STATISTICS

Agricultural Policies in Emerging and transition Economies

2002 – Indicators

USER'S GUIDE

OECD

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TABLE DES MATIÈRES

USER'S GUIDE

Introduction

The electronic version of the agricultural policies in emerging and transition economies indicators complements the annual publication "*Agricultural policies in emerging and transition economies, 2002*" by providing more complete historical data series than is contained in that publication.

This guide provides an overview of the structure of the agricultural policies in emerging and transition economies indicators on CD-ROM.

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Overview of series presented

The database is partitioned into four subsets.

The first subset, Indicators, contains the following four tables for the period 1990-2001:

1. Macroeconomic indicators
2. Basic agricultural indicators
3. Production and consumption
4. Agricultural and food trade

The second subset is the agricultural and food trade by destinations and countries of origin from 1993 to 2001.

The third subset, PSE/CSE, contains the relevant information and data for all non-OECD member countries for which OECD has estimated the level of support, on specific market support tables. The information is provided from 1986 to 2001.

The fourth provides information on exchange rates used for all countries.

The variables are presented in the annex I to this guide.

The OECD methodology for the calculation of PSE/CSEs is presented in annex II to this guide.

Geographical coverage

The CD-ROM contains data for the following countries: Argentina, Brazil, China, India, South Africa, Albania, Bulgaria, Croatia, Estonia, Latvia, Lithuania, Romania, Slovenia, Belarus, Kazakhstan, Russian Federation, Ukraine and the four transition countries which are OECD members - the Czech Republic, Hungary, Poland and the Slovak Republic.

The countries covered in the PSE/CSE tables are Bulgaria, Estonia, Latvia, Lithuania, Romania, Russia and Slovenia.

ANNEX 1

Indicators

1. Macroeconomic indicators

Population, mid-year estimates
GDP growth
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Inflation, end of year changes in consumer prices
Exchange rate, annual average
Current account balance, USD mn
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Foreign Direct Investment, USD mn

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Share of agriculture and food exports in total exports
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Gross Agricultural Output, Total
Gross Agricultural Output, Crops
Gross Agricultural Output, Livestock
Agricultural input price index
Agricultural output price index
Retail food price index

3. Production and consumption

Total grain production
Wheat production
Coarse grain production
Total meat production
Beef and veal production
Pigmeat production
Milk production

Annual consumption of meat and meat products
Annual consumption of milk and dairy products
Annual consumption of grain and grain products
Annual consumption of potatoes
Total area sown, crops
Grain sown areas
All cattle inventories
Pig inventories
Production of selected commodities in selected developing countries.

4. Agricultural and food trade

Agricultural and food exports, USD mn
Agricultural and food imports, USD mn
Agricultural and food trade balance, USD mn

Agricultural and food trade by destination and countries of origin

Agricultural and food exports by destination, per cent
Agricultural and food imports by origin, per cent

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Other grains
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Rye
Oilseeds
Sunflower
Rapeseed
Soybean
Sugar beet
Potatoes
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Beef and veal
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Eggs

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  - C. Payments based on area planted/animal numbers
    - 1. Based on unlimited area or animal numbers
    - 2. Based on limited area or animal numbers
  - D. Payments based on historical entitlements
    - 1. Based on historical plantings/animal numbers or production
    - 2. Based on historical support programmes
  - E. Payments based on input use
    - 1. Based on use of variable inputs
    - 2. Based on use of on-farm services
    - 3. Based on use of fixed inputs
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    - 1. Based on constraints on variable inputs
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    - 1. Based on farm income level
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P. Transfers to producers from consumers (-)
1. Standard PSE commodities
Q. Other transfers from consumers (-)
1. Standard PSE commodities
R. Transfers to consumers from taxpayers
S. Excess feed cost

V.2 Percentage CSE
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  B. Payments based on output
    1. Based on unlimited output
    2. Based on limited output
  C. Payments based on area planted/animal numbers
    1. Based on unlimited area or animal numbers
    2. Based on limited area or animal numbers
  D. Payments based on historical entitlements
    1. Based on historical plantings/animal numbers or production
    2. Based on historical support programmes
  E. Payments based on input use
    1. Based on use of variable inputs
    2. Based on use of on-farm services
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    1. Based on constraints on variable inputs
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    3. Based on constraints on a set of inputs
  G. Payments based on overall farming income
    1. Based on farm income level
    2. Based on established minimum income
  H. Miscellaneous payments
    1. National payments
    2. Sub-national payments
IV. Unit PSE
V. Percentage PSE
VI. Producer NPC
VII. Producer NAC

ANNEX II: DEFINITIONS AND METHODS FOR PSE/CSES INDICATORS

Introduction

The OECD has, since 1987, measured support to agriculture using the Producer Support Estimate (PSE) and Consumer Support Estimate (CSE).[1] With the reform of agricultural policies in OECD countries, the number and complexity of policy measures has increased significantly. A given objective may be achieved through different measures and the economic impacts depend on the way they are implemented. A comprehensive evaluation of recent measures requires grouping policies according to their implementation criteria — independently of their objectives and effects. This is the basis of the OECD classification system presented here.

This chapter explains the coverage, definitions, criteria of classification and methods of calculating the OECD indicators of support associated with agricultural policies. It elaborates on the meaning and interpretation of the concept of market price support and the main indicators of support. It also elaborates on the way the PSE and related indicators are used for policy evaluation. It also presents the method of decomposing the annual variations in the PSE and CSE to calculate the contribution of each component to the country PSE or CSE, Definitions for full-time farmer equivalents and for agricultural land are also provided.

The work on implementing the current classification system, presented for the first time in the 1999 edition of this report, was undertaken by the Secretariat in close co-operation with Member countries. It provided not only the opportunity to “reclassify” policy measures, but also to “clean up” the databases and calculations for each country to ensure consistency. A description of the policies covered, and the detailed results for all countries, as well as the documentation of the

[1]. Prior to 1999, these indicators were referred toas the Producer Subsidy Equivalent (PSE) and the Consumer Subsidy Equivalent (CSE), respectively. The method of calculation was changed at that time; see the 1999 edition of the report.

data sources, are available in the Electronic Data Product, *OECD PSE/CSE Database*.

Although the Secretariat has made an effort to ensure consistency in the treatment and completeness of coverage of policies, this exercise should be seen as a dynamic process and the results included in this report have to be seen as preliminary. Future annual exercises will offer the opportunity to revise the calculations for the entire period in the light of more updated information on policy measures.

Classification and definitions

The current OECD classification of total transfers associated with agricultural policies (TSE), groups the policy measures into three main categories; transfers to producers individually (PSE), transfers to consumers individually (CSE) and transfers to general services to agriculture collectively (GSSE), as in Box 1.

I. Producer Support Estimate (PSE): an indicator of the annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income.

The PSE measures support arising from policies targeted at agriculture relative to a situation without such policies,i.e., one in which producers are subject only to general policies (including economic, social, environmental and tax policies) of the country. Although the PSE is measured net of producer contributions to help to finance a support policy (e.g., through a levy on production) it is fundamentally a gross concept because any costs associated with those policies, and incurred by individual producers, are not deducted[2]. It is also a measure of nominal assistance in the sense that increased costs associated with import duties on inputs are not deducted. The PSE includes both implicit and explicit payments, such as price gaps on outputs or inputs, tax exemptions and budgetary payments, includ-

[2]. In other words, elements in the PSE are, in general, gross transfers to producers because, to receive a given payment, producers have to produce or plant a specific commodity, or use a specific input, and therefore incur costs. These costs are not deducted from the amount of the payment, although they may absorb part of the payment.

ing those for remunerating non-marketed goods and services. The indicator measures, therefore, more than just the "subsidy element". Although farm receipts (revenue)[3] are increased (or farm expenditure reduced) by the amount of support, the PSE is not in itself an estimate of the impact on farm production or income. The following paragraphs describe the main components of the PSE.

A. Market Price Support (MPS): an indicator of the annual monetary value of gross transfers from consumers and taxpayers[4] to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm-gate level.

The MPS, which is conditional on the production of a specific commodity, includes the transfer to producers associated with both production for domestic use and export. It is measured by the price gap applied to current unlimited production (a. *Based on unlimited output*); or, where restrictions on output apply, to current limited production (b. *Based on limited output).* The MPS is net of financial contributions from individual producers through producer levies on sales of the specific commodity or penalties for not respecting regulations such as production quotas (c. *Price levies).* In the case of livestock production, it is net of the market price support on domestically produced coarse grains and oilseeds used as animal feed (d. *Excess feed cost*).

B. Payments based on output: a the annual monetary value of gross transfers from taxpayers to agricultural producers arising from policy measures based on current output of a specific agricultural commodity or a specific group of agricultural commodities.

These payments, which are conditional on producing a specific commodity, or a specific group of commodities, include payments per tonne, per hectare or per animal on current unlimited production (a. *Based on unlimited output*), or limited production (b. *Based on limited output*).

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3. Farm receipts (revenues) are not the same as farm income, which is farm receipts less farm costs.

4. Transfers from taxpayers occur, for example, when subsidies are used to finance exports.

C. Payments based on area planted/animal numbers: an indicator of the annual monetary value of gross transfers from taxpayers to agricultural producers arising from policy measures based on current plantings, or number of animals, in respect of a specific agricultural commodity or a specific group of agricultural commodities.

These payments, which are conditional on planting a specific crop or crops, or maintaining particular number of livestock, include payment per hectare, or per head, to current unlimited (a. *Based on unlimited area or animal numbers*), or limited (b. *Based on limited area or animal numbers)* area planted or animal numbers.

D. Payments based on historical entitlements: an indicator of the annual monetary value of gross transfers from taxpayers to agricultural producers arising from policy measures based on historical support, area, animal numbers or production of a specific agricultural commodity, or a specific group of agricultural commodities, without obligation to continue planting or producing such commodities.

These payments are conditional on being a producer of a specific commodity or a specific group of commodities at the time of the introduction of the payment. The measure includes payments based on historical plantings/animal numbers or production of such commodities (a. *Based on plantings/animal numbers or productio*n) and payments based on historical support programmes for such commodities (*b. Based on historical support programme*s).[5]

E. Payments based on input use: an indicator of the annual monetary value of gross transfers from taxpayers to agricultural producers arising from policy measures based on the use of a specific fixed or variable input, or a specific group of inputs or factors of production.

These payments, which are conditional on the on-farm use of specific fixed or variable inputs, include explicit, and implicit, payments affecting specific variable input costs (a. *Based on use of variable input*s); the cost of on-farm technical, sanitary and phytosanitary services (b. *Based on use of on-farm service*s); or affecting specific fixed input

5. Unlike the others payments to commodities, these payments directly increase farm income by the amount of the payment as producers do not have to incur any specific cost (other than that associated with being a farmer).

costs, including investment costs (c. *Based on use of fixed inputs).*

F. Payments based on input constraints: an indicator of the annual monetary value of gross transfers from taxpayers to agricultural producers arising from policy measures based on constraints on the use of a specific fixed or variable input, or a specific group of inputs, through constraining the choice of production techniques.

These payments are conditional on the application of certain constraints (reduction, replacement, or withdrawal) on the on-farm use of specific variable inputs (a. *Based on constraints on variable input*s); or fixed inputs (b. *Based on constraints on fixed input*s); or based on constraints on the use of a set of farm inputs through constraining the choice of production techniques of marketed commodities for reducing negative externalities or remunerating farm inputs producing non-market goods and services (*c. Based on constraints on a set of input*s).[6]

G. Payments based on overall farming income: an indicator of the annual monetary value of transfers from taxpayers to agricultural producers arising from policy measures based on overall farming income (or revenue), without constraints or conditions to produce specific commodities, or to use specific fixed or variable inputs.

These payments, which are conditional on being an eligible farming enterprise or farmer, compensate for farm income fluctuations or losses (a. *Based on farm income level*), or for guaranteeing a minimum income (b. *Based on an established minimum income*).[7]

H. Miscellaneous payments: an indicator of the annual monetary value of all transfers from taxpayers to agricultural producers that cannot be disaggregated and allocated to the other categories of transfers to producers.

These are payments to producers which cannot be disaggregated

6. A payment ,which subsidies farm inputs on condition that they are used for producing a non-market good, can be seen as a payment associated with constraints on the use of a set of inputs or on the choice of production techniques.

7. Unlike most of the others, these payments increase farm income directly by the amount of the payment, as producers do not have to incur any specific cost (other than those necessary to generate an eligible level of farm income).

due, for example, to a lack of information, and includes payments funded by national governments (a. *National payments*), or state, regional, prefectural or provincial governments (b. *Sub-national payments*).

II. General Services Support Estimate (GSSE): an indicator of the annual monetary value of gross transfers to general services provided to agriculture collectively, arising from policy measures which support agriculture, regardless of their nature, objectives and impacts on farm production, income, or consumption of farm products.

These paymentsto eligible private or public general service are provided to agriculture generally and not individually to farms. They include payments for collective agri-environmental actionand taxpayer's transfers for the following purposes;: improving agricultural production (I. *Research and development*); agricultural training and education (J. *Agricultural schools*); control of quality and safety of food, agricultural inputs and the environment (K. *Inspection services*); improvement of off-farm collective infrastructures, including downstream and upstream industry (L. *Infrastructures*); assistance to marketing and promotion (M. *Marketing and promotion*); meeting the costs of depreciation and disposal of public storage of agricultural products (N. *Public stockholding)* and other general services that cannot be disagreggated and allocated to the above categories due, for example, to a lack of information *(O. Miscellaneous*). Unlike the PSE and CSE transfers, these transfers are not received by producers or consumers individually, and do not directly affect farm receipts (revenue) or consumption expenditure, although they may affect production and consumption of agricultural commodities.

III. Consumer Support Estimate (CSE): an indicator of the annual monetary value of gross transfers to (from) consumers of agricultural commodities, measured at the farm-gate level, arising from policy measures which support agriculture, regardless of their nature, objectives or impacts on consumption of farm products.

The CSE includes explicit and implicit consumer transfers to producers of agricultural commodities, measured at the farm-gate (first consumer) level and associated with the following market price support on domestically produced consumption *(P. Transfers to producers from consumers*); transfers to the budget or to importers, or to both,

on the share of consumption that is imported *(Q. Other transfers from consumer*s); net of any payment to consumers that offsets their contribution to market price support of a specific commodity *(R. Transfers to consumers from taxpayer*s); and the producer contribution (as consumers of domestically produced crops) to the market price support on crops used in animal feed *(S. Excess feed cos*t). When negative, this indicates transfers from consumers and measures the implicit tax on consumption associated with policies to the agricultural sector. Although consumption expenditure is increased (reduced) by the amount of the implicit tax (payments), this indicator is not, in itself, an estimate of the impact on consumption expenditure.

IV. Total Support Estimate (TSE): an indicator of the annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture, net of the associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products.

The TSE is the sum of the following; the explicit and implicit gross transfers from consumers of agricultural commodities to agricultural producers net of producer financial contributions (which appear in MPS and CSE); the gross transfers from taxpayers to agricultural producers (in the PSE); the gross transfers from taxpayers to general services provided to agriculture (GSSE) and the gross transfers from taxpayers to consumers of agricultural commodities (in the CSE). As the transfers from consumers to producers are included in the MPS, the TSE is also the sum of the PSE, the GSSE and the transfers from taxpayers to consumers (in CSE). The TSE measures the overall cost of agricultural support financed by consumers *(T. Transfers from consumer*s) and taxpayers *(U. Transfers from taxpayer*s) net of import receipts *(V. Budget revenue*s).

Box 1. Classification of policy measures included in the OECD indicators of support

I. Producer Support Estimate (PSE) [Sum of A to H]

A. Market Price Support

a. Based on unlimited output

b. Based on limited output

c. Price levies

d. Excess feed cost

B. Payments based on output
a. Based on unlimited output
b. Based on limited output
C. Payments based on area planted/animal numbers
a. Based on unlimited area or animal numbers
b. Based on limited area or animal numbers
D. Payments based on historical entitlements

(Box 1 continued)
a. Based on historical plantings/animal numbers or production
b. Based on historical support programmes
E. Payments based on input use
a. Based on use of variable inputs
b. Based on use of on-farm services
c. Based on use of fixed inputs
F. Payments based on input constraints
a. Based on constraints on variable inputs
b. Based on constraints on fixed inputs
c. Based on constraints on a set of inputs
G. Payments based on overall farming income
a.Based on farm income level
b. Based on established minimum income
H. Miscellaneous payments
a. National payments
b. Sub-national payments

II. General Services Support Estimate (GSSE) [Sum of I to O]
I. Research and development
J. Agricultural schools
K. Inspection services
L. Infrastructure
M. Marketing and promotion
N. Public stockholding
O. *Miscellaneous*

III. Consumer Support Estimate (CSE) [Sum of P to S]
P. Transfers to producers from consumers
Q. Other transfers from consumers
R. Transfers to consumers from taxpayers
S. Excess Feed Cost

IV. Total Support Estimate (TSE) [I + II + R]
T. Transfers from consumers
U. Transfers from taxpayers
V. Budget revenues

Criteria for classification

Defining measures to be included in the PSE, CSE or GSSE

The general criterion to determine whether to include policy measures in the *PSE, CSE* or *GSSE* is if the implementation of the measure provides transfers to agricultural producers individually *(PSE*), to (from) consumers of agricultural commodities individually *(CSE*), or to the general services provided to agriculture collectively *(GSSE).* Therefore, the *TSE* includes all transfers included in the three other indicators (adjusted to exclude double-accounting).

In the case of the *PSE* (transfers to producers), it is necessary for an individual farmer to take decisions or actions to produce goods or services to use factors of production, or to be defined as an eligible farming enterprise, or farmer, to receive a transfer. The actions change gross farm receipts (revenue) by the amount of the transfer. In the case of the *CSE* (transfers to/or from consumers), it is also necessary for consumers to take decisions or actions to consume agricultural commodities to provide (or receive) a transfer. These decisions change gross consumer expenditure by the amount of the transfer. The *GSSE* transfers do not depend on any decisions or actions of individual farmers or consumers, are not received by individual producers or individual consumers and do not affect farm receipts (revenue) or consumption expenditure.

The general criteria for classifying policy measures included in each of the indicators composing the *TSE* requires responses to the following sequence of questions:

- *First*, does the policy measure create a transfer to (from) consumers of agricultural commodities? If yes, consider it under *CSE* and also proceed to the following question. If it does not, proceed to the next question;

- *Second*, does the policy measure (including those creating a transfer to (from) consumers) create a transfer to producers individually based on goods and services produced, on inputs used or on being a farming enterprise or farmer? If yes, consider it under *PS*E. If not, proceed to the next question;

- *Third*, does the policy measure create a transfer to general services provided to agriculture collectively? If yes, consider it under the *GSSE*. If not, do not consider it in the *TSE* calculation.

Classifying transfers to producers in the PSE

The implications of policy measures on variables, such as production, consumption, trade, income, employment and the environment, depend primarily on the way policy measures are implemented. Therefore, to be helpful for policy analysis, policy measures to be included in the PSE are classified according to implementation criteria. For a given policy measure, the *implementation criteria* are defined as *the conditions under which the associated transfers are provided to farmers or the conditions of eligibility for the payment*. However, these conditions are often multiple. Thus, the criteria used to classify payments to producers are defined in a way that facilitates; the analysis of policies in the light of the "operational criteria" defined by OECD Ministers of Agriculture in 1998; the assessment of their impact (on, for example, production, consumption, income, employment and the environment) through, for example, the policy models and the classification of new policy measures in a consistent way across countries, policy measures and over time.

Policy measures with environmental eligibility conditions illustrate the importance of the PSE classification based on implementation criteria. Payments with *cross-compliance* conditions are defined as measures to support specific agricultural commodities conditional in respect of some environmental constraints. *Cost-sharing* payments are defined as measures to support specific environmental activities, or outcomes, through constraints on agricultural production or pollution. Although, in both cases, the payments may be provided per farm, per hectare or per animal, their main implementation criteria are not the same These payments should not be considered, therefore, under the same category.[8]

The criteria for classifying each of the policy measures to be included

[8]. This also shows that a classification exclusively based on payments per tonne, per hectare or per animal would not classify such measures in a way helpful for policy analysis.

in the *PSE* into a specific category of measures requires responding to the following sequence of questions:

- *First*, does the policy measure provide an implicit or explicit payment to individual producers on the basis of their overall farming receipts or income and is this independent of the commodities they produce or the fixed and variable inputs they use? If yes, consider it under *G. Payments based on overall farming income;* if not, proceed to the following question;

- *Second*, does the policy measure affect the domestic market price (to consumers and producers) of a specific commodity? If yes, consider it under *A. Market price support*; if not, proceed to the following question;

- *Third*, does the policy measure provide a payment to agricultural producers conditional on production of a specific commodity or a specific group of commodities? If yes, consider it under *B. Payments based on output;* if not, proceed to the following question;

- *Fourth*, does the policy measure provide a payment to agricultural producers conditional on planting a specific crop or maintaining a herd of livestock or a specific group of crops (or animals)? If yes, consider it under *C. Payments based on area planted/animal numbers;* if not, proceed to the following question;

- *Fifth*, does the policy measure provide a payment to agricultural producers based on historical support, on area, on animal numbers or on production of a specific commodity or a specific group of commodities without obligation to continue planting or producing such commodities? If yes, consider it under *D. Payments based on historical entitlements;* if not, proceed to the following question;

- *Sixth,* does the policy measure provide an explicit or implicit payment to individual producers using a specific input (variable or fixed) or a specific group of

inputs to produce agricultural commodities? If yes, consider it under *E. Payments based on input use;* if not, proceed to the following question;

- *Seventh*, does the policy measure provide an explicit or implicit payment to individual producers conditional on the application of certain constraints (reduction, replacement, or withdrawal) on the use of specific variable or fixed inputs, or based on constraints on the use of a set of inputs through limiting the choice of production techniques, including remuneration for farm inputs used to produce non-market goods and services? If yes, consider it under *F. Payments based on input constraints;* if not, consider it under *G. Payments based on overall farming income* The latter includes transfers to individual producers conditional on being an eligible farming enterprise, or farmer, but without any requirement to produce specific commodities or use specific fixed or variable inputs.

These criteria are mutually exclusive and have to be applied to each policy measure in the order set out above.[9] Although a given policy measure may be conditional on several of the above criteria, it would be classified under the first applicable criteria. The following section includes some classification rules, which help to implement the general criteria.

Rules for classification

Classifying transfers associated with market price support

Border measures on imports and exports, together with on-farm and public stockholding, domestic and foreign food-aid measures, and consumption subsidies create a price gap between domestic and border prices.[10] Transfers to producers (from consumers), created

[9]. If transfers to agricultural producers provided through two (or more) policy measures are only available as aggregate amounts, an appropriate allocation key should be found to assign them to the appropriate categories. If such a key cannot be found, assign the total to *H. Miscellaneous payments*.

[10]. Border prices are world market prices; f.o.b. for exported commodities and c.i.f. for imported commodities.

by a situation in which domestic prices for commodities are maintained at a higher level than border prices *(price gap*), are included (+) under the *PSE*, and (-) under the *CSE*. Transfers to producers (from taxpayers) through export subsidies (the same price gap) are included in the PSE (see section on MPS).

While transfers from taxpayers for on-farm stockholding are transfers to producers, and are included in the *PSE*, transfers from taxpayers for the operational costs of public purchasing agencies and the depreciation and disposal costs associated with public stocks are *not* in themselves transfers to producers. Such transfers are, therefore, included in the *GSSE.* Transfers to processors (first consumers) to compensate them for paying domestic prices higher than border prices, and consumption subsidies in cash or in kind to support various consumption levels, are included under the *CS*E. However, when these subsidies also cover imported food, only the share attributable to domestic production is included under the *CSE* (see Box 2).

On-farm services in PSE or services to agriculture in the GSSE?

On-farm services in the PSE are explicit or implicit payments reducing the prices paid by farmers for services provided to them individually and therefore affecting farm receipts by the amount of the payment. This category includes, typically, extension services and technical assistance to farmers, as well as pest and disease control on farmers' crops and livestock, through, for example, animal vaccination. General services to agriculture in the GSSE are explicit or implicit payments to general services provided to agriculture as a whole, which are not received by producers or consumers individually, and therefore do not affect farm receipts or consumption expenditure by the amount of the payment. This includes payments to institutions for research, the control of quality of food and agricultural inputs (through, for example, quarantine) or the control of environmental quality in agriculture.

Input subsidies in the PSE or transfers for infrastructure in the GSSE?

Input subsidies are typically explicit or implicit payments reducing the price paid by farmers for variable inputs (for example, fertilisers,

feed, seeds, energy, water, transportation, insurance), which are provided to farmers through a given policy instrument, or a set of instruments, including interest concessions, tax rebates and budgetary transfers to input industries to provide lower input prices for farmers.

In the absence of such instruments, and with input industries (or services) providing inputs at prices fully reflecting depreciation and operational costs, there are neither input subsidies (in the PSE) nor transfers for infrastructure (in the GSSE). PSE transfers to producers associated with the policy measures are, for example, the budget receipts forgone in the case of tax rebates and interest concessions (implicit payment), or the annual budgetary expenditure to compensate industry (banks) for losses associated with lower input prices paid by farmers (explicit payment). Such transfers could, in principle, also be measured by the gap between the price (interest or tax rate) actually paid by farmers and the price (rates) paid by others in the domestic market.[11]

However, public expenditure is sometimes also used with the intention of increasing the competitiveness of the sector as a whole through improving infrastructure related to input, processing and marketing industries. It is, for example, the case that Regulation 355/77 (replaced by Regulations 866/90 and 867/90) is designed to improve the infrastructure related to processing and marketing of agricultural products in the European Union. Such transfers are not received as such by farmers and are included in Infrastructures in the GSSE. They are also included in the PSE to estimate the overall support to agriculture (TSE).

[11] . Sometimes, part of the budgetary transfer is retained by industry or or the service sector (e.g. banks) (and not transferred to farmers) This part should, strictly speaking, be included in the GSSE. However, as it is not always possible to identify the part that does not accrue to producers, the PSE (GSSE) is over (under)-evaluated to some extent. The same could also be said in the case of other programmes, such as certain schemes of deficiency payments for commodities. That is one of the reasons why a price-gap calculation would, in many cases, be the most appropriate. However, the choice of the method to be used will often be dictated by data quality and availability .

Box 2. Transfers associated with market price support

Consider the case of a country where there are border measures and government purchasing agencies (GPAs) importing, and buying and selling in the domestic market, in order to maintain the domestic price close to an administered domestic price higher than the border price (world reference price).

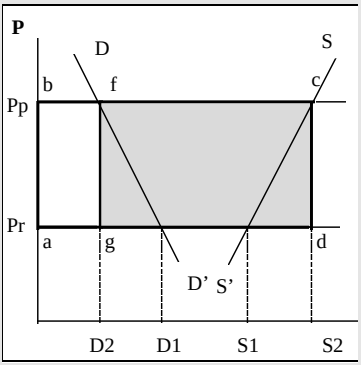
In the case of exported commodities (Figure 1), farmers sell all their production (*S2*) to domestic consumers (*D2*) and GPAs (*S2-D2*) at an average producer price (*Pp*) that is higher than the world reference price (*Pr*). The quantities purchased by the GPAs are sold in the same year in the domestic market at the average price *Pp*, offered as domestic food aid at the opportunity cost of *Pp*, sold in the world market (with export subsidies) at the average price *Pr*, offered as foreign food aid at an opportunity cost of *Pr*, or kept in public storage for later sale.

As, in a given year, domestic consumers and GPAs purchase all domestic production at an average price (*Pp*) that is higher than the price at which the GPAs export the commodity (*Pr*), the transfer to producers associated with MPS to the commodity is measured by the area *abcd* = (*Pp-Pr*)•S2 and considered under **I.A. *Market Price Support***. The area *abfg* = (*Pp-Pr*)•*D2* measures the share of MPS financed by consumers and is considered under **I.A MPS** in the PSE and **III.P. *Transfers to producers from consumers*** in the CSE. The area *gfcd* = (*Pp-Pr*)*(*S2-D2*) measures transfers to producers from taxpayers The share of MPS financed by taxpayers is considered under **I.A MPS** in the PSE (through food aid, export subsidies or public storage).

The CSE is the share of MPS financed by consumers [area *abfg* = (*Pp-Pr*)**D2*] minus consumption subsidies, in cash or in kind, and price compensating aids paid to processors financed by taxpayers (**III.R. *Transfers to consumers from taxpayers***). The total of the transfers associated with MPS are therefore obtained by adding to the MPS in the PSE [area *abcd* = (*Pp-Pr*)•*S2*], transfers under marketing and stockholding in the GSSE, consumption subsidies in cash and price compensation in the CSE.

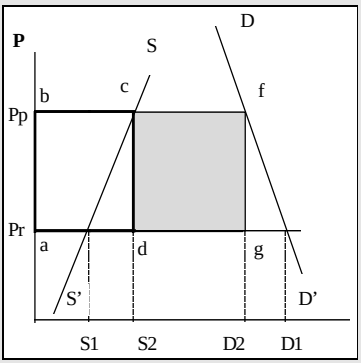
(Box 2 continued)

Figure 1. Export Commodities



In the case of imported commodities (Figure 2), both domestic production (*S2*) and imports (*D2-S2*) are sold in the domestic market at the average producer price (*Pp*). But in both cases, price compensation is provided by Government to processors (first consumers) to help them to stay competitive in the world market for processed products and some consumption subsidies in cash and in kind are also provided. The quantities domestically produced, and those imported by the GPAs, are sold in the same year in the domestic market at the average price *Pp. They are also* offered as domestic food aid at the opportunity cost of *Pp.* as foreign food aid at the opportunity cost of *Pr* or kept in public storage for later sale.

Figure 2. ImportCommodities



(Box 2 continued)

Under these conditions, the transfer to producers associated with MPS for a particular commodity is measured by the area *abcd* = (*Pp-Pr*)•*S2*. *This is* considered under ***I.A Market Price Support*** in the PSE and ***III.P. Transfers to producers from consumers*** in the CSE. While this area also represents the transfers from consumers to producers, the area *dcfg* = (*Pp-Pr*) • (*D2-S2*) measures the transfers from consumers to the budget through import receipts or as rents to importers or exporters due to tariff quotas (***III. Q. Other transfers from consumers or IV.V. Budget revenues***).

The CSE is measured by the area *abfg* = (*Pp-Pr*)•*D2* (***III.P. Transfers to producers from consumers and III.Q***. ***Other transfers from consumers***) minus the consumption subsidies, in cash or in kind, or price compensation financed by taxpayers (***III.R. Transfers to consumers from taxpayers***). The total of transfer associated with MPS is therefore obtained by adding to the MPS in the PSE [area *abcd*=(*Pp-Pr*)**S2*], those transfers under marketing and stockholding in the GSSE and the consumption subsidies in cash and price compensating aids in the CSE minus the transfers from consumers to the budget importers, or to both.

In both cases — exported and imported commodities — to provide such transfers to producers through MPS, other transfers are generated These are mainly in the form of operational costs of GPAs and the stock depreciation and disposal costs of public stockholding. However, although these transfers contribute to create the price gap received by producers, they are not in themselves a transfer to producers. They are transfers to general services provided to agriculture considered in the GSSE under II.M. ***Marketing and promotion*** (in the case of the operational costs of GPAs) and II.N**.** ***Public stockholding*** (in the case of the stock depreciation and disposal costs) These are considered in most cases to be dead-weight losses.

While most agricultural inputs in the OECD are provided through private investment, the off-farm provision of water for irrigation is usually based on public investment. Although, in this case, the initial investment is financed by taxpayers, it is not included in the PSE or GSSE. In both cases of public or private investment — and as for any other input — the question is whether the price for water paid by farmers covers all the industry costs or not.[12] If the answer is no, the annual budgetary expenditure to compensate industry for operational costs associated with lower input prices for farmers is included in the PSE. On the other hand, public expenditure for maintaining or improving collective infrastructure related to the input, processing and marketing industries is considered in the GSSE.

Treatment of taxes and levies

The PSE and CSE are defined as net of producer contributions which help finance policy measures providing support to them. This is one of the reasons why the excess feed cost is calculated and deducted from the market transfers to producers and to (from) consumers. The PSE and CSE are calculated relative to total production and consumption— i.e. including quantities domestically produced and used as feed. Therefore, the MPS for feed crops domestically produced and consumed by livestock producers is included as negative in the PSE for livestock and in the CSE for crops. This avoids double counting when aggregating the PSE and CSE for crops and livestock.[13]

In the same way, the receipts from production taxes and levies which finance a given measure are also deducted from the total amount of the payment provided to producers through such policy measures. However, the receipts from taxes and levies on purchases of inputs or penalties on farmers resulting from economy-wide regulations —

12. Sometimes, part of the price gap for farmers is paid by other consumers of the input. For example, other consumers of water finance the price gap for farmers through higher water prices. That is another reason why the price gap calculation would, in many cases, be the most appropriate.

13. The CSE for crops is therefore calculated net of producer contributions or, in other words, does not include the share of domestic production used as feed in the sector. In the same way, the aggregate PSE for crops and livestock does not include the share of domestic production used as feed in the sector, but the method shows that the associated support to crops is an implicit tax on livestock products.

for example, for reducing environmental pollution — are not considered in the PSE calculation. This is because the PSE is a "nominal assistance" concept, meaning that increased costs associated with import duties on inputs are not deducted The PSE is also a "gross" concept, meaning that increased costs to farmers associated with the policy measure are not deducted. Achieving the level of environmental quality (through good agricultural practices) as required by regulations should be, therefore, at the expense of farmers and a payment for reducing pollution is considered as a support to help farmers to reach the required environmental quality (see Box 3).

Box 3. The case of negative support

The concept of the PSE as a "gross" measure allows for cases of negative support. This is the case of agricultural policy measures that act as a tax on producers relative to the situation in the absence of such measures — i.e. if only general economy-wide policies were in place. The typical example of negative support is an export tax, or any other agricultural policy measure discouraging exports and imposing a domestic price lower than the world price.

Under the concept of the PSE as a "nominal assistance" measure, taxes on producers in the context of general economy-wide policies applied in a country are not included as negative support. For example, V.A.T., or other general taxes on purchases of inputs, and taxes on salaries for social protection, or taxes on inputs for environmental protection are not considered as negative support This is the case unless the rates applied to agricultural producers differ from those resulting from the general tax, or from social and environmental policies, in a manner that does not reflect sound technical differences. In such a case, the difference between a lower rate for producers and the general rate would mean positive support, while the difference between a higher rate and the general rate would mean negative support. A consistent and comprehensive PSE coverage of such cases would need more work on taxation and on social and environmental policies.

Therefore, a producer, whobears the costs incurred in eliminating pollution caused by his production activity, is respecting the Polluter Pays Principle and is not subject to negative support. Neither is a producer who pays a pollution tax, which represents the social cost of the pollution. But if a payment is received to compensate for the costs incurred in eliminating pollution, which the producer has caused, such a payment is considered as support.

Main indicators: meaning, calculation and interpretation

What does the PSE/TSE cover?

The PSE is a static measure of support provided to agricultural producers in a given time period (e.g. one year or season) and defined by the general macro-economic conditions in the context of the general economy-wide policies. A situation of zero support to agriculture would occur when there are only general economy-wide policies in place with no policies specifically altering the transmission of the general macro economic conditions for agriculture. In such a situation, current total farm receipts would entirely be generated in the market without any policy-linked transfer to farmers. This can be seen as an extreme situation. To improve welfare or to address market failure, however, it can be appropriate to have policies although their efficiency depends on associated transfers and effects on production, consumption, trade, incomes and the environment. Such transfers, and their effects, depend on the way policies are implemented. This is the criterion used to group transfers under the PSE, CSE, GSSE and TSE, and the basis for any cost/benefit analysis of policies.

For example, to protect the natural habitat one country applies SPS measures to avoid importing pests or diseases that do not exist in the country. A second country grants a payment to farmers to share the costs of changing farming practices, and a third country finances collective actions in favour of such protection. All these cases involve costs and benefits. In the first case, SPS measures may create transfers from consumers to producers through, for example, a domestic price higher than the export price, and is included in MPS under the PSE. In the second case, the transfers are also included in the PSE, but under payments based on input constraints while, in the third case, the transfers are included under the GSSE.

The PSE identifies policies which specifically alter for agriculture the transmission of general macro-economic conditions (for example, changes in exchange rates) and measures the associated transfers. For example, a “double price” occurs when the f.o.b./c.i.f. border price is adjusted for the exchange rate variation, while the domestic price is not adjusted. This can happen only if a specific policy exists for allowing it. There are two main categories of policies affecting price transmission to farmers directly. These are payments based on

current output ("deficiency payments") and MPSand are included in the PSE. While deficiency payments do not affect domestic consumers and are explicit transfers included in the budget, MPS includes a wide range of measures generating implicit transfers paid by consumers, which are included in the PSE and CSE.

Calculating the MPS

Market price support is only calculated where there are policies that affect the transmission of the general macro-economic conditions to agricultural producers and create a "price gap" with transfers from consumers to producers. There is a range of policies that create transfers from consumers to producers. For example, MPS should be calculated for a country that has no border measures for imports and exports of a commodity, but has State (or monopoly) marketing structures that control the domestic market, or applies sanitary barriers. Although MPS policies are usually easy to identify, when applied simultaneously their individual contribution to the price change might be difficult to calculate.

It is also important to recognize thata price gap (positive or negative) can exist in the absence of any policy measures that affect the transmission of prices. This may occur in the short term due to the inability of the domestic marketing structures to adjust and profit from foreign market conditions by importing or exporting. However, over the medium or long term, in the absence of policy constraints, it is expected that domestic or foreigner enterprises would raise profits by increasing their imports or exports.

The types of MPS transfers are identified in Box 2 but the method of calculating these transfers varies depending on the country's trade position and the type of policies in place. *In a net exporting country,* with no policy specifically affecting the imports or exports of a given commodity, domestically produced commodities are exported at an f.o.b. price, which is also the domestic price, i.e. the producer price plus marketing margins, or the wholesale price plus internal transportation costs (see Diagram 1). This corresponds to the case of zero MPS.

However, when a country applies explicit export subsidies it creates a "double price", with the export price lower than the domestic price and the (average) export subsidy (i.e. total expenditure on export

subsidies divided by total exports) measures the price gap. If other policy measures (for example, import tariffs, export credits, foreign food aid, public stockholding, sanitary barriers, state-trading enterprises) are in place alone, or in a package, they create implicit (or explicit) export subsidies. This can only be measured by comparing the effective export and domestic prices. A positive difference means an implicit tax on consumption financing exports through an implicit export subsidy, while a negative difference means an implicit consumption subsidy[14].

In a net importing country, where there is no policy specifically affecting the imports or exports of a given commodity, domestically produced commodities and imports are consumed at a c.i.f. price, which is the domestic price, i.e. the producer price plus marketing margins or the wholesale price plus internal transportation costs (see Diagram 1). This corresponds to the case of zero MPS, i.e. the price paid by consumers for the quantities imported and produced domestically is the same with both quantities defined at the same marketing and geographical level.

However, when, for example, a country applies import tariffs, it creates a "double price" with the c.i.f. import price lower than the domestic price. The applied tariff rate average (i.e. total receipts from import tariffs divided by total imports) measures the price gap. But, if other policy measures (for example, tariff import quotas, public stockholding, sanitary barriers, state-trading enterprises) are in place, alone or in a package, they may create an implicit import tax. This can also be measured only by comparing the effective import and domestic prices.

Comparing prices for the price gap

The method for calculating the price gap varies depending on the policies in place. In all cases, the accuracy of the calculation depends on the data quality and availability and the definition of the prices compared. Diagram 1 helps to clarify the relationships between the prices that can be used to calculate the MPS. The prices are

[14] . An STE is seen as any private, co-operative or public entity with monopoly, or quasi-monopoly, powers over imports, exports or domestic purchases and sales of a given commodity.

adjusted to take in to account different marketing and geographical levels of the prices in order to compare "like with like". This is to ensure that the price gap covers only policies specifically affecting the price paid by domestic consumers to domestic producers and does not include factors such as:

- *Natural Protection* — This results in higher (lower) producer prices in the importing (exporting) country in comparison to those in the supplier (purchaser) country due to the transportation costs between the two countries. As the international transportation costs are (not) included in the c.i.f. (f.o.b.) prices with which the producer prices are compared, the resulting price gap excludes natural protection (handicap) as a positive (negative) support to producers of the country.

- *Quality differences* — While, for a net exporter, the f.o.b. price for a commodity generally corresponds to the quality of the commodity produced domestically, this may be not the case of a c.i.f. price for a commodity imported by a net importer country. In this case, the c.i.f. price has to be adjusted to avoid a price gap that included quality differences.

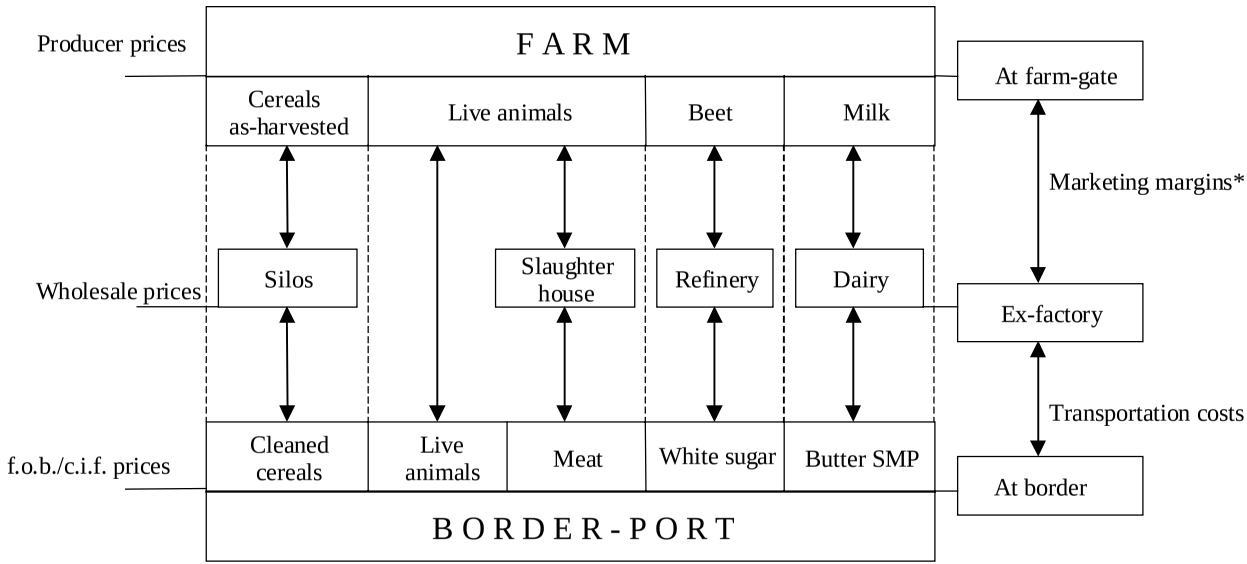
- *Marketing margins and internal transportation costs* — These costs may vary significantly between countries and are much higher in countries with poor transportation, processing and marketing infrastructures. So it is important to deduct the marketing margins and internal transportation costs of the country importing or exporting the commodity and not the costs reflecting marketing structures of another country.

Potential for error in the MPS calculation can arise from failing to compare "like with like". A lack of information for some commodities means that, sometimes, second best solutions have to be found. The MPS is calculated at the farm gate level, when there is inadequate information on the marketing margins In this case, the domestic wholesale price can be compared with the f.o.b. (or c.i.f.) price as both prices are at a similar marketing level with the only difference being in terms of the internal transportation costs. Internal transportation costs refer to the costs from the factory to the port in the case of the f.o.b. price and, in the case of a c.i.f. price, they refer to the costs from the port to the place of domestic consumption. Because, in both cases, trans-

portation costs also exist between the factory and the place of domestic consumption, it is considered in some of the current MPS calculationsr that the costs offset each other.

Diagram 1.

MPS Calculation : Marketing and geographical levels of commodity prices



*Marketing margins = handling margin + processing margin + transaction margin + transportation costs

Main indicators: methods of calculation

PSE and TSE by country

To calculate the PSE and the TSE for a given country, the only component that has to be calculated for each commodity is that part of market price support which is financed by consumers. This is because all the other PSE and TSE components are recorded, explicitly or implicitly, as budgetary expenditure. Input subsidies in the form of interest concessions and tax rebates are budget revenue forgone that have also to calculated, but an estimate often appears in the budget.

In calculating Total Transfers, the OECD method of calculation starts with the actual total budget transfers associated with agricultural policies. Market price support is calculated for a number of commodities, and the MPS average for these commodities is then applied to all commodities (i.e. to the total value of production of the whole agricultural sector) according to their share in the value of production.[15] This method, even when consistently applied across countries, may over-estimate or under-estimate the MPS for particular countries. The larger the share of production covered by the MPS calculation, the smaller the risk of error. Thus, error can be reduced by increasing the products specifically covered by MPS calculations.

PSE and CSE by commodity

The calculation of any indicator by commodity needs to have a precise meaning to be useful for policy analysis. In a given year, the allocation of a transfer to specific commodities has a policy meaning only when such a transfer depends on individual farmers' or consumers' decisions or actions and affects, to some extent, commodity production or consumption. This is the case for transfers in the PSE and CSE, but not for transfers in the GSSE and the TSE. As shown in this section, only the calculation of the PSE and CSE by commodity has a meaning useful for policy analysis.

All transfers included in the CSE are transfers to (from) individual

15. Tables in Part III show, for each country, the list of commodities for which MPS is explicitly calculated, the amount of the MPS for these commodities and the shares of these commodities in the total value of agricultural production.

consumers of a specific commodity and affect consumption decisions relating to that commodity. Therefore, there is no specific conceptual or practical difficulty in the CSE calculation by commodity. All transfers included in the PSE of a given country are transfers to agricultural producers individually that implicitly or explicitly increase gross farm receipts. Some of these transfers influence overall farming receipts across many or all commodities and have to be allocated across commodities. Such allocations are made on a case-by-case basis according to the specific implementation criteria of the policy measure in question. In general, the allocation coefficients are the shares of each commodity in the total value, area, or animal number of all relevant commodities.

Market price support, Payments based on output and *Payments based on planted area or animal numbers* are, by definition, commodity-specific. Payments based on historical entitlements are provided to producers of a specific commodity, or a specific group of commodities, at the moment of introduction of the payment. In some cases, the payment rates are specific to particular livestock or crops, and by farm.

Payments based on input use and *Payments based on input constraints* also affect production decisions concerning the limited group of commodities that a given farm can produce using the inputs in question. As most of these programmes are input-specific (and often specific to regions), they are allocated to the limited group of commodities that can be produced from the inputs and in the regions in question. *Payments based on overall farming income* allow farmers to produce any agricultural commodity. However, by increasing overall farm receipts, they also influence farmers' decisions to stay in the sector. As most of the programmes in this category are, in practice, region-specific in their basic conditions or implementation requirements, they are, as far as possible, allocated to the relevant commodities.

It should be made clear that some of these allocations to commodities are only a proxy for the payments received by producers of such commodities in a given year. That is especially the case of the *Payments based on historical entitlements* and the *Payments based on overall farming income*. Therefore, more than for any other group of payments by commodity in the PSE, attention should be drawn to the fact that there is no direct link between the amount allocated to each commodity and the level of production of that commodity.

Finally, transfers included in the *TSE* of a given country include transfers to individual producers and consumers, and transfers to general services provided to agriculture collectively *(GSSE*). Although some of the *GSSE* transfers (for example, for research) may be intended for work relating to specific commodities, they do not affect farm receipts or consumer expenditure in such a way that the amounts involved can be directly attributed to producers or consumers. Therefore, the *GSSE* transfers are not allocated to commodities, as such transfers do not depend on the decisions or actions of any individual farmer or consumer affecting the production or consumption of specific commodities in a given year.

Percentage PSE/CSE and producer/consumer NAC

The PSE by country and by commodity can be expressed in monetary terms — the PSE; as a ratio of the value of total gross farm receipts[16], measured by the value of total production (at farm-gate prices), plus budgetary support — the percentage PSE; or a ratio between the value of total gross farm receipts including support and production valued at world market prices without support — the producer NAC (Nominal Assistance Coefficient).

SEQ dpara1. In algebraic form, these PSE expressions can be written as follows:

$$\%PSE = PSE / (Q \bullet Pp + PP) \times 100 \quad (1)$$

$$(100 - \%PSE) = Q \bullet Pb / (Q \bullet Pp + PP) \times 100 \quad (2)$$

$$[100 \times 1/(100 - \%PSE)] = [\%PSE/(100-\%PSE) + 1] = [(PSE/Q \bullet Pb) [+- 1]] = NACp \quad (3)$$

Where,

PP = Payments to producers = PSE - *Market Price Support* = Σ *I.B to I.H* (see Box 1.)

Q•Pp = value of production at producer prices (not including output payments)

Q•Pb = value of production at border prices

16. Gross farm receipts are not the same as farm income, which is farm receipts less farm costs.

For example, a %PSE of 60%, expresses the share of transfers to agricultural producers in the total value of gross farm receipts (as measured by the PSE), or the share of gross farm receipts derived from policies [equation (1)]. Hence, some 40% of gross farm receipts is derived from the market without any support [equation (2)]. The value of gross farm receipts is two and a half times (or 150% higher than) what they would be if entirely obtained at world prices without any budgetary support [equation (3)] — a producer NAC of 2.50.

When the producer NAC is equal to one, this means that gross farm receipts are entirely derived from the market without any support. Therefore, the higher the producer NAC, the lower (greater) the share of gross farm receipts derived from the market (support) This can be seen as an indicator of *market orientation*, i.e. the degree of influence of market signals (relative to those from government intervention) on the orientation of agricultural production.

All transfers included in the CSE are implicit taxes or explicit budgetary transfers to consumers of agricultural commodities affecting consumer expenditure (valued at farm gate) of agricultural commodities. Therefore, the CSE by country and by commodity can be expressed in monetary terms — the CSE. The CSE as a ratio of the total value of consumption expenditure on commodities domestically produced, measured by the value of total consumption (at farm gate prices), minus budgetary support to consumers — the percentage CSE; or as a ratio between the total value of consumption expenditure on commodities domestically produced, including support to producers, and consumption valued at world market prices, without budgetary support to consumers — the consumer NAC.

In algebraic form, the CSE expressions can be written as follows:

$$\%CSE = .CSE/(Qc \bullet Pd - TC) \times 100 \quad (4)$$

$$(100 - \%CSE) = Qc \bullet Pb/(Qc \bullet Pd - TC) \times 100 \quad (5)$$

$$[100 \times 1/(100 + \%CSE)] = [\%CSE/(100 + \%CSE) + 1] = [(CSE/Qc \bullet Pb) [+-] 1] = NACc \quad (6)$$

Where,

TC = taxpayer transfers to consumers = *III.R. Transfers to consumers from taxpayers* (Box II.3)

Qc•Pd = value of consumption at domestic prices (at farm gate)

Qc•Pb = value of consumption at border prices

For example, a %CSE of –60% indicates that 60% of total consumption expenditure on agricultural commodities represents a transfer from consumers to producers or the share of the consumption expenditure created by policies (equation *(4)*). A consumer NAC of 2.50 indicates that expenditure by primary consumers is two-and-a-half times, or 150%, higher than it would have been if it had been conducted entirely at world market prices without any budgetary support to consumers (equation *(6)*).

When the consumer NAC is equal to one, this means that total consumer expenditure on agricultural commodities is at market prices, without any support to producers and consumers. Therefore, the higher the consumer NAC, the less (more) the share of consumer expenditure reflects the market. The NAC can be seen as an indicator of *market orientation*, i.e. the degree of influence of market signals (relative to those from government intervention) on the orientation of consumption of agricultural commodities.

Producer/consumer Nominal protection coefficient (NPC)

The producer NPC measures the ratio between the average price received by producers (at farm gate), including payments based on output (PO/tonne), and the border price (at farm gate) In algebraic form this can be expressed as follows:

$$NPCp = (Pp + PO/tonne) / Pb = [(Pp - Pb) + PO/tonne] / Pb + 1$$

For example, an NPCp of 2 shows that the price received by farmers is twice the border price. The producer NPC can be seen, therefore, as an estimate of the *nominal rate of market protection* for producers, or the rate of the implicit export subsidy necessary to export any quantity produced.

The consumer NPC measures the ratio between the domestic price paid by consumer (at farm gate) and the border price (at farm gate) In algebraic form this can be expressed as follows:

$$NPCc = (Pd / Pb) = (Pp - Pb) / Pb + 1$$

For example, an NPCc of 2 shows that the price paid by consumers is twice the border price. The consumer NPC can be seen, therefore, as an estimate of the *nominal rate of market protection* for consumers, or the average rate of the implicit import tax applied in the domestic market.

Percentage GSSE and TSE

For a given country or commodity, the calculation of any of the indicators in percentage terms needs to have a precise meaning. This is the case when both the numerator and the denominator have an economic meaning, and the value of the transfers in the numerator can be seen as an integral part of the denominator.[17] Moreover, as percentage indicators take account of the effect of inflation on both the numerator and the denominator, this effect is eliminated. As a result, percentage indicators are more representative and more appropriate measures of support for analysis over time and across countries.

The percentage GSSE is defined as the share of support to general services provided to agriculture in the total support to agriculture (TSE), the rest being the support to individual producers and consumers of domestic agricultural commodities. In a situation of public support to agriculture, the higher the percentage GSSE, the lower the share of support affecting individual decisions on domestic production and consumption of agricultural commodities.

The TSE includes transfers from taxpayers (which are a component of the total current government expenditure) and transfers from consumers (which are a component of the total domestic consumption expenditure). Both of these transfers, from taxpayers and consum-

17. That is the case of the percentage PSE and CSE as defined above. The GSSE and the TSE are not a part of the total value of farm receipts (as the PSE) nor a part of the total value of consumption expenditure of agricultural commodities (as the CSE).

ers, are included in Gross Domestic Product (GDP). Therefore, the percentage TSE is defined as the share of total support to agriculture in the total GDP. The higher the percentage TSE, the larger the share of national wealth used to support agriculture.

Main indicators: general interpretation

Highlighting the use of some other well-known economic indicators in policy analysis may assist a better understanding of the general interpretation given to the PSE and related indicators in evaluating agricultural policy developments. For example, while the annual variation in gross domestic product (GDP) gives an indication of a country's economic performance, by itself, it does not show the causes and consequences of the economic situation. Other related indicators, such as the rates of inflation and of economic growth help in understanding the economy better, although each of these related indicators measures a particular trend in the economy. Thus, it is the joint analysis of all these indicators combined that allows a comprehensive evaluation of the economic situation of the country.

Like the PSE andCSE, the GDP price index measures inflation in a production perspective, while the CPI measures inflation in a consumption perspective. The analysis of the components of the GDP price index, and those of the CPI, can help to identify distortions in production and consumption and the need to adjust certain policies. The analysis of the effects of factors, such as the effects of exchange rates on the rate of inflation, may help to evaluate policies. The analysis is not concerned, however, with eliminating the effects of exchanges rate variations on the inflation indicators to make them more appropriate for policy analysis. On the contrary, this would result in the loss of a major source of information needed for assessing the effects of inflation.

Do these indicators help to assess the need for, and progress in, policy reform?

While, with a low rate of inflation, there is a continuing needto managethe economy to keep inflation and associated distortions low, a high rate of inflation indicates the need to find ways to reduce inflation and associated distortions. In this sense, the inflation rate can be seen as an indicator of the need for policy reform. The annual variation in inflation does not necessarily measure progress in reform.

However, after a period of policy reform, a sustained and significant reduction in the average rate of inflation could indicate the progress in reform. The same could not be said if the average inflation rate remains unchanged or higher. Any judgement on the effects of inflation changes on production, consumption and wealth of the country needs the use of other economic indicators and tools.

The PSE/CSE and related indicators provide measures of the level of support, and the degree of protection and market orientation. Together with the analysis of their components, these help to identify the associated production, consumption and trade effects (or distortions). The joint analysis of these indicators provides an assessment of the need for, and progress in, policy reform. Although these indicators do not measure, by themselves, the levels of the associated effects or distortions, they provide the necessary data and information for the quantification of such effects. The calculation of the "subsidy element or equivalent" of each policy measure is achieved through the use of other economic tools, such as those used for establishing the OECD Policy Evaluation Matrix (see evaluation method in Chapter B).

Finally, it is sometimes argued that the PSE/CSE, and particularly the MPS, concepts and their interpretation should be adjusted for developing countries or for countries in the process transition towards a market economy. Among the reasons proposed for this are the high rates of inflation and exchange rate volatility, as well as the poor quality of data used for calculating the indicators.. The same arguments could be applied to the inflation and economic growth indicators, which are linked far more to price developments and are far more data intensive. As the quality of the policy analysis increases with the quality of data, the objective should be to improve the quality of the data rather than to adjust the inflation or support concepts for these countries.

Method of policy evaluation

Since 1987 the PSE and related indicators have been used as the principal tools to monitor and evaluate agricultural policy developments in the light of the policy reform principles. The PSE and related indicators are estimates of the costs (monetary transfers) for consumers and taxpayers of support arising from agricultural policies, but do not themselves quantify the impacts of policy measures on such variables as production, consumption, trade, farm income or

the environment. Those impacts depend on the *level of support*, the *nature of support* in terms of the way policy measures are implemented, and the *responsiveness* of those variables to changes in support. Moreover, policy measures are rarely applied in isolation and their impacts depend also on the policy mix or *composition of support*. The production and trade distortions associated with agricultural support are also the result of different *rates of support* among agricultural commodities and between commodity and non-commodity based support. Finally, the extent of such impacts and distortions may be limited through imposed constraints on that are imposed on production, on factors of production or on farming methods and technologies, which are also important to identify. The quantification of these impacts (distortions) requires economic models such as the *Policy Evaluation Matrix* (PEM) developed by OECD.

Although PSE and related indicators do not quantify the impacts or distortions of policies, they provide the information necessary for such quantification and can illustrate in qualitative terms the relative impacts of policies on production, consumption and trade. To contribute to a better evaluation of these impacts, the policy measures included in the PSE and TSE are grouped according to the conditions under which the associated transfers are provided.

Moreover, the classification of policy measures included in the PSE is based on two key assumptions, all other things being equal. First, policies within a given category have the same eligibility criteria, with the same potential impacts on production, consumption and trade. Second, the relative importance of the potential impacts of a policy measure(s) on production, consumption and trade depend primarily on the degree to which the measure(s) is linked to a specific commodity or input necessary to produce the commodity. This information allows the ranking of the categories of measures according to their relative potential impacts on production, consumption and trade (Box 4).

Although transfers in the GSSE have in general the same objectives of the transfers in the PSE, they are implemented differently. The GSSE transfers are collectively provided to the sector as a whole, while the PSE/CSE transfers are provided to individual farmers/consumers. Contrary to the PSE transfers, GSSE transfers do not depend on any individual framers' decisions or actions to produce goods or services, or use factors of production, and do not affect farm receipts directly.

Therefore, all other things equal, although GSSE transfers can in the long run contribute to improve or expand the sectoral production capacity of the country, their production and trade impacts are lower than those associated with PSE transfers.

"Market protection" and "market orientation"

A key reform principle is to seek reductions in market protection and improved market orientation through policy measures that result in lower support delivered in less distorting ways. Market protection is an element of market orientation and is the degree to which domestic markets are insulated from foreign markets. Market orientation is a more comprehensive concept and refers to the degree to which the signals guiding production, consumption and trade come from the market (relative to those from policy intervention). Market protection is measured by the prices received by farmers and those paid by consumers at farm gate in relation to world (border) prices. Market orientation is associated not only with such "price gaps", but also with other forms of government intervention influencing production and consumption decisions and therefore the levels of production, consumption and trade of agricultural commodities.

If a country produces a commodity that is entirely bought by a government agency, which fixes the quantities to be produced and the purchase prices, and forbids any import or export, but there is no other form of government intervention, then this is an example of a fully protected market with no market orientation. On the other hand, if a country produces the same commodity, but where the quantities to be produced, consumed and traded are entirely the result of market prices free of any government intervention, then this is an example of a non-protected market with full market-orientation. This latter example can be seen as an extreme situation where there is no specific policy for taking into account any market imperfection or failure that may reduce welfare. To improve welfare it can be appropriate to have policies, but beyond the well-founded goals of any policy, its efficiency depends on its effects on production consumption and trade of agricultural commodities. Such effects depend on the way policies are implemented, which is the criterion used to group transfers under the PSE/CSE and the GSSE, and the basis for any evaluation of the policies.

Therefore, the above extreme examples define the upper and lower degrees of market protection and market orientation within which any other policy package may be situated. The degree of market protection may be estimated through the *nominal rate of protection*, as measure by the NPC, while the degree of market orientation may be expressed through the *nominal rate of assistance*, as measured by the NAC. The higher the rates of (explicit or implicit) export subsidies or import duties, the greater the NPC and the producer or market protection. And the higher the share of farm receipts resulting from government intervention, the more the producer NAC is above one and the lower the degree of market orientation.

The combination of these two indicators deepens the evaluation based on the level of support as measure by the PSE, GSSE and TSE. All other things being equal, the higher the market protection (and the NPC) the greater the impacts on production and trade. And with the same level of market protection, the lower the degree of market orientation (the higher the NAC) the greater are those impacts. In summary, there is no single indicator to evaluate a policy change. The PSE/CSE, NPC, NAC, GSSE and TSE are interrelated indicators of the main elements that determine the impacts of policies on production, consumption and trade, which can be used in any quantitative or qualitative evaluation of policies.

How are support indicators used to evaluate policy changes?

The *TSE* in percentage measures the share of total support to agriculture in the GDP of a country, or the share of the country's wealth used to support agriculture. Although the percentage TSE is influenced by the size of agriculture in the economy, the higher it is the higher the cost of agricultural policy to the economy. The *GSSE* in percentage measures the share of transfers to general services provided to agriculture in the total support to agriculture (TSE), and therefore gives a measure of the relative importance of PSE and GSSE transfers in each country. All other things equal, the lower the percentage GSSE, the greater the share of PSE transfers in the total support to agriculture and the associated impacts on production and trade. In other words, all other things being equal, to pursue a given policy objective through transfers to individual producers has potentially greater production and trade effects than through transfers to general services provided to agriculture.

Box 4. Relative impacts of policy measures on production and trade[18].

The impacts of a policy measure on production and trade of a commodity depend on both, the degree to which extra resources are attracted to produce that commodity and the degree it affects consumption of the commodity. In general, the more a policy measure provides specific support to a commodity, the greater the impacts on production and trade of that commodity, although restrictions or constraints on providing support may limit these impacts. All other things being equal, the main categories of PSE measures can be ranked according to their relative impacts on production and trade as follows:

Market Price Support (MPS) is by definition commodity specific. Support is provided through the higher price received by producers and paid by consumers for the commodity in the domestic market compared with the border price. The more of the commodity produced the higher the total support paid. MPS is the only form of support that simultaneously affects production and consumption of a commodity and as such has the greatest impacts on production, consumption and trade.

Payments based on output are financed from government budgets and raise the price received by producers, thus having the same impact on current production as MPS, but with no impact on consumption. Thus they have a smaller impact on trade than MPS. This is why a $1 of MPS and a $1 payment per tonne have the same effect on production and on the Nominal Protection Coefficient (NPC) for producers, but not on consumption and on the NPC for consumers.

Payments based on use of inputs are budget financed and reduce the cost of inputs used by producers. An input payment may have a higher, the same, or a lower effect on production and trade than an output payment depending on the type of input. The more the payment is specific to a variable input necessary to obtain a given commodity the greater the incentive to production intensification and the impacts on production and trade of the commodity. With limited resources the production impacts of payments based on *fixed* inputs are potentially lower than those based on *variable* inputs, because of the mobility of the latter.

18 This ranking is consistent with the results of the work on *A matrix approach to evaluating policy: preliminary findings from PEM pilot studies of crops policy in the EU, the US, Canada and Mexico*, OECD 2000 and on *Decoupling: a conceptual overview*, OECD 2001.

(Box 4 continued)

Payments based on area planted/animal numbers are budget financed and based on current plantings or animal numbers. Although producers have to plant specific crops or have specific animals, they are not encouraged to produce as intensively or sell the commodity, as they are with the others forms of support outlined above. Therefore the production and trade impacts are lower than the previous forms of support.

Payments based on historical entitlements (i.e., past support, area, animal numbers, production, or income associated with specific commodities) are budget financed but based on historical parameters. As producers are not obliged to plant, own animals, or produce any particular commodities in order to receive the payments, their impacts are lower than the previous forms of support.

Payments based on input constraints are budget financed and paid on condition that farmers respect certain constraints (reduction, replacement or withdrawal) on the use of inputs, including changing farm practices (for example for environmental purposes). These payments may be targeted to specific situations and reduce production or have impacts on production and trade lower than the previous forms of support, depending on the type of constraint.

Payments based on overall farming income are budget financed and are paid on the condition that the overall farm income is below a pre-defined level. These payments can be targeted to the situation of specific farmers, and although they have the potential to retain resources in the sector and thus the capacity to produce, their production and trade impacts are the least compared with other forms of support to producers.

The *PSE/CSE* and the producer/consumer *NPC* and *NAC* provide the specific information that is used to evaluate changes in agricultural policies that have the most direct impacts on production/consumption decisions and therefore on trade of agricultural commodities. On the basis of these indicators, the following guidelines are used to evaluate policy changes in relation to the principles and actions agreed by OECD Ministers for agricultural policy reform:

- A lasting reduction in the rate of support (% PSE) with no change in the policy composition is a step in the direction of policy reform — lower costs for consumers (%CSE) and/or taxpayers and potentially less production and trade distorting;

- No change in the rate of support (% PSE) with a change in the policy composition to a smaller share of MPS and payments based on output is a step in the direction of policy

reform — lower costs for consumers (%CSE) although more costly for taxpayers, but reduction in the most production and trade distorting measures (lower NPC) thus potentially less production and trade distorting;

- An increase in the rate of support (% PSE) with no change in the policy composition is a move away from policy reform — higher costs for taxpayers and/or consumers (%CSE) and more production and trade distorting especially if the producer/consumer NPC also increases;

- An increase in the rate of support (% PSE) with a change in the policy composition to a smaller share of MPS and payments based on output is ambiguous — higher costs for taxpayers, possibly higher costs for consumers (%CSE) depending on the rate of the PSE rise, with more or less production and trade distorting depending on the relative magnitudes of changes in the producer (consumer) NPC;

- A lasting decrease in the producer/consumer NPC is a step towards lower market protection — a closer alignment of domestic and world prices through a lower nominal rate of protection to producers/imports and implicit rate of export subsidy/import tax applied to export/import commodities, thus a reduction in the most production/consumption and trade distorting measures;

- A lasting decrease in the producer/consumer NAC is a step towards greater market orientation — higher share of farm receipts generated in the market at unsupported prices, thus and lower government intervention and risk of production/consumption distortions.

The country averages of the above indicators may in some cases hide a wide variation across commodities. In some countries price support through MPS or payments per tonne exists for many commodities, while in others it only exists for a few. Therefore, it is important to complement the evaluation with a reference to the number of commodities eligible to receive price support and the range of each of the above indicators across commodities. As the OECD Ministers

agreed to initiate the reform in 1987, it is appropriate to monitor and evaluate the progress in reform relative to the 1986-1988 average. Although the main objective of is to monitor and evaluate policy developments in the year under review, the evaluation should also assess the contribution of the annual policy developments to the long-term trend on the main indicators.