on water supply or flood prevention included in other programmes under the general label of agricultural infrastructure) provide benefits to urban and industrial centres (e.g. township and village enterprises) in the vicinity. For now, due to a lack of more accurate information, these expenditures are allocated to General Services.

Source: OECD, 2005a; OECD, 2005b.

Summary

25. Macroeconomic instability and structural weaknesses are characteristic of non-OECD economies. Agricultural policies create implicit transfers to or from agricultural producers in interaction with these factors, which may amplify or offset the impacts of agricultural measures as such. The non-policy impacts can not be perfectly filtered out these transfers. It is therefore important to interpret the support estimates for non-OECD economies with care. In particular, long-term trends in support should take precedence over the numbers for one particular year. This however does not diminish the relevance of PSE/GSSE estimates for policy analysis and monitoring, particularly given that since the beginning of the market-oriented reforms non-OECD economies have substantially progressed towards more developed market systems and macroeconomic stability.

26. As governments in non-OECD economies operate under fiscal rigidities, the assistance is often provided in forms, which do not imply actual budgetary disbursements. Such implicit support as controlled (preferential) terms of lending to agricultural borrowers and large-scale debt restructurings have been common to many monitored non-OECD countries. Identification and evaluation of this support is an important task. Another specificity of budgetary support to producers in non-OECD countries is that it may be partly based on international funds, *i.e.* ultimately financed by foreign taxpayers.

27. Many non-OECD countries are facing serious poverty and social equity problems. These problems are largely based in the rural population and solutions are often sought through support to agricultural activity among the poor. Evaluation of support arising from these actions, fundamentally inspired by social considerations, but largely pursued through agricultural support, is another notable feature of non-OECD countries, which requires attention. In particular, there is a need for careful separation of agricultural support from broad based assistance provided under poverty alleviation and development programmes.

28. Broadening the policy information and improving the quality of data underlying the PSE/GSSE estimates for non-OECD countries is an ongoing process. Success can only be achieved through an interest and active co-operation on the part of the governments of the countries concerned.

BIBLIOGRAPHY

- FSSS (1995), *Selskhoje Khozyaistvo Rossii: 1995*, Federal Service of State Statistics, Moscow (FSSS), 1995, pp. 101-106.
- Harley, M. (1996), "Use of Producer Subsidy Equivalents as a Measure of Support to Agriculture in Transition Economies", in *American Journal of Agricultural Economics*, 78 (August 1996), pp. 799-804.
- Kwiecinski, A. and N. Pescatore (2000), "Sectoral Agricultural Policies and Estimates of PSEs for Russia in the Transition Period", in P. Wehrheim *et al.* ed., *Russia's Agro-Food Sector Towards Truly Functioning Markets*, Boston, pp. 111-121.
- Melyukhina, O. (2002a), "The Measurement of the Level of Support in Selected Non-OECD Countries", in: *Agricultural Policies in China After the WTO Accession*, Paris, OECD, pp. 262-283.
- Melyukhina, O. (2002b), "Policy and Non-Policy Sources of Agricultural Price Distortions: Evidence From Measurement of Support in Selected Transition Economies", in: *Agricultural Trade and Poverty: making Policy Analysis Count*, Paris, OECD, pp. 119-139.
- OECD (2004), "Agricultural Support: How is it Measured and What does it Mean?" *Policy Brief*, OECD, Paris.
- OECD (2005a), *OECD Review of Agricultural Policies: Brazil*, OECD, Paris.
- OECD (2005b), *OECD Review of Agricultural Policies: China*, OECD, Paris.
- OECD (2006a), *OECD Review of Agricultural Policies: South Africa*, OECD, Paris.
- OECD (2006b), *Producer and Consumer Support Estimates: OECD Database 1986-2005*. OECD, Paris www.oecd.org/document/55/0,2340,en_2649_33727_36956855_1_1_1_1,00.html
- OECD (2006c), *Producer and Consumer Support Estimates: OECD Database 1986-2005*. User's Guide, OECD, Paris. www.oecd.org/dataoecd/60/57/37034570.pdf