Support to Agriculture in FYR Macedonia

- An Exploratory Assessment (1999-2004)

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Support to Agriculture in FYR Macedonia

- An Exploratory Assessment (1999-2004)

Stöd till jordbruket i Makedonien (FYROM)

- En explorativ undersökning (1999-2004)

Поддршка на земјоделството во ПЈР Македонија

– Експлоративна пресметка 1999 - 2004

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Preface

This study is the first attempt to give a comprehensive appraisal of the support to agriculture in the Former Yugoslav Republic of Macedonia (FYROM) along the lines of OECDs methodology for the measurement of support. It is thus exploratory by nature and the results should be interpreted with caution. However, the results obtained do offer several valuable insights, in a national, regional and international context regarding the level and composition of support in Macedonia. Further research may be able to "fine-tune" the results, but already as currently presented they offer a solid base for policy evaluation.

The main findings of this study are presented in the executive summary and in chapter 2 and 3. In **chapter 2,** the aggregated results for the agriculture sector of Macedonia as a whole are presented and discussed. The results are then broken down to individual commodities and are presented in **chapter 3**. Throughout the document, and whenever possible, the results are contrasted to the corresponding figures for the OECD, the European Union, and countries in the region. The **annexes** provide extensive information regarding definitions, references, and data. An Excel file containing the entire data set is available upon request.

The study is produced within the framework of a project funded by the Swedish International Development Cooperation Agency (Sida) and has been written in close cooperation with the department of Agricultural Economics and Organization at St Cyril and Methodius University in Macedonia. During the course of this study, several missions have been made to Macedonia. The authors would therefore especially like to acknowledge Professor Dragi Dimitrievski, MSc Gordana Manevska Tasevska, MSc Emelj Tuna, Dr Aleksandra Martinovska Stojcheska, Ivana Janeska, and MSc Ana Hristovska for their valuable support in the data collection and for hosting us in Skopje. Thanks also to Karl-Anders Lindqvist for his help with data analysis and to Professor Emeritus Olof Bolin for reviewing a draft version of this report, both at the Department of Economics of the Swedish University of Agricultural Sciences (SLU). Our acknowledgements, finally, to Catherine Moreddu and Olga Melyukhina at the OECD for helpful advice. The authors alone are of course responsible for any remaining errors in this report.

Abstract

Macedonia, as a candidate country to the EU and a member of the WTO is in need of a comprehensive, transparent, and internationally comparable assessment of the support to agriculture in the country. OECD that has been measuring support to agriculture on a yearly basis, in its member countries as well as some other countries since the mid-1980s offers a good tool for such a task. The method is known for its most important indicator, the Producer Support Estimate (PSE). Using this method, data on Macedonian agricultural policy measures, in place – partly or entirely - for the period 1999 to 2004, have been gathered and categorized in order to arrive at an estimate of the level of support. This report presents the main findings of this assessment.

Key terms: FYR Macedonia, Producer Support Estimate (PSE), agricultural support, trade protection

Sammanfattning

Makedoninen har som kandidatland till EU och som medlemsland i WTO ett behov av en ingående, transparant och internationellt jämförbar analys av stödet till jordbruket i landet. OECD som årligen har mätt jordbruksstödet i sina medlemsländer och även en rad andra länder sedan mitten av 1980-talet, erbjuder ett bra verktyg för en sådan analys. Metoden är känd för sin viktigaste indikator, producentstödsskattningen Producer Support Estimate (PSE). Med användande av den här metoden och för att få en beräkning av nivån på jordbruksstödet, har data över jordbrukspolitik och stöd tillämpade i Makedonien under hela eller delar av perioden 1999 till 2004 samlats in och kategoriserats. Den här rapporten presenterar de viktigaste rönen från den analysen.

Nyckelord: Makedonien, Producer Support Estimate (PSE), jordbruksstöd, protektionism

Апстракт

Македонија, како земја-кандидат за членка на Европската унија (EU – European Union) и членка на Светската трговска организација (WTO – World Trade Organization), има неминовна потребата од детална, транспарентна а воедно и интернационално споредлива пресметка за поддршката на земјоделството. Во рамките на Европската унија и уште неколку други држави ваквите пресметки се прават на годишно ниво, а ги спроведува Организацијата за економска соработка и развој (OECD – Organisation for Economic Co-operation and Development) уште од 80тите год. на минатиот век. OECD има развиено посебен метод, кој е општо препознатлив по показателот за поддршка на производителите (PSE - Producer Support Estimate), како нејгов најзначаен индикатор.

Овој метод беше користен и за пресметка на показателот за нивото на поддршка на земјоделството во Македонија. За таа цел беа собирани и категоризирани податоци за мерките на агарна политика, применети во целост или делумно, за периодот 1999 – 2004. Овој извештај ги презентира најзначајните резултати од анализата.

Клучни зборови: ПЈР Македонија, показател за поддршка на производителите (PSE), земјоделска поддршка, трговска заштита.

Abbreviations and Acronyms

Commodities

WT: Wheat
MA: Maize
BA: Barley
RI: Rice
PO: Potatoes
TM: Tomatoes
PE: Pepper
CU: Cucumbers
AL: Alfalfa
AP: Apples
WA: Watermelons
GR: Grapes
TB: Tobacco
CM: Cow milk
SC: Sheep cheese
PK: Pig meat
BF: Beef and veal
SH: Sheep meat
EG: Eggs

Support Estimates

CSE: Consumer Support Estimate
GSSE: General Services Support Estimate
MPS: Market Price Support
NAC: Nominal Assistance Coefficient
NPC: Nominal Protection Coefficient
PSE: Producer Support Estimate
TSE: Total Support Estimate

Others

AVE: Ad Valorem Equivalent
CAP: Common Agricultural Policy (European Union)
CEEC: Central and Eastern European Countries
CEFTA: Central European Free Trade Agreement
EFTA: European Free Trade Agreement
FYROM: Former Yugoslav Republic of Macedonia
GDP: Gross Domestic Product
GNI: Gross national income
MAFWE: Ministry of Agriculture, Forestry and Water economy
MKD: Macedonian Denar
OECD: Organization of Economic Cooperation and Development
PPP: Purchasing Power Parity
R&D: Research and Development
SEEC: South and Eastern European Countries
USD: United States Dollar
USAID: United States Agency for International Development
WTO: World Trade Organization

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Executive Summary

This report presents the findings of the first comprehensive measurement of support to agriculture in Macedonia applying the guidelines specified by the OECD. The advantage of these estimates is the possibility to use them for international and regional comparisons. Moreover, they can be a useful contribution to the ongoing analysis of the impacts on Macedonia's agriculture of the country's future accession to the European Union.

Moderate support at the aggregate level…

On average, farmers in Macedonia received 17 percent of their farm revenues in the form of support in the period 1999 to 2004. The corresponding number in the European Union was 35 percent and the average for OECD was 31 percent. In an international perspective, farmers in Macedonia thus received less support during the period of study than what the average OECD farmer and farmers in the EU did. Total support to agriculture in Macedonia, however, amounted to 2.9 percent of GDP on average, a share that is more than the double of the corresponding share in the EU and among OECD countries, which reflects the relative importance of agriculture in the country.

Due to a significant MPS component, farmers in Macedonia on average, as measured by the producer NPC, received prices 20 percent higher than the border prices in 1999-2004. That is less than the corresponding numbers in the EU and in the OECD, which are 33 and 32 percent, respectively. Still, consumer prices were 21 percent higher than what consumers would have had to pay without any support to farmers. The cost to consumers of the support, as measured by the percentage CSE, was 16 percent of the consumption expenditures of agricultural commodities. These facts indicate that the MPS causes Macedonian consumers to pay more for agricultural commodities than the world prices; however, there are exceptions at the commodity level: Rice, potatoes, cucumbers, alfalfa, apples, grapes, and tobacco seem to be traded at border prices.

…but the picture is mixed at the commodity level

To look at the aggregate level only can be misleading since the picture, both in terms of competitiveness and with respect to the level of support, is more mixed at the commodity level. The average PSE for all commodities in 1999-2004 was 17 percent. However, livestock producers, with an average percentage PSE of 28 percent, received the largest portion of producer support amounting to 65 percent of the total. By contrast crop products are characterized by an average PSE of 11 percent, which represents only 35 percent of the total producer support. A comparison with the levels of support for individual commodities in the EU and the OECD reveals that Macedonia, although having a lower level of support on aggregate, in fact supported eggs more than the case in the EU and in the OECD.

High reliance on trade distorting measures…

In relation to the EU and the OECD, the support to farmers in Macedonia is to a larger degree based on market price support while budgetary transfers is characterized by a larger reliance on output and input subsidies. It should be noted that OECD considers these forms of support as trade distorting. The share of MPS was 85 percent of producer support on average in 1999-2004 and payments based on output and inputs stood for the greater part of budgetary support. The combined share of trade distorting policy measures was estimated to be equal to 99 percent on average during the period of study. This figure is significantly higher than the corresponding one in the EU and the average for OECD countries. It is, however, similar to the shares Bulgaria and Romania had prior to their accession to the EU in 2007 but higher than the share Slovenia experienced prior to EU accession in 2004.

…and little public support to general services to agriculture

General services to agriculture stood for 5.3 percent of total agricultural support in 2004; a small share when compared to the EU (7.8 percent) and the OECD (18 percent) and even a rather small share when compared to countries such as Slovenia (9.6 percent) and Romania (7.1 percent), but similar to Bulgaria's 3.4 percent of TSE. Macedonia's figures also diverge in terms of composition of GSSE. Macedonia spent on average much less on marketing and less on research and development than the EU and the OECD as a whole.

…Since EU accession is on the agenda, some significant adjustment of support to its agricultural sector are expected in the future

Given that Macedonia intends to join the European Union when allowed to, one would expect that the level and composition of its farm support with a move towards more direct (decoupled) subsidies will increasingly bear some kind of resemblance to the situation in the EU. In 2004, however, there was still no sign of this, neither in the level nor in the composition of support. There is also room for another composition of the general services to agriculture. In order to improve Macedonia's competitiveness relative to the European Union, an increase in the support to research and development as well as to marketing and promotion would be beneficial to promote the export potentials of key agricultural commodities produced by this country (lamb, vegetables, grapes, wine, and tobacco).

1. Introduction

Macedonia[1], a small country with two million inhabitants in the Western Balkans can still be considered a country in transition. The time that has passed since Macedonia gained its independence in 1991 has been turbulent although the country, unlike many of its Balkan neighbors has been spared any major armed conflict. Agriculture has a share of GDP that gravitates around 12 percent and employs about 20 percent of the economically active population (World Bank, 2006)[2]. Agriculture thus plays a significant role in the Macedonian economy. The importance of agriculture for ordinary Macedonians is accentuated by the fact that almost half the population as well as nearly half of the poor live in rural areas (World Bank, 2006). During the transition period, agriculture has served as a buffer absorbing especially low-skilled surplus labor from other sectors (COM, 2005).

Map 1. Macedonia and EU-27.

Crops constitute about two-thirds of the agricultural contribution to the GDP (Dimitrievski & Kotevska, 2008). Major agricultural products are vegetables representing 29 percent of gross agricultural output followed by grapes, tobacco, and fruits representing 9, 7, and 4 percent of gross agricultural output, respectively. The grain-livestock complex, however, also plays an important role with dairy production (cow and sheep milk) accounting for 15 percent of gross agricultural output, meat (mainly sheep, pig and beef) representing 11 percent and cereals (wheat, maize and barley) forming an additional 14 percent. Yields in both crops and livestock are often low, especially in comparison with yields in the EU (Dimitrievski & Kotevska, 2008).

[1] Macedonia's constitutional name is the Republic of Macedonia and this country is provisionally referred to as 'the former Yugoslav Republic of Macedonia' (FYROM) within the United Nations, pending the settlement of the differences that has arisen over the name of the state. The majority of the countries in the world (126 to this moment) recognize Macedonia's constitutional name in their bilateral relations with this country.

[2] If agro-processing is added the share in GDP increases to around 16 percent.

1.1 Agriculture and Trade

Representing more than 16 percent of total exports and about 12 percent of total imports in 2005 (Pelling, 2007), agriculture plays a significant role in Macedonia's trade relations. As a small landlocked country, however, it comes as no surprise that Macedonia on aggregate runs a trade deficit. Macedonia's net exports in agri-food products are limited to tobacco, beverages, and vegetables.

Macedonia has spent the time since independence trying to restore trade relations lost in the transition and to explore new ones. WTO membership, bilateral free trade agreements and the strive for EU-accession have been the key ingredients in this endeavour to increase trade. Macedonia became a member of the WTO in 2003 after almost ten years of negotiations and delays. Free trade agreements have been signed with all former Yugoslav republics, with several other eastern European countries, as well as with the EFTA and Turkey. Macedonia joined the Central European Free Trade Agreement (CEFTA) in 2006 and when its new treaty entered into force in 2007, it replaced many of Macedonia's existing free trade agreements (COM, 2007).

Macedonia applied for membership of the European Union in March 2004 and was granted candidate status in December 2005. EU-accession, however, remains in a distant and unclear future as neither the time frame nor the starting date for accession negotiations have been settled yet. Meanwhile, a Stabilization and Association agreement signed in 2001 aiming at the harmonization of Macedonian laws and regulations to EU standards known as the *acquis communautaire*, stipulates the conditions for trade between Macedonia and the EU. Effective implementation of this agreement is also one of the prerequisites for negotiations to take place.

1.2 Agricultural Policy

At independence in 1991, Macedonia more or less continued the agricultural policy applied when still a part of the Socialist Federal Republic of Yugoslavia. It was a policy principally based on direct and indirect market price regulations through tariffs, trade limitations, and guaranteed prices (Dimitrievski & Kotevska, 2008). Input subsidies also played a role in the agricultural policy of the former Yugoslavia (OECD, 2001). The "socially owned" agro-kombinats and cooperatives provided additional "soft" budget support to individual farmers as suppliers of agricultural machinery and other inputs and as purchasers of the agricultural production (ARCOTRASS-Consortium, 2006). Since 1991, however, the agricultural policy of Macedonia has gone through substantial changes. The changes have included reductions in direct producer support to agriculture, abolition of guaranteed prices, curbing of the preferential treatment enjoyed by the previously state-owned agro-kombinats and cooperatives, partial removal of trade barriers, and shifts towards a policy framework more in line with the Common Agricultural Policy of the EU. The privatization of the agro-kombinats and cooperatives has disrupted the former linkage between them and the individual farmers (ARCOTRASS-Consortium, 2006). The long-term objective of these

changes is a market-oriented policy and a demand-driven production (van Berkum, 2001).

The main agricultural policy instruments in effect during the whole or part of the period 1999-2004 were (see Annex C for more details):

- Guaranteed prices
- Trade restrictions (*e.g.*, import tariffs, export and import licenses, and quotas)
- Intervention schemes (*e.g.*, buying in and storage)
- Payments based on output
- Payments based on area planted/animal numbers
- Farm investment support
- Support for agricultural infrastructure
- Support to rural development
- Support for agricultural extension, research, education, livestock and crop services

During the period 1999-2004, the market price support mainly consisted of guaranteed prices, trade restrictions, and intervention schemes. Given its importance in the Macedonian diet and the fact that it is net-imported, wheat was one of two commodities deemed strategic and benefiting from pre-announced guaranteed prices. As one of the major exports, tobacco was the other commodity that received a guaranteed price during that period. For the same reasons the national Commodity Reserves Bureau performed buy outs of wheat and tobacco. Wheat, milk, and lamb received price aids based on output. As from 2004, producers of wheat, barley, corn, sugar beat, sunflower, cattle, sheep and goats, and pigs receive direct payments based on area sown or number of animals. A recurrent feature of the agricultural policy during this period was its ad hoc character. The support schemes changed markedly in the aftermath of the armed clashes in 2001 and before the elections in 2002.

Given that much of Macedonia's agriculture is dependent on irrigation, the support to agricultural infrastructure was targeted at the restructuring of irrigation systems. The rural development support during the period was aimed at the revitalization of villages through investments in reconstruction and construction of water pipelines, sewages, and local roads. In 2004, support to rural development was intensified by the introduction of support for farm investments.

The National Extension Agency, which receives its funding from the state budget, is the main provider of agricultural extension services. Research and education is carried out at the faculty of Agriculture and Food and the faculty of Veterinary Medicine in Skopje as well as in the Faculty of Biotechnology in Bitola. In addition, there are five research institutes. Various institutions provided services aimed at the improvement of livestock and crops trough breeding and seed selection.

According to the 2007 EU progress report (COM, 2007) on Macedonia, and in spite of the reforms carried out, there is still much to be done before Macedonia's agricultural policy meets EU regulations. The various Free Trade Agreements and

the commitments to WTO and EU have already exposed Macedonian producers to increased competition and presented new export opportunities. Direct subsidies and import tariffs are the principal tools of support to agriculture today. Tariffs are to be reduced gradually in accordance with Macedonia's commitments to the WTO, EU, and other bilateral free trade agreements. The average tariff rate on agricultural goods in 2008 was 16.46 percent and that of industrial goods 7 percent (COM, 2008). Whereas tariffs have been reduced for most traded goods, they remain high or moderate for highly sensitive products, i.e., products that are net exported or for which Macedonia has a significant processing interest (MAFWE, 2004). Direct subsidies, as of 2004 are distributed in the form of payments per hectare and headage. In 2004, crop producers received half the available support. (MAFWE, 2005).

Import tariffs typically represent a lion's share of agricultural support in many countries. Similar to many developing countries the importance of tariffs is even more pronounced in Macedonia, as there are few resources to spare for direct budgetary support to agriculture. It has been said that Macedonian farmers receive about 40 times less budgetary support than EU farmers (MAFWE, 2006) and during the period 1999-2004 the total budget of Macedonia's Ministry of Agriculture, Forestry and Water Economy represented only about 1 percent of the national budget. Tariffs and other barriers to trade, aimed at keeping the domestic market price up are expected to have a greater impact on trade and welfare relative to budgetary support. Whereas the latter may increase production, market price support affects both supply and demand directly as the higher price spurs production but at the same time discourages domestic consumption.

1.3 Support Indicators

As a candidate country to the European Union and a member of the World Trade Organization (WTO) there is a need for a comprehensive, transparent, and internationally comparable assessment of the support to Macedonia's agricultural sector. Every year since the mid-1980s, OECD has been measuring support to agriculture in its member countries as well as some other countries along the lines of the same standard method (OECD, 2002). The method is known for its most important indicator, the Producer Support Estimate (PSE). This method has become the principal and most well-known tool for international comparisons among countries of the level of support to agriculture. Using this method, data on Macedonian agricultural policy measures, in place in all or some of the years between 1999 and 2004, have been gathered and categorized in order to arrive at an estimate of the level of support to the agricultural sector. The report presents the main findings of this assessment.

2. Method

The estimates of support to agriculture in Macedonia presented here are based upon OECD's methodology for the measurement of support to agriculture as implemented in 1999 (OECD, 2002). Although, OECD revised its methodology in 2007 (OECD, 2007b) to better capture decoupled policy measures, the results for Macedonia would not be significantly different with the new method considering the composition of its support to agriculture.

Agricultural support can be analyzed from many angles since it affects producers, consumers, taxpayers, and governments differently. There are therefore not one but several indicators of agricultural support. The main indicators used by the OECD and in this report are:

- Producer Support Estimate (**PSE**) of which
  - ✓ Market Price Support (**MPS**)
  - ✓ Budgetary Transfers
- Consumer Support Estimate (**CSE**)
- General Services Support Estimate (**GSSE**)
- Total Support Estimate (**TSE**)

These indicators are calculated in monetary terms so in order to make international comparisons possible some of them are also converted into percentage terms. For the same reason two complementary indicators, which are reported as ratios and therefore are directly comparable, are computed: The Nominal Protection Coefficient (**NPC**), thus measures *market protection,* and the Nominal Assistance Coefficient (**NAC)** *market orientation*.

2.1 Classification and Definitions

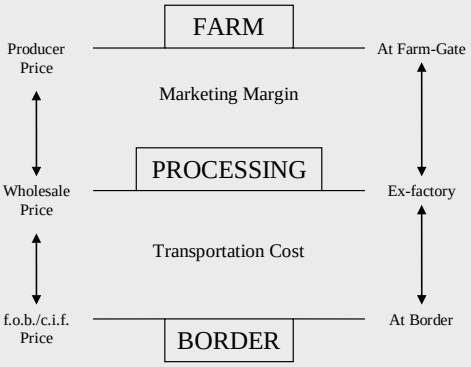
The very idea of the OECD methodology is to make international comparisons possible and it is therefore an absolute prerequisite to follow its system of classification. The first step is to distinguish and classify policy measures that create transfers to producers individually (PSE), to or from consumers individually (CSE), or to agriculture as a collective (GSSE). The sum of the PSE, the GSSE and the transfers from taxpayers to consumers included in the CSE makes up the total support estimate (TSE). The second step is to break these aggregated headings down to their smaller components.

The **Producer Support Estimate** is a summary measure of support as it adds up the annual monetary value of gross transfers from consumers and taxpayers that support agricultural producers. Farmers receive support both directly in the form of direct transfers (budgetary transfers) and indirectly through higher prices (MPS). **Market Price Support** is the result of policy measures that maintain domestic prices for farm commodities at levels higher (or lower) than those at the country's border (see box 1). **Budgetary transfers** are payments to farmers based on criteria such as the quantity of a commodity produced, the amount of inputs used, the number of animals kept, the area farmed, or the revenue or income received by

farmers. The budgetary transfers may also include implicit support, e.g. through tax or interest rate concessions.

Box 1. Price differential

In order to calculate MPS for a specific commodity, the difference between the domestic price and the border price is quantified. A precondition is that it exists a policy measure that justifies the existence of such price gap. All prices are measured at the farm-gate level to assure a relevant comparison. The latter requires a set of adjustments since any cost associated with the marketing and transportation of a commodity must be subtracted. This so-called marketing margin includes handling, processing, transactions, and domestic transportation costs. The border price net of its handling margin is used as the border or reference price and should be directly comparable to the producer price at farm gate. Any remaining price differential is thus the result of policy measures such as domestic price support, import measures, export measures, or state trading. (OECD, 2002)



$$\Delta P = P_p - P_b \text{ (at farm gate)}$$

The **Consumer Support Estimate** summarizes transfers to or from consumers of agricultural commodities. Consumers, accordingly, refer to the first buyers of agricultural commodities, *i.e.*, processors such as mills, dairies, and slaughterhouses as well as private households purchases on green markets. If negative, CSE measures the implicit tax on consumption due to policy measures. Market price support is considered also in the consumer support estimate as it maintains domestic prices paid by consumers at levels higher (or lower) than those obtained at the border. Consumers may also receive food subsidies, which keep prices of commodities consumed by certain groups in the economy lower than would otherwise be the case. CSE is measured at the farm-gate.

The **General Services Support Estimate** captures measures affecting farmers as a group. A wide range of policy measures, such as agriculture-related education or

research, inspection services, off-farm infrastructure, and others that affect the agriculture sector collectively are included here.

The **Total Support Estimate** measures the total cost to the economy of agricultural support and is the sum of producer support, consumption subsidies, and general services and is net of import tariff revenues.

The **Nominal Protection Coefficient** is a ratio between the price received by producers and the price received at the border measured at farm gate. A NPC equal to one indicates that producers and consumers sell and buy at the border price, *i.e.*, no market protection. The **Nominal Assistance Coefficient** is a ratio between total gross farm receipts including support and the production valued at border prices without support. A NAC equal to one indicates complete market orientation whereby producers sell and consumers buy at market prices.

2.2 Method of Calculation

The estimation of agricultural support is undertaken in three steps. The first step, which proved to be quite tedious, is the data collection. The necessary data include not only detailed information on each specific policy measure but also volumes produced, quantities consumed as well as prices paid and received at the farm gate and at the border. Since prices are compared at the farm gate, it is important to collect reliable marketing and handling margins. The second step is the classification of the various policy measures according to the OECD methodology. The allocation of the budgetary data to individual commodities and the estimation of the commodity specific market price support is the third step. In many cases, the allocation is straightforward as it is clearly stated which commodities that benefit from a specific policy measure. In some cases, however, it is more complicated and the procedure in these cases is to allocate the budgetary expenditures to the various commodities based on their value shares in agricultural production or some other allocation key. Not all agricultural commodities are included in the calculations; the aggregate support estimates, as illustrated by figure 1, are extrapolated from the selected "PSE-commodities".

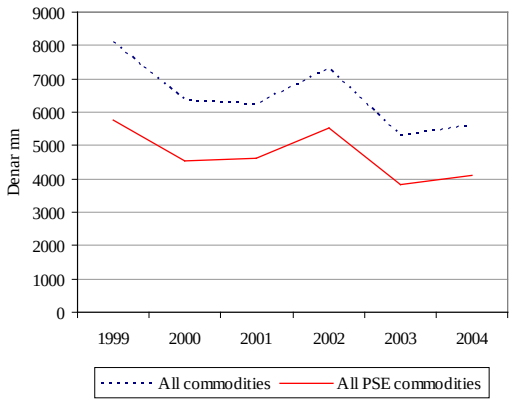


Figure 1. Producer support for all commodities and all PSE-commodities.

The data for the study were collected from national sources such as the State Statistical Office, the Ministry of Agriculture, Forestry and Water Economy and its

directorates, the National Extension Agency, and other relevant ministries and government bodies; moreover, FAO's and COMTRADE's statistical databases were used for complementary and comparison data. In addition, data from OECD's PSE estimation for neighbouring countries were used for approximation were real data were missing for Macedonia. Throughout, data issues have been a recurrent problem of this study and more reliable estimates of Macedonian agricultural support could be attained with more accurate and better statistical information on prices, production, and consumption of agricultural commodities.

2.3 Changes in the Methodology

Agricultural policy is constantly changing. As the policy measures tend to change both in quantity and in complexity, there has been a continuous need for modifications in the classification of the different policy measures. As of 2007, OECD member countries have decided to implement yet a new revised methodology to estimate PSEs (OECD, 2007b). The latter includes a new classification of policy measures as well as changes in the measurement of support to individual commodities and in the presentation of the indicators. The new PSE classification is believed to better capture a reality where policy measures are increasingly decoupled from production and where farmers more often face regulations and constraints on *how* they manage their farms rather than on *what* they produce.

A major difference between the 1999 methodology and the new one regards the estimation of support to individual commodities. Until now, the commodity producer support estimates have been the sum of both commodity-specific and other policy measures allocated to each commodity based on shares in total production or some other allocation keys. OECD, however, has decided to no longer allocate non-commodity specific policy measures to individual commodities. In the new methodology, thus, the total PSE is broken down into four sub-categories of which single commodity transfers will be one. The other three categories are group commodity transfers, all commodity transfers, and other transfers but these will not be broken down to individual commodities. Consequently, OECD does no longer calculate nor publish PSEs, CSEs and NACs for individual commodities. It would be possible to organize the data according to the new methodology but the time available did not allow for that. However, while applying the new methodology may change the level of budgetary support for individual commodities it would not alter the overall results, nor the commodity-specific MPS, presented in this report.

2.4 Scope

This report provides a set of measures of the level and composition of farm support in Macedonia. It does not dwell, however, into the detailed policy setting. The study is limited in time to the period of 1999 to 2004 and in its coverage of the agricultural production in Macedonia. The level of support to agriculture in

Macedonia has been estimated for 16 agricultural products[3]. These "PSE-commodities" represents about 70 percent of Macedonia's total agricultural output value[4]. Products that do not reach a certain threshold in terms of output value were excluded. However, due to lack of accurate data, some commodities of greater importance have also been excluded. With a 94-percentage coverage most of the livestock sector is included. The crop sector, however, has a less complete coverage with only 59 percent of the crop related output value included in the calculations. Worth mentioning is the exclusion of tomatoes, peppers, and watermelons, which represent 7, 6, and 1 percent of the agricultural output, respectively[5].

In estimating the level of support to agriculture in Macedonia, it has not been an easy task to find consistent and coherent data. It has been especially difficult to find reliable reference prices and marketing margins and thus to estimate the market price support; apparently, a common problem for several countries in transition. The resulting unrealistically large price gap between domestic producer prices and border reference prices could be separated into two categories. Firstly, some commodities had unjustified price gaps, especially some net exported commodities and after consultations with experts from the OECD (OECD, 2007a), it was therefore decided not to include market price support in the determination of PSEs for rice, potatoes, cucumbers, alfalfa, apples, grapes, and tobacco. It is assumed that these seven products have zero market price support, see Annex F for further details. Secondly, for three livestock commodities with questionably large MPS, the OECD experts recommended the use of a different method where representative summary tariff rates replace the border reference prices in estimating the MPS. This procedure is explained in Annex G.

In general, MPS is only estimated for those commodities for which there is a policy measure that justifies the existence of a price gap. Market price support is thus explicitly calculated only for nine of the 16 agricultural products included in the PSE calculations. The products, for which complete estimates have been derived, represent a smaller share of the total value of agricultural production. It is reasonable, however, to assume that the commodities, for which MPS is not explicitly calculated, enjoy none or only minor market price support. The continued use of the 70 percent coverage is thus justifiable. See also Annex E for more details regarding the commodity coverage.

2.5 Previous Studies

Several reviews and assessments of the agriculture sector of Macedonia were undertaken over the last fifteen years. Although agricultural policy and trade is discussed in many of them, few have attempted to estimate the level of support to

[3] The included commodities are wheat, maize, barley, rice, potatoes, cucumber, alfalfa, apples, grapes, tobacco, cow milk, sheep cheese, beef and veal, pig meat, sheep meat, and eggs.

[4] The value of agricultural output is known only for 2001, 2002, and 2003; the values shares mentioned in this report are therefore an average of the three years and should be considered with caution.

[5] Reasons to justify the exclusion of these commodities are provided in Annex E.

agriculture along the lines of the OECD methodology. The first attempt to estimate the level of agricultural support in Macedonia was undertaken by Ouedraogo and Shaw (1996), who estimated nominal protection coefficients and producer subsidies equivalent for wheat, cowmilk, sugar beet and sunflower seed for 1994. NPC were also estimated for fertilizer for the same year. This study found that percentage PSE was higher in Macedonia than in the EU. On the other hand, percentage PSEs for cow milk and sunflower were lower than in the EU and the United States. An interesting aspect of this work was to show that the level of protection for the above agricultural commodities was sensitive to the way international transport costs were calculated in the reference (border) prices.

In a comparative analysis of agricultural support programs in Macedonia, Greece, and Turkey published in 2003, the International Bio-Food Institute arrived at an aggregate support level of less than 10 percent in 2001 as measured by the percentage PSE (IBI, 2003). This figure, however, must be considered as a guess estimate since both the market price support and the budgetary transfers are cited as unknown.

Van Berkum (2001), in an analysis of Macedonia's trade relations and the competitiveness of the agro-food sector, does measure the NPC for wheat, maize, potatoes, tomatoes, cucumbers, cow milk, and butter in 1999. None of the products had a NPC smaller than one that year. The estimates obtained, however, do not consider the marketing margins and are therefore not directly comparable to the estimates presented in this study. Van Berkum, furthermore, abstains from calculating PSEs due to difficulties in obtaining the necessary data.

In a World Bank (2003) review of Macedonia's agriculture sector NPCs are calculated for a set of commodities in 2002. It is concluded that early tomatoes, fresh apples and lamb, as well as wine and tobacco have NPCs smaller than one and thus are competitive on international markets, whereas wheat, maize, cow milk, and pork are not. These figures, however, do not consider the marketing margins and are therefore not directly comparable with the estimates presented in this report.

3. Aggregate Results

This chapter examines Macedonia's agricultural support from an international perspective. The indicators used to contrast and compare Macedonia's agricultural support with those of other countries, as well as the OECD and the EU, are obtained from OECDs 2005 PSE/CSE database (OECD, 2006).

3.1 Producer Support Estimate

Although there are countries such as Argentina that ″tax″ its agriculture sector, a high level of support to agricultural producers is a common feature of many countries and can be considered as a rule in most OECD countries. As illustrated by figure 2, the OECD countries that to a varying degree all support their agriculture can roughly be divided into low, moderate and high level "supporters". At the bottom, with low levels of support, are Australia and New Zealand, which are traditional exporters of agricultural commodities. New Zealand, and to a certain extent Australia, that carried out major agricultural reforms in the 1980s distinguishes itself with a single digit producer support estimate that is the lowest in the OECD. In the middle, are countries such as Canada and the United States with relatively moderate support levels gravitating around 20 percent. Traditional importers and protectionist countries such as Japan, South Korea, Switzerland, and Norway form a group with a high level of support and distinguish themselves with support levels well above 50 percent and in some cases higher than 70 percent. The European Union with a support level around 35 percent is close to the OECD average.

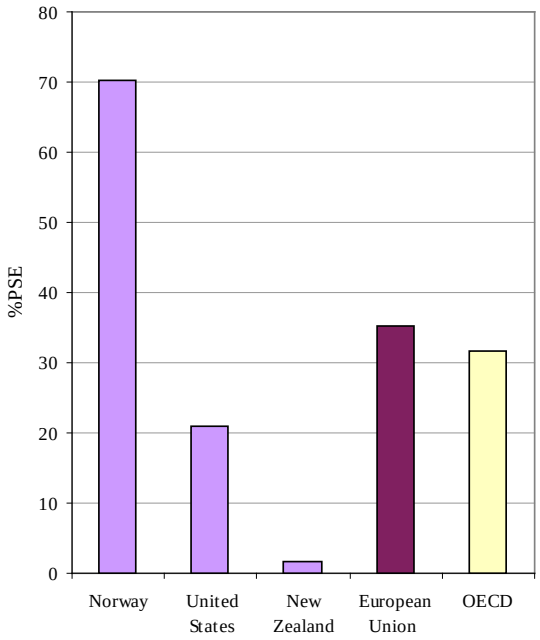


Figure 2. %PSE for selected OECD countries, average 1999-2003.

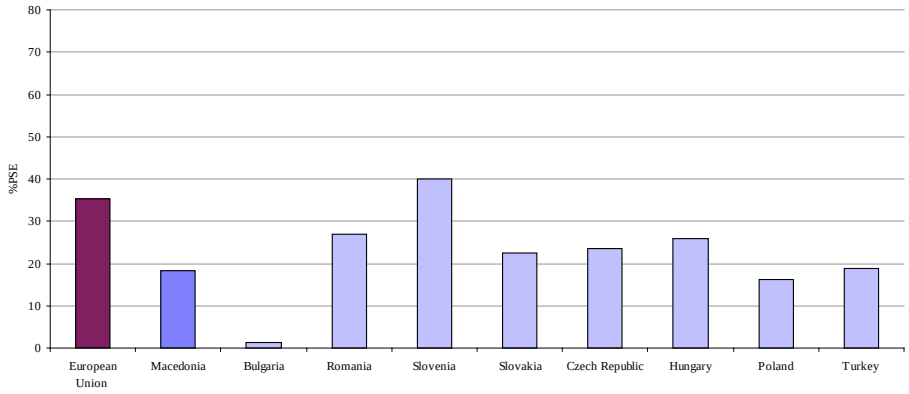


Figure 3. Agricultural support in a European perspective, %PSE average 1999-2003[6].

As shown in figure 3, most of the countries in transition of Central and Eastern Europe had moderate levels of support prior to accession to the EU. The exception is Slovenia, which is highly dependent on agri-food imports and had a level higher than the EU level. Romania, which joined the European Union together with Bulgaria at the beginning of 2007, also had a moderate level of support. Noteworthy, however, is the low level of support in Bulgaria during the period. Bulgaria, however, has a more export oriented agricultural production than most other transition countries (World Bank, 2004). With an aggregate PSE at 17 percent on average in 1999-2004, the level of support in Macedonia is considered as moderate, just slightly, lower than the level in Canada and the United States.

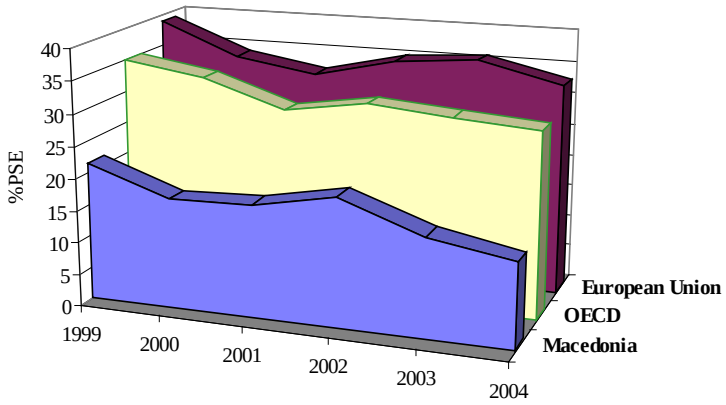


Figure 4. Aggregate percentage PSEs for Macedonia, OECD, and the EU.

[6] Since Slovenia, Slovakia, Czech Republic, Hungary, and Poland became EU-members in 2004, the figures are an average of the period between 1999 and 2003. Estonia, Latvia and Lithuania also joined the European Union in 2004. However, due to lack of data they have not been included in figure 3.

For the period under study, the level of support to agriculture in Macedonia has remained at a level lower than both OECD and EU averages (Figure 4). As can be seen in table 1, the level of support, measured by the percentage PSE in Macedonia, has been consistently lower throughout the period of 1999-2004 but has also been fluctuating during the period.

Table 1. *Aggregate percentage PSEs for Macedonia and selected countries*

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**Average 1999-03**	**Average 1999-04**
OECD	35	33	29	31	30	29	32	31
Australia	6	5	4	6	5	5	5	5
Canada	18	20	16	21	25	21	20	20
European Union	39	34	32	35	36	33	35	35
Iceland	67	61	57	67	68	63	64	64
Japan	60	60	56	58	59	58	59	59
Korea	65	67	62	65	61	63	64	64
Mexico	18	24	19	26	19	12	21	20
New Zealand	2	1	1	2	2	2	2	2
Norway	72	67	67	74	71	67	70	70
Switzerland	75	72	70	73	71	68	72	72
Turkey	22	21	3	20	28	25	19	20
United States	26	24	22	18	15	16	21	20
Non OECD								
Russia	8	5	9	9	1	n/a	6	n/a
Ukraine	-3	-2	4	-5	1	n/a	-1	n/a
CEEC								
Slovakia	26	25	16	21	25	EU	23	n/a
Czech Republic	23	17	23	25	29	EU	23	n/a
Hungary	24	22	22	33	28	EU	26	n/a
Poland	27	12	15	19	8	EU	16	n/a
SEEC								
Bulgaria	-1	-1	-2	3	9	11	1	3
Romania	22	18	34	37	24	28	27	27
Slovenia	47	36	37	39	42	EU	40	n/a
Macedonia	22	17	17	20	16	13	18	17

As indicated by figure 5, most of the fluctuations in the level of support to Macedonian farmers can be explained by similar fluctuations in the market price support. Since Macedonia was granted candidate status by the EU in December 2005 and actively pursues the goal of becoming a member, it is expected that Macedonia will move towards the support level of the EU in the medium to long run. Given the composition of the agricultural support in the EU, such anticipation to a higher level of support is expected to be due to increasing levels of budgetary support mainly and not due to a widening gap between domestic and border prices, *i.e.*, a higher MPS. In addition, given Macedonia's obligations to the WTO, one would also expect a gradually decreasing market price support. From 1999 to 2004, there was a decrease in the level of MPS and the level of aggregate producer

support is substantially lower in 2004 yet the market price support continues to represent the bulk of the producer support.

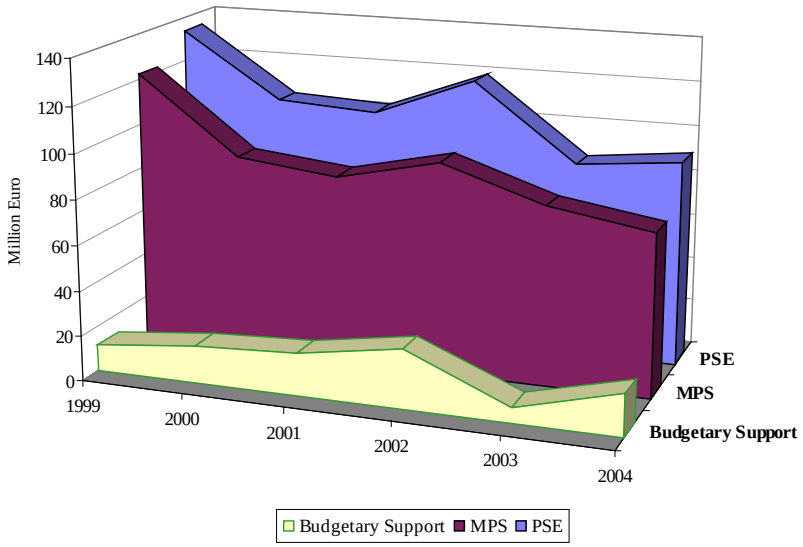


Figure 5. Aggregate PSE, MPS and Budgetary Support in Macedonia.

Composition of PSE

It is not just the level of support that matters, the composition is equally important. As is shown in table 2, MPS, which on average stood for 85 percent of the producer support in 1999-2004, is the major determinant of support to agriculture in Macedonia. The creation of a wedge between the domestic and the border prices is thus the principal tool when supporting agriculture in Macedonia.

Table 2. *Composition of Producer Support Estimate, in percent*

	1999	2000	2001	2002	2003	2004	Ave.
Producer Support Estimate	100	100	100	100	100	100	100
Market Price Support	**91**	**84**	**82**	**78**	**92**	**79**	**85**
Budgetary Support	**9**	**16**	**18**	**22**	**8**	**21**	**15**
⇒ output	4	7	6	16	2	3	6
⇒ area planted/animal numbers	1	0	0	0	1	4	1
⇒ historical entitlements	0	0	0	0	0	0	0
⇒ input use	4	8	12	6	5	14	8
⇒ input constraints	0	0	0	0	0	0	0
⇒ overall farm income	0	0	0	0	0	0	0
⇒ miscellaneous	0	0	0	0	0	0	0

As a middle-income country in transition with an economic standard as measured by the PPP per capita GNI of about one-fourth the EU-15 level (Pelling, 2007), it is not surprising that the budgetary support to agriculture in Macedonia is relatively

small, representing 15 percent on average of the total support. There is simply a limited amount of funds. The large share of market price support is striking from an international perspective. Macedonia has a much larger share of market price support and a far smaller share of budgetary support than the case in the European Union and compared to the OECD average. Among countries in transition, however, the composition may not be that different. Macedonia's neighbor and one of EU's most recent members, Romania for instance, did have a similar composition with a high reliance of MPS and budgetary transfers based mainly on output or the use of inputs between 1999 and 2004. Bulgaria had a much lower level of PSE relative to Macedonia during the period and even a negative level for some years but the composition is similar (OECD, 2007c)

The budgetary support is expected to increase and the market price support to decrease over time as Macedonia strives for EU-accession and fulfills its commitments to the WTO.

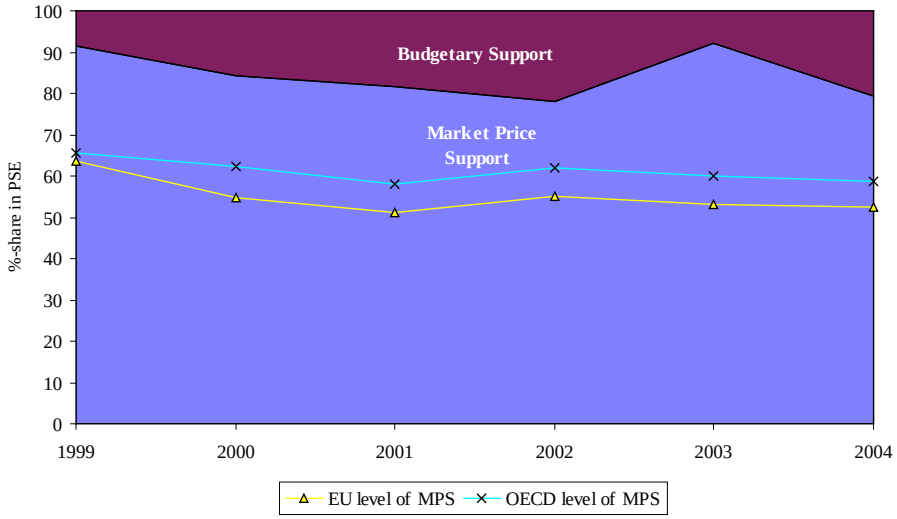


Figure 6. Composition of producer support in Macedonia relative to the EU and OECD, 1999-2004.

A closer look at the MPS and budgetary support - the two components of the PSE - reveals their determinants in Macedonia (Table 2). None of the commodities covered are facing output restrictions. Market price support (MPS) is thus based on unlimited output. Consumers finance most of the market price support but there are also some contributions from taxpayers in the form of explicit and implicit export subsidies mainly (OECD, 2002). Budgetary support in Macedonia is mainly carried out as payments based on current output and as payments based on farm use of inputs. However, from 2003 onwards, payments based on area planted or animal numbers become increasingly important at the expense of output subsidies, contributing 1 percent in 2003 and 4 percent in 2004. This change reflects the introduction of hectare payments for maize, barley, grapes; and headage payments for sheep and pigs.

Market price support and payments based on output and/or use of inputs are considered by the OECD as the most trade distorting forms of support since they have a direct impact on production decisions and limit the influence of the world-market forces on domestic prices (*e.g.*, Cahill & Legg, 1990, and OECD, 2002). The composition of Macedonia's producer support can be considered trade-distorting in a way since MPS is the major form of support and budgetary transfers are based mainly on output and/or input use. As shown in table 3, the combined share of trade distorting policy measures in Macedonia was 99 percent during the period 1999-2004. That is significantly higher than the corresponding share in the EU (67 percent) and higher than the average for OECD countries (76 percent). As mentioned earlier, the composition of Macedonia's support is similar to that of Bulgaria and Romania. Macedonia's combined share of trade distorting policy measures, however, is higher than in Slovenia and in Turkey.

Table 3. *Combined Share of Trade Distorting Policy Measures, in percent 1999-2004*

Macedonia	99
Slovenia[7]	83
Bulgaria[8]	100
Romania	98
Turkey	89
Norway	76
European Union	67
United States	65
New Zealand	99
OECD	76

3.2 Consumer Support Estimate

The support agricultural producers receives must be paid by someone. To the extent producers are supported through higher producer prices, consumers will bear this burden since higher producer prices normally are translated into higher consumer prices. A positive market price support can therefore be seen as an implicit tax on consumers, which is equal to the extra amount paid by consumers relative to border prices. A positive producer support (PSE) thus, results in a negative consumer support (CSE). Consumers themselves might receive support in the form of consumer subsidies. If these subsidies are large enough to offset the implicit tax, the consumer support estimate will be positive and taxpayers will bear the burden of support instead.

Table 4. *Aggregate percentage PSEs and CSEs for Macedonia*

	Percentage PSE	Percentage CSE
1999	22	-23
2000	17	-17
2001	17	-15
2002	20	-17
2003	16	-14
2004	13	-13
Average	17	-16

Starting at -23 percent in 1999, as is shown in table 4, the CSE has been decreasing, although fluctuating during the period. In 2002 it peaked at -28 percent

[7] The combined share of trade distorting policy measures for Slovenia is an average of 1999-2003.

[8] The combined share of trade distorting policy measures for Bulgaria is for 2003. Due to negative MPS some years the average for 1999-2004 is -2.

but the CSE then fell back to its 2001 level of -22 percent at the end of the period. The CSE was -16 percent on average. Under the period of study, there were no consumer subsidies for agricultural products in Macedonia. Figure 7 reveals that the agricultural support in Macedonia led to an implicit taxation of consumers that was lower than both the OECD-average and the level in the European Union.

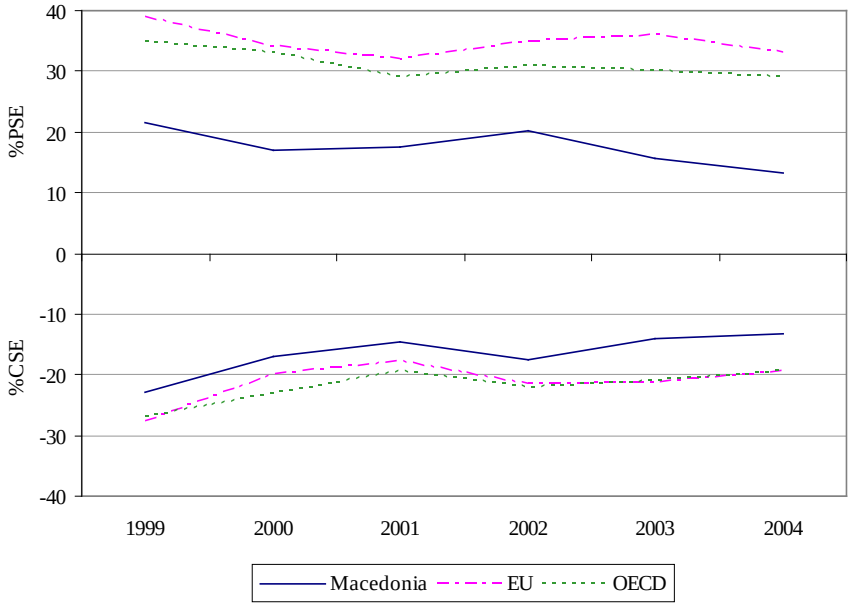


Figure 7. Aggregate Percentage CSEs (below) and PSEs (above) for Macedonia, the EU, and OECD.

Composition of CSE

The major determinant of consumer support in Macedonia is market transfers from consumers to producers related to the consumption of both domestically produced and imported agricultural commodities. Many commodities, however, are net-imported and since some of them receive market price support other transfers from consumers explain a substantial share of the consumer support. The CSE is negative since there are no direct transfers to consumers that compensate for the price wedge between domestic and border prices created by the MPS, and the adjustment made due to feed costs plays only a minor role in the composition of CSE.

Table 5. *Composition of Consumer Support Estimate, in percent*

	1999	2000	2001	2002	2003	2004	Ave.
Consumer Support Estimate	100	100	100	100	100	100	100
Transfers to producers from consumers	85	78	84	72	76	83	80
Other transfers from consumers	22	26	22	32	30	23	26
Transfers to consumers from taxpayers	0	0	0	0	0	0	0
Excess feed cost[9]	-7	-4	-5	-5	-6	-6	-6

3.3 General Services Support Estimate

The agricultural sector can also be supported as a group. These transfers are reflected in the General Services Support Estimate (GSSE) and include support to research and development, agricultural training and education, inspection services, off-farm infrastructure, marketing and promotion, public stock-holding of agricultural products and other measures (see Annex C for more details).

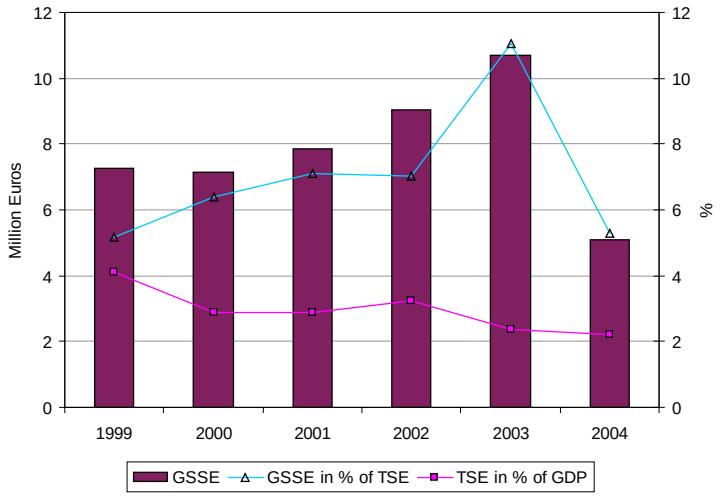


Figure 8. GSSE over time, 1999-2004.

Support for general services to agriculture has been increasing in monetary terms during most of the period but there was a sharp drop in 2004. As shown in figure 8, the share of GSSE in TSE also decreased in 2004, whereas total transfers relative to GDP remained stable.

[9] To avoid double counting any MPS on crops produced domestically and consumed by livestock producers is deducted from the CSE for crops and the PSE for livestock.

Composition of GSSE

Measures supporting infrastructure represents the bulk of the general services provided to agriculture in Macedonia and stood for 69 percent, on average, of the overall GSSE during the period. The average share for inspection services in total GSSE was 16 percent, and the share for research and development was 8 percent (Table 6). It is noticeable that only 1 percent of GSSE was directed towards marketing and promotion, and that agricultural schools receive, on average, even less than that. Costs associated with the public stockholding of agricultural products are recorded for 2004 only. Such results, however, should be interpreted with caution since no figures on secondary and tertiary agricultural education are included and since most figures on public stockholding are classified due to national security reasons and thus are not included in the estimation.

Table 6. *Composition of GSSE, 1999-2004*

	1999	2000	2001	2002	2003	2004	Ave.
General Services Support Estimate (GSSE)	**100**	**100**	**100**	**100**	**100**	**100**	**100**
I. Research and development	0	10	15	13	8	5	8
J. Agricultural schools	0	0	0	2	1	0	0
K. Inspection services	0	22	16	19	14	24	16
L. Infrastructure	100	61	61	59	71	62	69
M. Marketing and promotion	0	1	1	1	1	1	1
N. Public stockholding	0	0	0	0	0	3	1
O. Miscellaneous	0	6	6	6	5	5	5
GSSE in percentage of TSE	5.2	6.4	7.1	7.0	11.0	5.3	7.0

As indicated by figure 9, the share of GSSE in total support varies a lot across countries and Macedonia lies well below the OECD-average and countries such as New Zealand and the United States, and lower than the European Union.

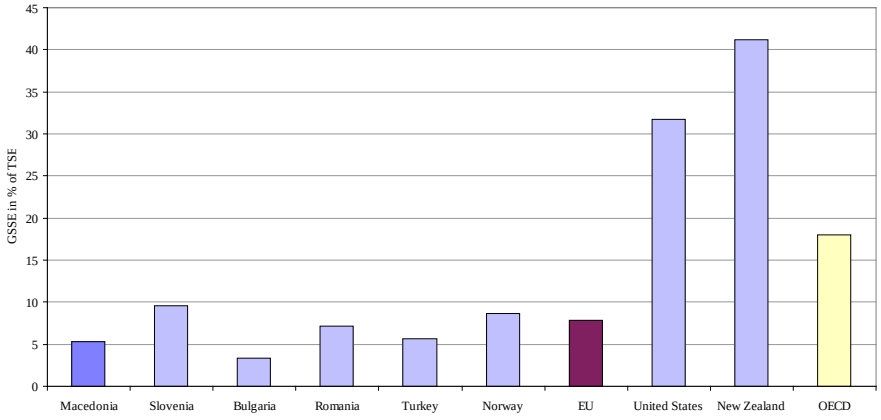


Figure 9. General Services Support Estimates by country in percentage of TSE, 2004.

A comparison between the composition of GSSE in Macedonia, OECD and the European Union is striking. As can be seen from figure 10, Macedonia dedicates a much larger share on infrastructure and inspection services than the case in both OECD and the European Union but less on marketing and promotion, agricultural schools, and public stockholding.

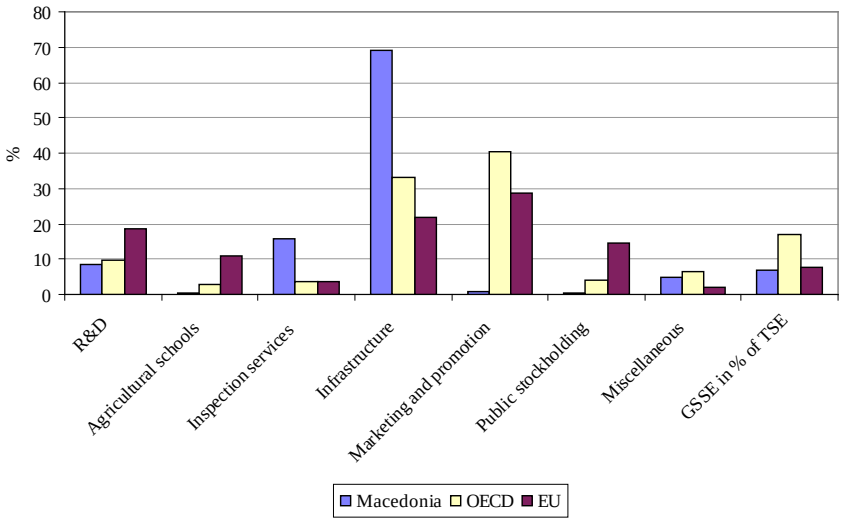


Figure 10. Composition of GSSE in Macedonia and the EU, average 1999-2004.

The larger share of infrastructure in the GSSE is explained by the relatively poor situation in Macedonia on this matter. The support measures to infrastructure during the period are almost entirely related to rural development and water management, where substantial foreign donations or investments aim at restoring irrigation systems important to agricultural production. A large part of the inspection services has to do with animal welfare, which has received a lot of attention lately because of the need to conform to EU regulations (European Community, 2008). Due to lack of information, the data regarding the category ″agricultural schools″ includes only measures such as education for farmers on veterinary medicine, publishing of brochures, and staff training for particular projects. As mentioned earlier, it does not include expenses on agricultural schools and universities. These expenditures should be part of GSSE but their total amounts need to be adjusted by the proportion of the graduated students who are ending up in agriculture. A simulation, whereby available data[10] on actual expenditures on agricultural education in 2001-2004 are included unadjusted indicates that the GSSE as well as the share of agricultural schools and universities in total GSSE would increase. Macedonia, however, would still devote fewer resources to GSSE relative to the EU and OECD as measured by its share in total support to agriculture (TSE).

[10] The data regards the actual expenditures of the Faculty of Agricultural Sciences and Food, Faculty of Forestry, Faculty of Biotechnical Sciences Bitola, and the Veterinary Faculty (World Bank, 2006, p. 88).

3.4 Total Support Estimate

Total support to agriculture is measured by the total support estimate (TSE), which consists of support to producers (PSE), general services to agriculture (GSSE) and transfers from taxpayers to consumers. On average total transfers to agriculture in Macedonia amounted to 2.9 percent of Macedonia's GDP. Given that Macedonia spends relatively small amounts on budgetary support to agriculture this might seem a surprisingly high share but note that MPS, which stood for the greater part of the producer support is included in this figure. Macedonia's share of total transfers in GDP is substantially higher than both the OECD average (1.2) and the EU average (1.3) for the same period. The relative burden on consumers and taxpayers due to policy measures that support agriculture is thus greater in Macedonia. The greater cost of agricultural support to the economy is explained by the economic importance of agriculture in Macedonia and the fact that agriculture thus contributes relatively more to the GDP.

Table 7. *Indicators and composition of total support to Macedonian agriculture*

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**Ave.**
Total Support Estimate (TSE)							
Million MKD	8549	6797	6719	7863	5932	5899	6960
Million USD	150	103	99	122	110	120	117
Million Euro	141	112	110	129	97	96	114
TSE as share of GDP, percent	4.1	2.9	2.9	3.2	2.4	2.2	2.9
Composition of TSE, percent							
Total Support Estimate (TSE)	100	100	100	100	100	100	100
Producer Support Estimate (PSE)	94.8	93.6	92.9	93.0	89.0	94.7	93.0
- *Market Price Support*	86.6	78.9	76.0	72.7	81.9	75.3	78.6
- *Budgetary Support*	8.2	14.7	16.9	20.3	7.1	19.4	14.4
General Services (GSSE)	5.2	6.4	7.1	7.0	11.0	5.3	7.0
Transfers to Consumers from Taxpayers	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Composition of TSE

Producer support (PSE) on average stood for more than 93 percent of TSE in Macedonia in 1999-2004. Support for general services (GSSE) made up the whole difference as there were no direct consumer subsidies during the period. The general services provided to agriculture regarded mainly infrastructure, inspection services, and R&D.

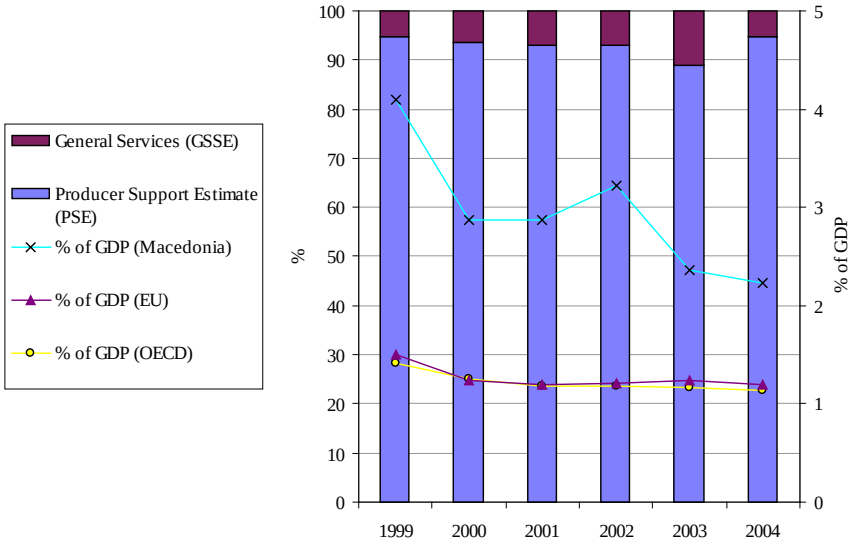


Figure 11. Composition of total support estimate in percent and as share of GDP, 1999-2004.

4. Commodity Profile of Producer Support

4.1 Distribution of Producer Support across Commodities

For the individual commodities and for commodity groups, the level of support differs from the previously described results. The distribution of support in monetary terms across commodities in Macedonia is uneven and varies substantially from one year to another. The main part of the producer support goes to livestock producers. Producers of cow milk, sheep cheese, pig meat, and sheep meat were the main beneficiaries but producers of beef and eggs also receive substantial shares.

Table 8. *Distribution of producer support by commodities, in percent*

	1999	2000	2001	2002	2003	2004	Ave.
Crops	**42**	**36**	**29**	**38**	**29**	**38**	**35**
Wheat	29.9	29.9	22.0	23.2	17.7	25.7	24.7
Maize	5.2	1.7	0.9	0.1	8.2	4.9	3.5
Barley	5.6	3.1	3.7	4.0	1.8	3.8	3.7
Rice	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Potatoes	0.2	0.2	0.5	0.5	0.3	1.1	0.5
Cucumbers	0.0	0.4	0.1	0.1	0.1	0.3	0.2
Alfalfa	0.1	0.1	0.2	0.1	0.1	0.5	0.2
Apples	0.1	0.1	0.1	0.1	0.1	0.3	0.1
Grapes	0.4	0.6	1.0	3.6	0.6	1.6	1.3
Tobacco	0.2	0.2	0.5	6.3	0.1	0.3	1.3
Livestock	**58**	**64**	**71**	**62**	**71**	**62**	**65**
Cow Milk	16.4	19.4	21.0	15.6	22.3	9.9	17.4
Sheep Cheese	11.8	18.6	17.5	15.7	23.0	18.4	17.5
Beef and Veal	2.1	2.2	3.8	5.7	12.1	1.5	4.6
Pig meat	8.0	9.0	8.4	9.1	5.7	5.5	7.6
Sheep meat	6.4	13.6	18.9	9.8	7.7	13.7	11.7
Eggs	13.4	0.7	1.4	6.0	0.3	12.6	5.8
All commodities	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Crop products accounted only for 35 percent of total producer support between 1999 and 2004 and wheat producers received the bulk of this. Barley and maize, which are used as feed grains mainly, was given less than 4 percent of total producer support each, and grapes and tobacco, which are important export products, obtained around 1 percent each.

4.2 Level of Support by Commodities

According to figure 12 and data presented in table 9, the level of support to producers, as measured by the percentage PSE, is higher for livestock producers. On average, they received 28 percent of their farm receipts in the form of support during the period 1999 to 2004, whereas crop producers received only 11 percent.

Cow milk, pig meat, sheep meat, sheep cheese, and eggs all on average had percentage PSEs above 20 percent during the period. Among crop products, only wheat enjoyed a similar level of support.

Table 9. *Percentage PSE by commodity, 1999-2004*

	1999	2000	2001	2002	2003	2004	Average
Crops	**15**	**11**	**9**	**14**	**8**	**9**	**11**
Wheat	49	39	35	40	28	26	36
Maize	23	8	4	0	23	16	12
Barley	33	15	20	20	10	12	18
Rice	1	1	1	1	1	2	1
Potatoes	1	1	1	1	0	2	1
Cucumbers	1	3	1	1	0	2	1
Alfalfa	1	1	1	1	0	2	1
Apples	1	1	1	1	0	2	1
Grapes	1	1	2	11	1	2	3
Tobacco	0	0	1	11	0	0	2
Livestock	**33**	**26**	**29**	**30**	**26**	**21**	**28**
Cow Milk	26	23	27	24	25	11	23
Sheep Cheese	39	45	37	37	40	35	39
Beef and Veal	11	10	20	27	36	5	18
Pig meat	29	30	30	30	16	18	26
Sheep meat	56	56	57	41	19	27	43
Eggs	55	2	4	25	1	38	21
All commodities	**22**	**17**	**17**	**20**	**16**	**13**	**17**

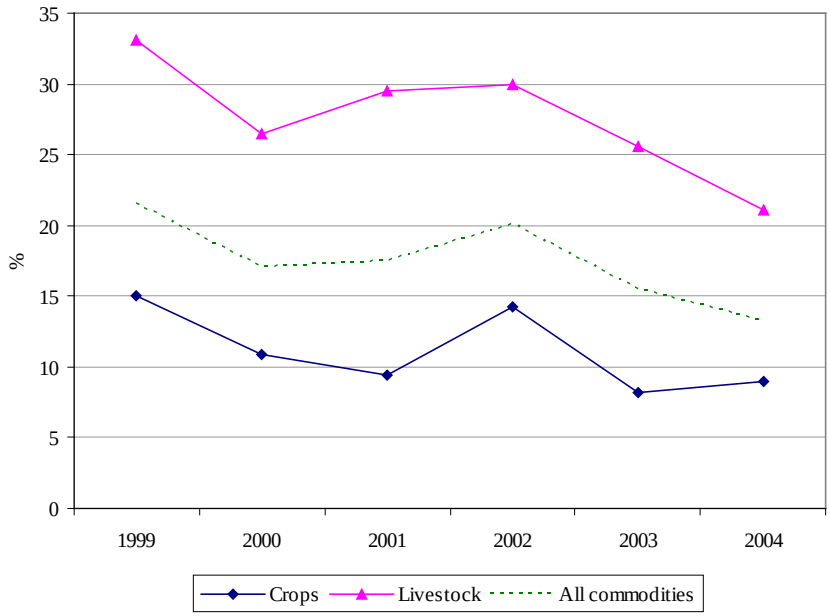


Figure 12. Percentage PSE for crops and livestock, 1999-2004.

As mentioned earlier, Macedonia on aggregate had a lower level of support than in the European Union and the OECD average. Among individual commodities, however, there is one exception, as shown in figure 13, the level of support to egg producers in Macedonia surpass both the OECD-average and the level in the European Union.

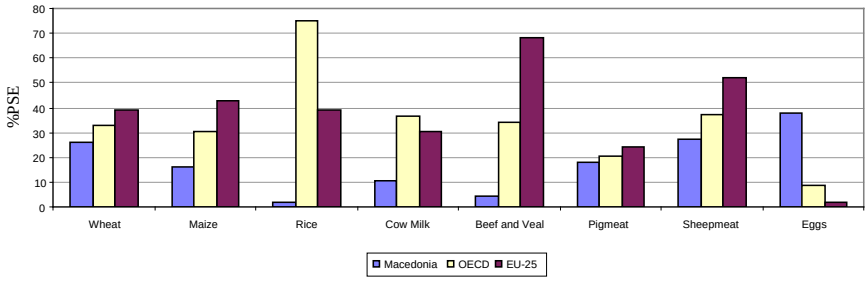


Figure 13. Percentage PSE for selected commodities in Macedonia, OECD, and the EU[11], 2004.

Given the importance of MPS in the PSEs for the various commodities, a closer look at the percentage MPS by commodity in table 10 provides no surprising results. Livestock products in most cases receive considerably higher rates of

[11] The data for OECD and the EU are provisional figures from "Producer and Consumer Support Estimates, OECD Database 1986-2004". From this date the OECD Database ceased to include PSEs per commodity.

market price support compared to crops. The exception is wheat that benefited from a guaranteed price and other policy measures restricting imports and raising its price.

Table 10. *Percentage MPS*[12] *by commodity, 1999-2004*

	1999	2000	2001	2002	2003	2004	Average
Wheat	41	26	22	23	22	21	26
Maize	22	7	2	-1	22	12	11
Barley	32	14	19	19	8	6	16
Rice	0	0	0	0	0	0	0
Potatoes	0	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0	0
Alfalfa	0	0	0	0	0	0	0
Apples	0	0	0	0	0	0	0
Grapes	0	0	0	0	0	0	0
Tobacco	0	0	0	0	0	0	0
Cow Milk	24	21	22	21	24	7	20
Sheep Cheese	35	42	33	35	38	30	35
Beef and Veal	8	7	14	25	35	1	15
Pig meat	26	27	25	28	15	14	22
Sheep meat	52	53	52	39	17	21	39
Eggs	52	0	0	23	0	34	18

The budgetary support by commodities includes both commodity specific payments and more general payments that benefit groups of commodities. The latter have been allocated to the various commodities according to their output-value shares. Table 11 lists the budgetary support for each of the 16 commodities that are analyzed in this report.

[12] The percentage MPS is measured as a share of total gross farm receipts. It is not directly comparable to the percentage price gap, which is measured as the price differential between the producer and reference price as a share of the reference price.

As shown in table 11, crop producers, which on aggregate received 62 percent of the budgetary transfers, received more budgetary support than livestock producers (38 percent) did. The greater part of the budgetary support attributed to crops, however, regards wheat (38 percent) and to a lesser extent grapes (7 percent) and tobacco (8 percent) whereas the budgetary support to livestock producers was more evenly distributed. In terms of budgetary support 2002, which was a election year, is an outlier. The amount of budgetary support to crop producers more than doubled in absolute values this year and decreased as drastically the following year. In relative terms, crop producers received 81 percent of the total budgetary support in 2002. That was an all time high for the period of study.

According to the producer nominal protection coefficients (NPC) shown in figure 14, crop producers on average receive a price 15 percent higher than the border price, whereas livestock producers on average obtain a price 42 percent higher than the border price. Among the products for which MPS has been calculated, sheep meat, sheep cheese, and wheat receive a price more than 50 percent higher than the border price.

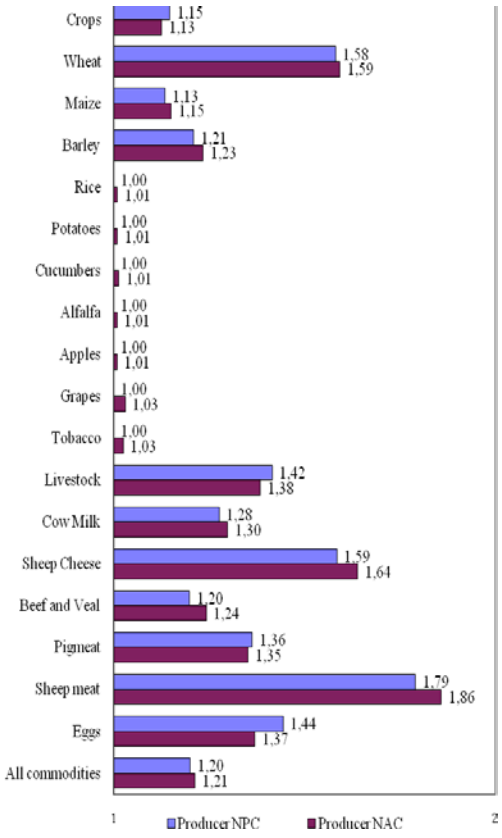


Figure 14. Producer NPC and Producer NAC by commodity, 1999-2004 average

None of the 16 agricultural commodities included in this study have a NPC less than unity but all the commodities for which MPS is assumed zero have NPCs equal to 1.00 which is expected and would indicate that there are no policies creating a price gap. As pointed out by the World Bank (2003), a NPC above 1.00 indicates that the commodity in question is not competitive on international markets.

Table 11. *Budgetary Support by commodities (million Denar), 1999-2004*

	1999		2000		2001		2002		2003		2004		Ave.	
Crops	362	*(56)*	537	*(68)*	519	*(50)*	1175	*(81)*	217	*(55)*	506	*(49)*	553	*(62)*
Wheat	287	*(45)*	447	*(57)*	381	*(37)*	546	*(37)*	150	*(38)*	206	*(20)*	336	*(38)*
Maize	8	*(1)*	6	*(1)*	17	*(2)*	19	*(1)*	6	*(2)*	48	*(5)*	17	*(2)*
Barley	6	*(1)*	6	*(1)*	10	*(1)*	11	*(1)*	18	*(5)*	83	*(8)*	22	*(3)*
Rice	2	*(0)*	2	*(0)*	1	*(0)*	2	*(0)*	1	*(0)*	3	*(0)*	2	*(0)*
Potatoes	11	*(2)*	10	*(1)*	23	*(2)*	28	*(2)*	10	*(2)*	46	*(5)*	21	*(2)*
Cucumbers	3	*(0)*	20	*(3)*	6	*(1)*	6	*(0)*	2	*(1)*	11	*(1)*	8	*(1)*
Alfalfa	5	*(1)*	5	*(1)*	9	*(1)*	8	*(1)*	3	*(1)*	19	*(2)*	8	*(1)*
Apples	4	*(1)*	4	*(1)*	3	*(0)*	6	*(0)*	2	*(1)*	11	*(1)*	5	*(1)*
Grapes	25	*(4)*	28	*(3)*	47	*(5)*	200	*(14)*	22	*(6)*	66	*(6)*	65	*(7)*
Tobacco	12	*(2)*	8	*(1)*	22	*(2)*	350	*(24)*	3	*(1)*	12	*(1)*	68	*(8)*
Livestock	280	*(44)*	253	*(32)*	512	*(50)*	284	*(19)*	175	*(45)*	518	*(51)*	337	*(38)*
Cow Milk	74	*(12)*	71	*(9)*	158	*(15)*	121	*(8)*	50	*(13)*	130	*(13)*	101	*(11)*
Sheep Cheese	65	*(10)*	50	*(6)*	93	*(9)*	46	*(3)*	44	*(11)*	120	*(12)*	70	*(8)*
Beef and Veal	37	*(6)*	30	*(4)*	49	*(5)*	24	*(2)*	16	*(4)*	46	*(5)*	34	*(4)*
Pig meat	46	*(7)*	40	*(5)*	72	*(7)*	37	*(3)*	18	*(5)*	54	*(5)*	45	*(5)*
Sheep meat	26	*(4)*	29	*(4)*	73	*(7)*	31	*(2)*	33	*(8)*	123	*(12)*	53	*(6)*
Eggs	32	*(5)*	33	*(4)*	67	*(6)*	26	*(2)*	13	*(3)*	45	*(4)*	36	*(4)*

Note: The figures in parentheses represent the average proportion (%) of budgetary support for each commodity in the crop and livestock total.

The producer's nominal assistance coefficient (NAC), which measures the degree of market orientation, gives a similar picture. As can be seen in figure 14, the average crop producer had gross farm receipts that were 13 percent higher than what they would have been if obtained at border prices, without any budgetary support. The corresponding figure for livestock producers was 38 percent. Sheep meat is the less market-oriented commodity with a NAC at 1.86. Producers of sheep cheese, and wheat also obtained gross farm receipts 50 percent higher or more. By construction, all the commodities for which MPS is assumed to be zero, however, have NACs equal to or close to 1.00, thus meaning that they are somewhat market-oriented.

The producer NPCs presented in this report and the ones estimated by the Word Bank (2003) and Van Berkum (2001) are not directly comparable but it is still worthwhile to undertake such a task since it will indicate whether the different estimates are in the same range or not. A close inspection of table 12 reveals that the producer NPCs presented in this report are similar to the NPCs from previous studies concerning wheat and maize in 1999. On the other hand, significant differences between this report's estimates and those of the World Bank occur for these two commodities in 2002. The World Bank study reports that sheep meat was sold at a price lower than the border price in 2002, whereas this report says the opposite. The figures presented by Van Berkum do indicate a important price gap for potatoes and cucumbers in 1999, whereas this report does not. Such a difference stems mainly from the fact that this study does assume a zero price gap for these two agricultural commodities.

Table 12. *Producer NPC from different sources, 1999 and 2002*

	1999		**2002**	
	This report	Van Berkum	This report	World Bank
Wheat	1.96	2.16	1.65	1.28
Maize	1.28	1.29	0.99	1.21
Potatoes	1.00	1.53	1.00	n/a
Cucumbers	1.00	1.99	1.00	n/a
Tomatoes	n/a	2.08	n/a	0.91
Apples	1.00	n/a	1.00	0.84
Grapes	1.00	n/a	1.11	< 1
Tobacco	1.00	n/a	1.12	< 1
Cow Milk	1.38	2.18	1.27	1.29
Pig meat	1.50	n/a	1.42	1.23
Sheep meat	2.19	n/a	1.66	0.82

Source: Van Berkum (2001) and World Bank (2003a)

4.3 Analysis of Support by Commodities

What follows is a detailed description of the PSE/CSE calculations for each of the included commodities. Given the importance of MPS in total producer support, special attention will be given to the price wedges created between border and domestic prices. Commodity specific PSEs, MPSs, budgetary support, and CSEs are summarized in tables 9, 10, and 11 above and in table 13 below.

In the absence of consumer subsidies that would compensate for negative consumer transfers, the levels and changes in the commodity specific CSEs shown in table 13, were the result of market transfers (transfers to producers from consumers and other transfers from consumers) and to a minor extent feed cost adjustments. Since these market transfers are equivalent to the market price support at the producer side, the CSE mirrors the variations in the MPS.

Table 13. *Percentage CSE by commodity, 1999-2004*

	1999	2000	2001	2002	2003	2004	Average
Crops	-12	-8	-5	-8	-7	-7	-8
Wheat	-41	-27	-22	-23	-21	-19	-26
Maize	-8	-3	-1	1	-11	-7	-5
Barley	-9	-3	-4	-6	-1	-1	-4
Rice	0	0	0	0	0	0	0
Potatoes	0	0	0	0	0	0	0
Cucumbers	0	0	0	0	0	0	0
Alfalfa	0	0	0	0	0	0	0
Apples	0	0	0	0	0	0	0
Grapes	0	0	0	0	0	0	0
Tobacco	0	0	0	0	0	0	0
Livestock	-33	-26	-24	-25	-20	-20	-25
Cow Milk	-28	-25	-24	-20	-16	-13	-21
Sheep Cheese	-36	-43	-34	-36	-39	-31	-37
Beef and Veal	-17	-17	-17	-17	-15	-15	-17
Pig meat	-33	-30	-28	-30	-20	-17	-26
Sheep meat	-55	-55	-40	-18	-22	0	-31
Eggs	-62	0	0	-27	0	-38	-21
All commodities	-23	-17	-15	-17	-14	-13	-16

4.3.1 Wheat

Wheat, which is net-imported, is the most important cereal produced in Macedonia, representing about 10 percent of total crop value or 7 percent of the total agricultural output value. The percentage PSE for wheat has been falling steadily from 49 percent in 1999 to 26 percent in 2004. The only exception was 2002 when the decrease stopped and reversed but it continued to fall thereafter. Wheat and tobacco are the only agricultural commodities for which producers have been given a guaranteed price during the period under study. Total budgetary support, which averaged at 336 million denars during the period, explains a substantial share of the PSE for wheat. None of the other commodities under study receives a similar amount of budgetary support.

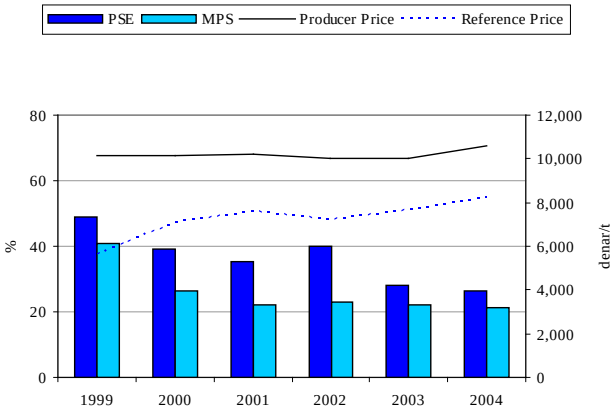


Figure 15. Percentage PSEs, Producer and Reference Prices for Wheat.

4.3.2 Maize

Maize, which also is net-imported, accounts for around 5 percent of total crop value and 3 percent of total agricultural output value. The percentage PSE fell drastically from 23 percent in 1999 to zero in 2002 but was back at 16 percent in 2004. This drop in the level of support is explained by the importance of market price support in the producer support to maize. In 2002, the reference price was higher than the producer price and the MPS, accordingly, was slightly negative that year. Total budgetary support averaged at 17 million denar but was significantly higher in 2004.

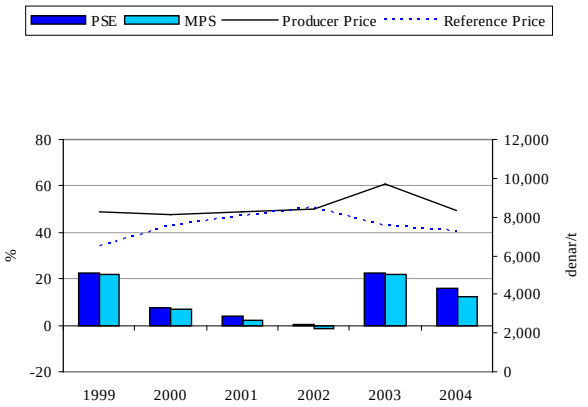


Figure 16. Percentage PSEs, Producer and Reference Prices for Maize.

4.3.3 Barley

Barley, which is net-imported, accounts for around 3 percent of total crop value and 2 percent of total agricultural output value. The producer support, as measured by the percentage PSE, has decreased from 33 percent 1999 to only 12 percent in 2004. The decrease, which is explained by the importance of market price support in total producer support, was partly offset by a sharp increase in the budgetary support. The wedge between the producer price and the border price has simply diminished. Total budgetary support was 22 million denar on average during the period under study.

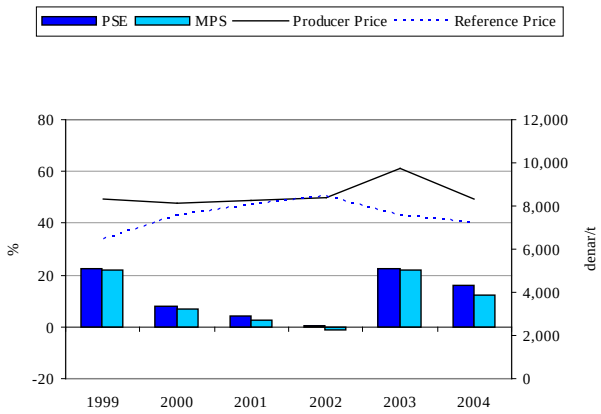


Figure 17. Percentage PSEs, Producer and Reference Prices for Barley.

4.3.4 Rice

Rice, for which Macedonia is a net exporter, accounts for around 2 percent of total crop value and 1 percent of the total value of agricultural output. Total budgetary support averaged at 2 million denar a year during the period, and MPS is assumed to be zero. The percentage PSE, thus, was 1 percent on average.

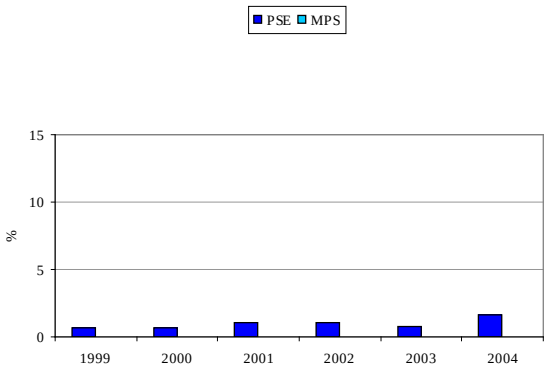


Figure 18. Percentage PSEs for Rice.

4.3.5 Potatoes

Potatoes accounts for around 8 percent of total crop value and 5 percent of total agricultural output value. Macedonia is a net exporter of non-seed potatoes but a net importer of seed potatoes. Since market price support was assumed to be equal to zero for potatoes and total budgetary support averaged at 21 million denar, the percentage PSE never reached above 1 percent.

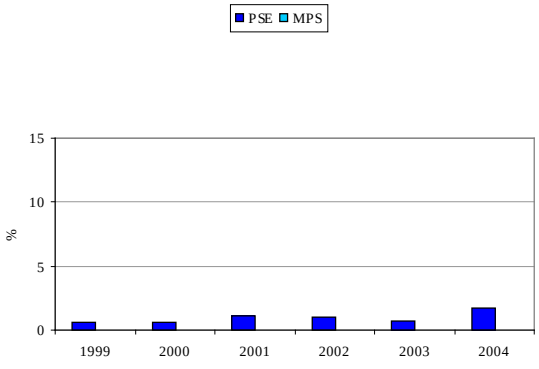


Figure 19. Percentage PSEs for Potatoes.

4.3.6 Cucumbers

Cucumbers, which are net-exported, accounts for around 2 percent of total crop value and 2 percent of total agricultural output value. With 8 million denar on average in total budgetary support and since MPS is assumed to be zero, the percentage PSE for cucumbers averaged at 1 percent during the period.

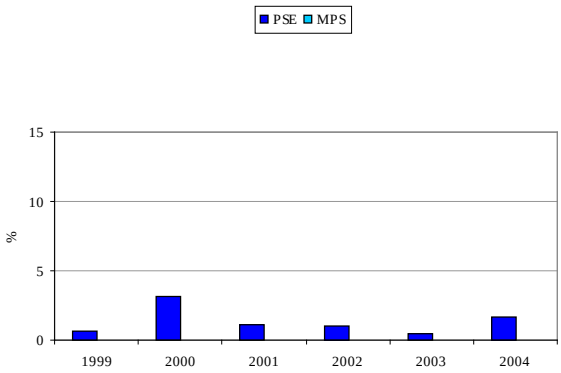


Figure 20. Percentage PSEs for Cucumbers.

4.3.7 Alfalfa

Alfalfa accounts for around 3 percent of total crop value and 2 percent of total agricultural output value. The entire domestic production of alfalfa is used domestically. With MPS assumed to be equal to zero and a total budgetary support averaging at 8 million denar during the period, the percentage PSE was small and never surpassed 1 percent.

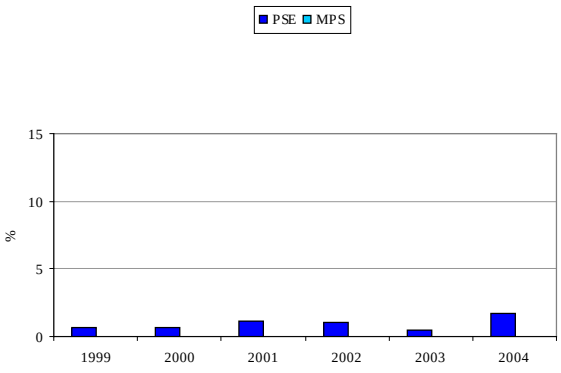


Figure 21. Percentage PSEs for Alfalfa.

4.3.8 Apples

Apples, for which Macedonai is a net exporter, account for around 3 percent of total crop value and 2 percent of total agricultural output value. The percentage PSE was 1 percent on average, originating from the total budgetary support of 5 million denar on average during the period. MPS is assumed to be equal to zero.

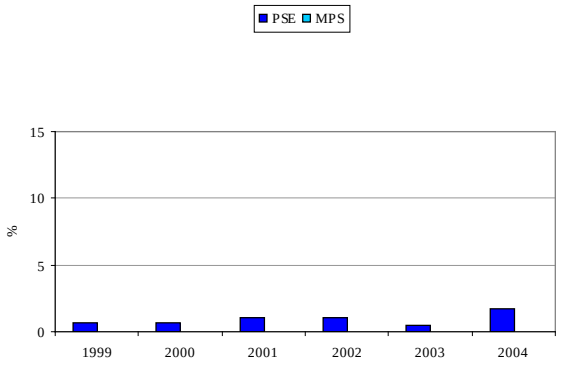


Figure 22. Percentage PSEs for Apples.

4.3.9 Grapes

Grapes account for around 13 percent of total crop value and 9 percent of total agricultural output value. Macedonia is a net exporter of these two commodities. As exports of grapes and wine were not subsidized, their MPS is assumed to be zero. Though total budgetary support, which was 65 million denar on average, was somewhat higher than for most other crop products, the percentage PSE averaged at only 3 percent. Total budgetary support more than tripled in 2002 causing the percentage PSE to peak at 11 percent but returned to a lower level already the following year. For a detailed description of the various policy measures affecting grape and wine production see also Manevska (2006).

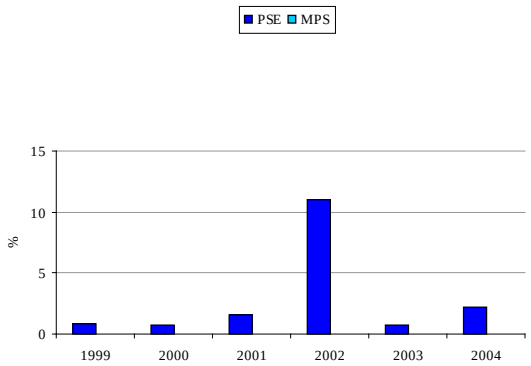


Figure 23. Percentage PSEs for Grapes.

4.3.10 Tobacco

Tobacco, which is net-exported, accounts for around 10 percent of total crop value and 7 percent of total agricultural output value. Producers of tobacco were entitled to a guaranteed price during the period (Tuna, 2006), which should justify the existence of MPS. However, MPS for this commodity is assumed to be zero because it has been impossible to find a suitable reference price. Total budgetary support was 68 million denar on average but since MPS is assumed to be zero, the percentage PSE was only 2 percent on average. With the exception of 2002 the percentage PSE was close to or below 1 percent. Total budgetary support, however, boomed in 2002, causing the percentage PSE to peak at 11 percent. Budgetary support fell to an all time low the next year, causing the percentage PSE to diminish.

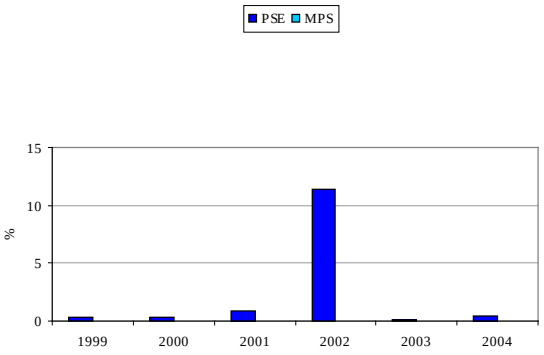


Figure 24. Percentage PSEs for Tobacco.

4.3.11 Cow Milk

Macedonia is a net importer of cow milk. The domestic production accounts for around 32 percent of total livestock production and 10 percent of the total value of agricultural output. Total budgetary support to producers of cow milk averaged at 101 million denar during the period. It was the market price support, however, that dominated the evolution of the producer support. In 1999, the producer support stood for 26 percent of farm receipts. It decreased the following years but peaked at 27 percent in 2001 before it ended at 11 percent in 2004.

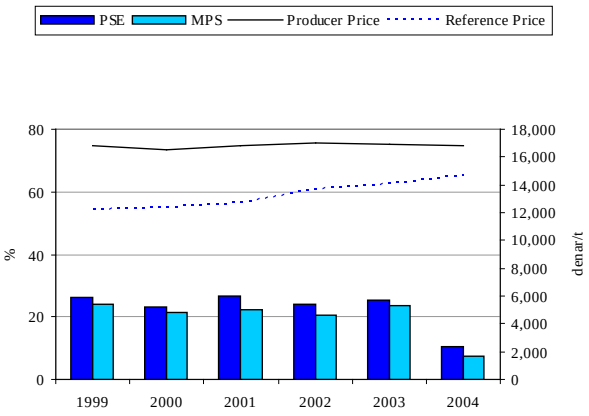


Figure 25. Percentage PSEs, Producer and Reference Prices for Cow Milk.

4.3.12 Sheep Cheese

Surprisingly, Macedonia is a net importer of sheep cheese. Sheep milk, which mainly is used to make cheese, accounts for 15 percent of total livestock production and 5 percent of the total value of agricultural output. Producers of sheep cheese received 39 percent of their farm receipts in support during the period. The percentage PSE peaked at 45 percent in 2000 but was lower in 2004 than in 1999. Total budgetary support was 70 million denar on average but fluctuated during the period, which ended with a nearly tripled budget of 120 million denars in 2004. The size of the market price support was the decisive factor in the evolution of the producer support.

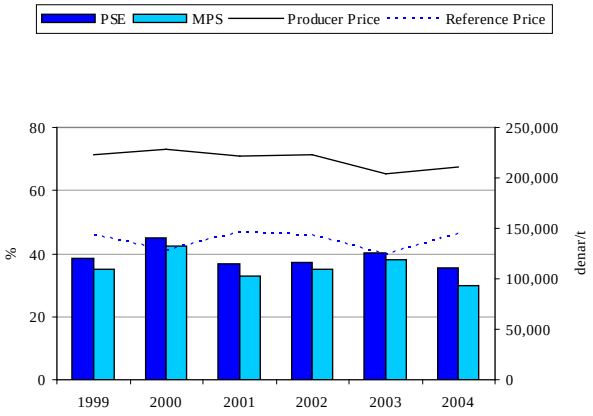


Figure 26. Percentage PSEs, Producer and Reference Prices for Sheep Cheese.

4.3.13 Beef and Veal

Beef, a net-imported commodity, accounts for 10 percent of total livestock production and 3 percent of the total value of agricultural output. The percentage PSE peaked at 36 percent in 2003 but was 18 percent on average during the period. Total budgetary support averaged at 34 million denar.

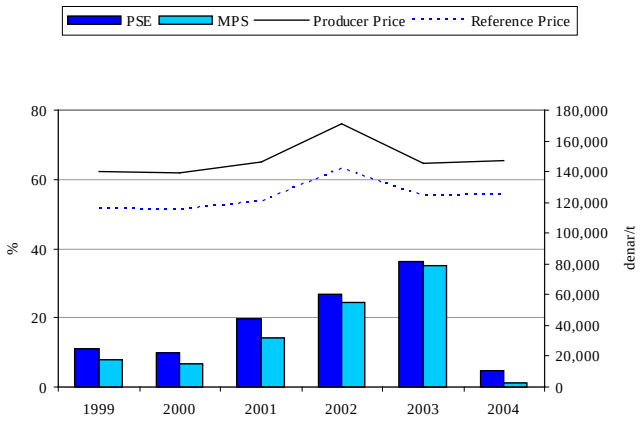


Figure 27. Percentage PSEs, Producer and Reference Prices for Beef and Veal.

4.3.14 Pig meat

Macedonia is a net importer of pig meat. Domestic production represents 13 percent of total livestock production and 4 percent of the total value of agricultural output. Producers of pig meat received 29 percent of their farm receipts in support in 1999 fluctuated thereafter and was down to 26 percent in 2004. Total budgetary support was 45million denar on average.

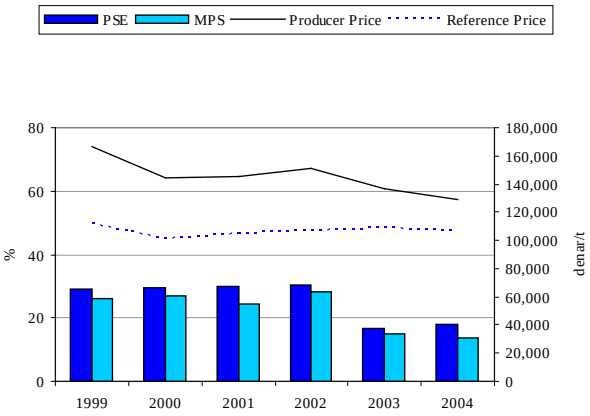


Figure 28. Percentage PSEs, Producer and Reference Prices for Pig meat.

4.3.15 Sheep meat

The domestic production of sheep meat represents about 10 percent of total livestock production and around 3 percent of the total value of agricultural output. Various statistical sources (FAOSTAT, SSO, COMTRADE) indicate a contrasting picture on Macedonia's trade flows of sheep meat. On one hand, this country seems to be a net importer of mutton, whereas lamb is net-exported. On aggregate, however, Macedoina is a net exporter of sheep meat since lamb represents about half or more of the total sheep meat production and stood for almost all the exports. This trade situation characterizing the sheep meat sector in Macedonia implies that the support enjoyed by sheep producers differs, depending upon the two sheep meat products. Thus concerning the former, MPS will correspond to a typical importer's price gap corresponding to import duties and tariff quotas13 (see Table F3 in annex) while for lamb, the price gap between domestic and border prices would reflect the existence of an export subsidy on surplus lamb until 2002. Sheep producers received, on average, 43 percent of their farm receipts in support during the period. Total budgetary support was 53 million denar on average. Given that lamb is one of Macedonia's traditional export commodities, this rate of support is rather high. MPS stands for most of the support to sheep producers.

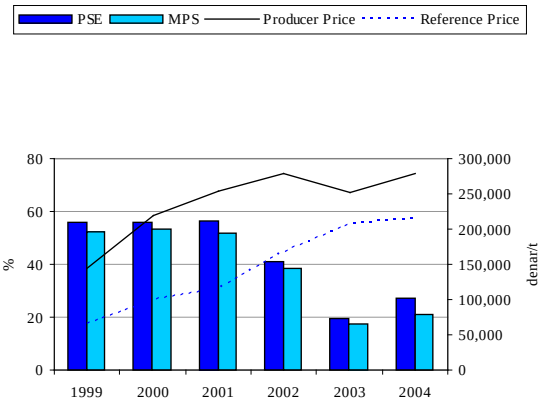


Figure 29. Percentage PSEs for Sheep meat.

[13] Concerning mutton, a 40% import tariff was in effect during the period 1999-2004.

4.3.16 Eggs

The domestic production of eggs represents around 11 percent of total livestock production and about 3 percent of the total value of agricultural output. Macedonia experienced repetitive switching net trade positions during the period of study. Hence, it was a net importer of eggs in 1999, 2002 and 2004 but was a net exporter in 2000, 2001 and 2003. Since there was no export subsidy or any other policy measure in effect that could justify the existence of MPS during the years where Macedonia was a net exporter, we assume that MPS is equal to zero in 2000, 2001 and 2003. On the other hand, MPS for eggs was calculated for the other years when Macedonia was a net importer of eggs. Total budgetary support to producers of eggs was on average 36 million denar during the period 1999-2004, Producers received 55 percent of their farm receipts in support in 1999, dipped to single digit levels during years with no MPS and rose to 38 percent in 2004.

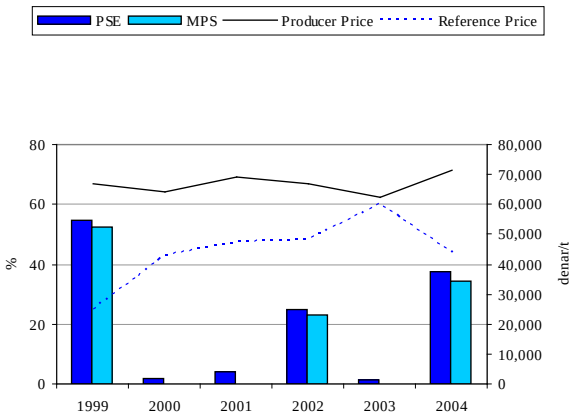


Figure 30. Percentage PSEs, Producer and Reference Prices for Eggs.

5. Conclusions

Macedonia's agricultural policy faces substantial changes ahead. What the outcome of the current round of trade negotiations, the so-called Doha round will be, is hard to predict but agriculture is indeed one of the hottest topics in the negotiations. As member of the WTO, Macedonia will have to comply with further cuts in trade barriers if that is demanded. This is true regardless of whether Macedonia joins the EU or not. Accession to the EU, however, will have a deeper impact. EU is something more than just a free trade area and do not only affect tariffs and other barriers to trade but as a future member, Macedonia will be part of a customs union, a common market, and perhaps also an economic and monetary union with a single currency. In the customs union, Macedonia will have to adapt to a common trade policy and scrap trade barriers against other EU members. The common market includes a common agricultural policy (CAP) and the free movement of goods and services, as well as of capital, labor, and other factors of production. Further institutional and policy harmonization will be required within the economic and monetary union. It is thus not an easy task to assess the consequences of accession. It will certainly open up for imports from other EU countries and provide complete access for Macedonian exports to the same. But it may also shut former trade partners out as Macedonia adopts the common trade barriers of the EU. In addition, Macedonia will no longer benefit from the preferential treatment Macedonia currently enjoys under the current trade agreement with the EU. Membership may thus boost trade with other EU members but it may also shrink trade with non-members. It is therefore, by no means, certain that Macedonia will be able to increase or even maintain its net exports as competition increases.

Finally, some words of caution

Since MPS is so much important in the support to agricultural producers in Macedonia, the estimates presented in this report are somewhat sensitive to the choice of producer and reference prices. Better estimates of the different handling margins, for instance, may improve the results on MPS. All along, data issues have been the main and recurrent problem of this study and more reliable estimates of Macedonia's agricultural support will be attained with more accurate and better statistical information on prices, production and consumption of agricultural commodities.

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Annex A: Estimates of Support to Agriculture

FYR Macedonia: Estimates of support to agriculture (MKD million)

	1999	2000	2001	2002	2003	2004
Total value of production (at farm gate)	**36,893**	**36,269**	**34,531**	**34,786**	**33,560**	**41,168**
Of which MPS commodities (%)	69	70	71	71	71	70
Total value of consumption (at farm gate)	**41,590**	**40,732**	**37,212**	**40,982**	**37,878**	**44,360**
Producer Support Estimate (PSE)	**8,108**	**6,362**	**6,242**	**7,312**	**5,277**	**5,587**
Market price support	**7,403**	**5,364**	**5,104**	**5,713**	**4,857**	**4,441**
Of which MPS commodities	5,115	3,759	3,605	4,058	3,437	3,089
Payments based on output	301	439	367	1,139	113	179
Payments based on area planted/animal numbers	41	31	8	0	49	210
Payments based on historical entitlements	0	0	0	0	0	0
Payments based on input use	362	528	763	458	259	756
Payments based on input constraints	0	0	0	0	0	0
Payments based on overall farming income	0	0	0	0	0	0
Miscellaneous payments	0	0	0	1	0	0
Percentage PSE	**22**	**17**	**17**	**20**	**16**	**13**
Producer NPC	**1.29**	**1.20**	**1.19**	**1.23**	**1.15**	**1.15**
Producer NAC	**1.27**	**1.21**	**1.21**	**1.25**	**1.18**	**1.15**
General Services Support Estimate (GSSE)	**441**	**435**	**477**	**551**	**655**	**312**
Research and development	42	63	63	42	35	37
Agricultural schools	2	2	7	3	1	1
Inspection services	97	72	90	79	157	80
Infrastructure	268	267	281	391	407	194
Marketing and promotion	4	4	5	8	4	0
Public stockholding	0	0	0	0	21	0
Miscellaneous	27	28	31	29	30	0
GSSE as share of TSE (%)	**5.2**	**6.4**	**7.1**	**7.0**	**11.0**	**5.3**
Consumer Support Estimate (CSE)	**-9,468**	**-6,877**	**-5,469**	**-7,129**	**-5,301**	**-5,845**
Transfers to producers from consumers (-)	-8,017	-5,388	-4,567	-5,168	-4,038	-4,846
Of which MPS commodities	-5,539	-3,776	-3,226	-3,671	-2,857	-3,370
Other transfers from consumers (-)	-2,108	-1,798	-1,192	-2,308	-1,601	-1,331
Of which MPS commodities	-1,457	-1,260	-842	-1,640	-1,133	-926
Transfers to consumers from taxpayers	0	0	0	0	0	0
Excess feed cost	657	309	290	347	339	332
Percentage CSE	**-23**	**-17**	**-15**	**-17**	**-14**	**-13**
Consumer NPC	**1.32**	**1.21**	**1.18**	**1.22**	**1.17**	**1.16**
Consumer NAC	**1.29**	**1.20**	**1.17**	**1.21**	**1.16**	**1.15**
Total Support Estimate (TSE)	**8,549**	**6,797**	**6,719**	**7,863**	**5,932**	**5,899**
Transfers from consumers	10,125	7,186	5,759	7,477	5,639	6,177
Transfers from taxpayers	532	1,409	2,152	2,695	1,894	1,053
Budget revenues (-)	-2,108	-1,798	-1,192	-2,308	-1,601	-1,331
Percentage TSE (expressed as share of GDP)	**4.1**	**2.9**	**2.9**	**3.2**	**2.4**	**2.2**

NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient. Market price support is net of producer levies and excess feed costs. MPS commodities for FYR Macedonia are: wheat, maize, barley, rice, potatoes, cucumbers, alfalfa, apples, grapes, tobacco, cow milk, sheep cheese, beef and veal, pig meat, sheep meat, and eggs. MPS is assumed zero for rice, potatoes, cucumbers, alfalfa, apples, grapes, and tobacco.

Annex B: Producer Support Estimates

FYR Macedonia: Producer Support Estimates by commodity

		1999	2000	2001	2002	2003	2004
Wheat	Denar mn	1,724	1,360	1,018	1,280	679	1,055
	Percentage PSE	49	39	35	40	28	26
	Producer NAC	1.96	1.64	1.54	1.66	1.39	1.36
	Producer NPC	1.96	1.64	1.53	1.65	1.37	1.35
	Consumer NPC	1.80	1.43	1.34	1.38	1.31	1.29
Maize	Denar mn	302	79	41	5	312	202
	Percentage PSE	23	8	4	0	23	16
	Producer NAC	1.29	1.08	1.04	1.00	1.29	1.19
	Producer NPC	1.28	1.08	1.03	0.99	1.29	1.15
	Consumer NPC	1.28	1.08	1.03	0.99	1.29	1.15
Barley	Denar mn	325	143	171	218	69	155
	Percentage PSE	33	15	20	20	10	12
	Producer NAC	1.49	1.18	1.24	1.25	1.12	1.14
	Producer NPC	1.48	1.17	1.23	1.23	1.09	1.07
	Consumer NPC	1.48	1.17	1.23	1.23	1.09	1.07
Rice	Denar mn	2	2	1	2	1	3
	Percentage PSE	1	1	1	1	1	2
	Producer NAC	1.01	1.01	1.01	1.01	1.01	1.02
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00
Potatoes	Denar mn	11	10	23	28	10	46
	Percentage PSE	1	1	1	1	0	2
	Producer NAC	1.01	1.01	1.01	1.01	1.00	1.02
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00
Cucumbers	Denar mn	3	20	6	6	2	11
	Percentage PSE	1	3	1	1	0	2
	Producer NAC	1.01	1.03	1.01	1.01	1.00	1.02
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00
Alfalfa	Denar mn	5	5	9	8	3	19
	Percentage PSE	1	1	1	1	0	2
	Producer NAC	1.01	1.01	1.01	1.01	1.00	1.02
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00
Apples	Denar mn	4	4	3	6	2	11
	Percentage PSE	1	1	1	1	0	2
	Producer NAC	1.01	1.01	1.01	1.01	1.00	1.02
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00

FYR Macedonia: Producer Support Estimates by commodity (cont.)

		1999	2000	2001	2002	2003	2004
Grapes	Denar mn	25	28	47	200	22	66
	Percentage PSE	1	1	2	11	1	2
	Producer NAC	1.01	1.01	1.02	1.12	1.01	1.02
	Producer NPC	1.00	1.00	1.00	1.11	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00
Tobacco	Denar mn	12	8	22	350	3	12
	Percentage PSE	0	0	1	11	0	0
	Producer NAC	1.00	1.00	1.01	1.13	1.00	1.00
	Producer NPC	1.00	1.00	1.00	1.12	1.00	1.00
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00
Cow Milk	Denar mn	943	884	972	863	856	407
	Percentage PSE	26	23	27	24	25	11
	Producer NAC	1	1	1	1	1	1
	Producer NPC	1.38	1.33	1.32	1.27	1.20	1.15
	Consumer NPC	1.38	1.33	1.32	1.25	1.20	1.15
Sheep Cheese	Denar mn	678	845	812	866	880	756
	Percentage PSE	39	45	37	37	40	35
	Producer NAC	1.63	1.82	1.59	1.59	1.67	1.54
	Producer NPC	1.57	1.77	1.52	1.56	1.64	1.46
	Consumer NPC	1.57	1.77	1.52	1.56	1.64	1.46
Beef and Veal	Denar mn	124	101	178	314	463	61
	Percentage PSE	11	10	20	27	36	5
	Producer NAC	1	1	1	1	2	1
	Producer NPC	1.21	1.21	1.21	1.21	1.17	1.18
	Consumer NPC	1.21	1.21	1.21	1.21	1.17	1.18
Pigmeat	Denar mn	459	410	391	500	219	226
	Percentage PSE	29	30	30	30	16	18
	Producer NAC	1	1	1	1	1	1
	Producer NPC	1.50	1.42	1.38	1.42	1.25	1.21
	Consumer NPC	1.49	1.42	1.38	1.42	1.25	1.21
Sheep meat	Denar mn	370	617	874	541	294	563
	Percentage PSE	56	56	57	41	19	27
	Producer NAC	2.28	2.26	2.31	1.69	1.24	1.37
	Producer NPC	2.19	2.20	2.20	1.66	1.21	1.29
	Consumer NPC	2.19	2.20	2.20	1.66	1.21	1.29
Eggs	Denar mn	773	33	67	331	13	517
	Percentage PSE	55	2	4	25	1	38
	Producer NAC	2.21	1.02	1.04	1.33	1.01	1.60
	Producer NPC	2.66	1.00	1.00	1.38	1.00	1.63
	Consumer NPC	2.66	1.00	1.00	1.38	1.00	1.62
All commodities[1]	Denar mn	8,108	6,362	6,242	7,312	5,277	5,587
	Percentage PSE	22	17	17	20	16	13
	Producer NAC	1.27	1.21	1.21	1.25	1.18	1.15
	Producer NPC	1.29	1.20	1.19	1.23	1.15	1.15
	Consumer NPC	1.32	1.21	1.18	1.22	1.17	1.16

[1] Estimation for all commodities (*i.e.*, both MPS and non MPS commodities).

Annex C: Definitions & Sources

The calculations behind the estimates of support to agriculture in FYR Macedonia have been carried out in EXCEL. The data file is available upon request and all definitions and sources are given in this annex. The presentation follows the same structure as in the EXCEL file.

Total Support Estimate (TSE) and derived indicators cover all agricultural production, *i.e.*, all agricultural commodities produced in the country. For the Producer Support Estimates (PSE) and Consumer Support Estimates (CSE), the description of policy measures indicates the commodities covered by the measures, as well as the method of allocation of the corresponding transfers among commodities. "MPS commodities" are those for which market price support is explicitly calculated or assumed to be zero.

Market Price Support (MPS) and Consumer Support Estimates (CSE) by commodity are explicitly calculated for the following commodities: wheat, maize, barley, cow milk, sheep cheese, beef and veal, pig meat, sheep meat (lamb and mutton), and eggs. MPS is assumed zero for rice, potatoes, cucumbers, alfalfa, apples, grapes, and tobacco.

PSE by commodity are calculated for wheat, maize, barley, rice, potatoes, cucumbers, alfalfa, apples, grapes, tobacco, cow milk, sheep cheese, beef and veal, pig meat, sheep meat (lamb and mutton), and eggs. These commodities have been selected since their value of production exceeds 1% of the total value of production.

Definitions of the indicators, criteria of classification of programs included, and methods of calculation are taken from OECD, *Methodology for the measurement of support and use in policy evaluation* (OECD, 2002). Table C1 provides a detailed list of the various policy measures in effect in Macedonia during 1999-2004. The classification is based on the OECD methodology (OECD, 2002) and the cookbooks for PSE for the EU, Slovenia, Bulgaria, and Turkey that are available in the OECD Database (OECD, 2006). Details on the justification to the classification are available on request. It should be stressed that the classification used in this report is based on an older OECD methodology, which is no longer applied by the OECD. Definitions of the indicators are presented in box C1 and sources in table C2.

Box C1. Definitions

I. Total value of production (at farm gate): total agricultural production valued at farm gate prices, i.e. value (at farm gate) of all agricultural commodities produced in the country.

1. Of which share of MPS commodities (%): share of commodities for which MPS is explicitly calculated or assumed to be zero in the total value of agricultural production.

II. Total value of consumption (at farm gate): consumption of all commodities domestically produced valued at farm gate prices, and estimated by increasing the value of

consumption (at farm gate) of the MPS commodities according to their share in the total value of agricultural production [(II.1) / (I.1) x 100].

1. Of which MPS commodities: sum of the value of consumption (at farm gate prices) of the MPS commodities produced in the country.

III.1 Producer Support Estimate (PSE): associated with total agricultural production, i.e. for all commodities domestically produced (Sum of A to H, when negative, the amounts represent an implicit or explicit tax on producers).

A. Market Price Support: on quantities domestically produced (excluding for on-farm feed use -- *excess feed cost*) of all agricultural commodities, estimated by increasing the MPS for the common commodities according to their share in the total value of agricultural production [(A.1) / (I.1) x 100].

> ***1. Of which MPS commodities:*** sum of the MPS (net of *price levies* and *excess feed cost*) for the MPS commodities.

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***
>
> ***3. Based on use of fixed inputs***

F. Payments based on input constraints

> ***1. Based on constraints on a set of inputs***
>
> ***2. Based on constraints on fixed inputs***
>
> ***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

III.2 Percentage PSE = [(III.1) / ((I) + (Sum of B to H)) x 100] or [(III.1) / ((I) + (III.1)) x 100]

III.3 Producer NAC = [1 / (100 - (III.2)) x 100] and [1 + (III.2) / (100 – (III.2))] For all agricultural commodities the Producer NPC is estimated as a weighted average of the producer NPC calculated for the individual MPS commodities. For each commodity Producer NPC = [domestic price received by producers (at the farm gate) + unit payments based on output] / border price (also at the farm gate).

IV. General Services Support Estimate (GSSE): total budgetary expenditure to support general services provided to agriculture. It is equal to the 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

V.1 Consumer Support Estimate (CSE): associated with agricultural production, i.e. for the quantities of commodities domestically produced, excluding the quantities used on-farm as feed – excess feed costs [(P) + (Q) + (R) + (S); when negative, the amounts represent an implicit tax on consumer].

P. Transfers to producers from consumers: associated with market price support on all domestically produced commodities, estimated by increasing the transfers calculated for the common commodities according to their share in the total value of production [(P.1) / (I.1) x 100]

1. Of which common commodities: sum of the values of transfers from consumers to producers associated with market price support on the common commodities produced in the country as calculated in Annex Tables IV.2.

Q. Other transfers from consumers: transfers to the budget associated with market price support on the quantities imported of domestically produced commodities, estimated

by increasing the transfers calculated for the common commodities according to their share in the total value of production [(Q.1) / (I.1) x 100]

1. Of which common commodities: sum of the transfers to the budget associated with market price support on the quantities imported of the common commodities produced in the country.

R. Transfers to consumers from taxpayers

S. Excess Feed Cost: associated with market price support on quantities domestically produced and used on-farm as feed. The sum concerns wheat, barley, and maize. The feed rates used are obtained from the PSE estimations conducted for Bulgaria.

V.2 Percentage CSE = [(V.1) / ((II) - (R)) x 100]

V.3 Consumer NAC = [(1 / (100 + (V.2)) x 100] and [1 - (V.2) / (100 + (V.2))]

VI. Total Support Estimate = [(III.1) + (IV) + (R)] and [(T) + (U) - (V)]

T. Transfers from consumers *[(P)+(Q)]*

U. Transfers from taxpayers *[(III.1)-(P)+(IV)+(R)]*

V. Budget Revenues *(Q)*

Table C1. *Description and classification of Policy Measures*[14]

ROW[15]	POLICY MEASURE	PRODUCT ALLOCATION
B. Payments based on output		
8	***1. Based on unlimited output***	
9	*Production subsidy (premium)*:	Wheat
10	*Subsidies for production and sale of cow milk*:	Cow milk
11	*Damage compensation*:	Grapes
12	*One-time aid for tobacco production*:	Tobacco
13	*Transport cost subsidy*:	Wheat
14	*Produce purchase intervention*:	PO, TM, CU, WA
15	*Funds for measures implementation in case of appearance of quarantine pest, as well as their total restraining and covering the losses for the plants that has been destroyed. (Pear, apples, tomato, pepper and other plants)*: 50% here and 50% under E.2.	All plant products
16	*Payments for lost production of reproductive animals, and compensation for slaughtered animals*: 50% here and 50% under E.3.	All livestock products
17	***2. Based on limited output***	
18		
C. Payments based on area planted/animal numbers		
20	***1. Based on unlimited area or animal numbers***	
21	*Financial support for Maize and Barley*:	MA, BA
22	*Financial support for founding a centre for reproduction of seed and planting material, and for obtaining certified and sanitary safe domestic grape vine planting material. (hectare payments)*: Allocated according to actual amount spent on each part of the measure. The same measure also to be found in E.1 (subsidised seed material) and L. (centre).	Grapes

[14] The classification is based on the OECD methodology (OECD, 2002) and the cookbooks for PSE for the EU, Slovenia, Bulgaria, and Turkey. Details on the justification of the adopted classification are available on request

[15] The row number refers to the row number in the EXCEL-file containing the PSE-calculations. The EXCEL-file is available upon request from the authors of this report.

23	*Financial support for raised and graded cows in the classes Elite, Ia, and I*:	Cow milk
24	*Subsidies for increased number of own produced high-in-calf heifers*:	Cow milk
25	*Subsidy for maintenance and enlargement of the basic flock of sheep*:	SC, SH
26	*Financial support for bred and graded pigs in the classes Elite, Ia, and I*:	Pig meat
27	***2. Based on limited area or animal numbers***	
28		
D. Payments based on historical entitlements		
30	***1. Based on historical plantings/animal numbers or production***	
31	***2. Based on historical support programmes***	
E. Payments based on input use		
33	***1. Based on use of variable inputs***	
34	*Certified and phytosanitary safe seed material production incentives*: Allocated according to actual amount spent on each part of the measure, *i.e.* 100% to wheat in 1999, 2000 and 2002 and 100% to rice in 2003. No funds were distributed in 2001.	WT, RI
35	*Diesel fuel coupons*:	All plant products
36	*Provision of masut*:	TM, PE, CU
37	*Sale of fertilizer*:	Wheat
38	*Sale of fertilizer*:	Barley
39	*Allotment of corn*:	All livestock products
40	*Financial support for founding a centre for reproduction of seed and planting material, and for obtaining certified and sanitary safe domestic grape vine planting material. (subsidised seed material)*: Allocated according to actual amount spent on each part of the measure. The same measure also to be found in C.1 (hectare payments) and L. (centre).	Grapes
41	*Subsidies for artificial meadows and pastures*:	All livestock products
42	*Write-off of debts and awarding aid to the regions affected by armed conflict (Debt write-off)*: Allocated according to actual amount spent on each part of the measure.	All products

43	*Write-off of debts and awarding aid to the regions affected by armed conflict (Corn aid)*: Allocated according to actual amount spent on each part of the measure.	All livestock products
44	*Write-off of debts and awarding aid to the regions affected by armed conflict (Fertilizer aid)*: Allocated according to actual amount spent on each part of the measure.	All plant products
45	*Write-off of debts and awarding aid to the regions affected by armed conflict (Feeding stuff)*: Allocated according to actual amount spent on each part of the measure.	All livestock products
46	*Write-off of debts and awarding aid to the regions affected by armed conflict (Seed material)*: Allocated according to actual amount spent on each part of the measure.	All plant products
47	*FAO - humanitarian aid (seed material, fertilizers and fodder)*:	All products
48	*FAO - humanitarian aid (wheat seed)*:	Wheat
49	*FAO - humanitarian aid (fertilizers)*:	All plant products
50	*Micro-accumulation*:	All products
51	***2. Based on use of on-farm services***	
52	*Expenditures transferred from 2001*	All plant products
53	*Promoting artificial insemination in pigs with sperm from selection centres*:	Pig meat
54	*Promoting artificial insemination for cows*:	Cow milk
55	*IFAD 1*: *Technical assistance for credit beneficiaries*:	All products
56	*Loan users' training*:	All products
57	*Research programmes*:	All products
58	*Private Farmer Support Programme*: The same measure also to be found in I. Allocation unknown due to lack of budgetary data.	All products
59	*Advisory services (MAFWE)*:	All products
60	*State Agricultural Inspectorate*: The same measure also to be found in K. Allocation unknown due to lack of budgetary data.	All products
61	*Advisory services (Agency for Promoting the Development of Agriculture)(NEA)*: The same measure also to be found in I. 33% is allocated here and the remainder under I.	All products
62	*Anti-hail protection measures*:	All plant products

63	*Monitoring, supervision, prognosis for further expansion, the intensity and determination of the diseases or pests appearance, as well as proposing adequate measures and expert coordination for pests restraining in the agriculture*:	All plant products
64	*Funds for measures implementation in case of appearance of quarantine pest, as well as their total restraining and covering the losses for the plants that has been destroyed. (Pear, apples, tomato, pepper and other plants)*: 50%here and 50% under B.1.	All plant products
65	*Funds for activities undertaken for pests restraining in agriculture (pests that have appeared for the first time or their number has increased rapidly)*:	All plant products
66	*Funds for doing analysis for the current situation in the pests' appearance, and expertise for plant protection including the crop production, green gardens, orchards, and the viticulture*:	All plant products
67	*Funds for monitoring, laboratory equipment, preparations and chemicals for pest determination on the open fields and the storehouses*:	All plant products
68	*Preparation of adequate methods for plant protection for organic farming and presentation to the producers*: The same measure also to be found in I. 50% of total allocated here. The other half is under I.	All plant products
69	*Participation in the activities undertaken for destroying of plant or tree steams, plantations or agricultural crops that have been attacked by quarantine and economically significant pests*:	All plant products
70	*Participation in the activities for measures acquisition for organic farming (tomato and potatoes production)*: 50% of total, the remainder is allocated to potatoes.	Tomatoes
71	*Participation in the activities for measures acquisition for organic farming (tomato and potatoes production)*: 50% of total, the remainder is allocated to tomatoes.	Potatoes
72	*Field and laboratory probing for plant pests and diseases*:	All plant products
73	*Vaccination for eradication of anthrax in horses, cattle, sheep; and for other cattle diseases*:	Beef & Veal
74	*Vaccination for eradication of anthrax in horses, cattle, sheep; and for other cattle diseases*:	Sheep meat
75	*Vaccination for eradication of pig disease, including additional vaccination when the disease appears*:	Pig meat
76	*Vaccination for Newcastle-disease in poultry (fowl), including additional vaccination when the disease appears*:	Eggs
77	*Vaccination of sheep and lambs*:	Sheep meat
78	*Treatment of sheep for parasite diseases and some other diseases*:	Sheep meat

79	*Collecting, packing and sending samples (blood etc) for laboratory examination for contagious diseases*:	All livestock products
80	*Laboratory examination and diagnostics of contagious animal diseases*:	All livestock products
81	*Testing and retesting the animals for tuberculosis*:	All livestock products
82	*Payments for slaughter of infected animals*: *sheep with brucellosis, goats, cattle and pigs with animal tuberculosis*:	All livestock products
83	*Payments for slaughter of infected animals suffering from other contagious diseases, ordered by the Veterinary directorate*:	All livestock products
84	*Payments for transport to the slaughtering place*:	All livestock products
85	*Animal crematory for infected animals*:	All livestock products
86	*Animal identification tagging*:	Beef & Veal
87	*Slaughter of infected animals*:	All livestock products
88	*Disease eradication when contagious animal diseases are eliminated in accordance with Act No.82, point 9, from the "Law for Veterinary health*: *facilities for animal surveillance, facilities for animal slaughtering etc"*:	All livestock products
89	*Providing stock of vaccines, disinfection and other resources for preventing, diagnosing and eradicating contagious animal diseases*:	All livestock products
90	*Services for first animal marking*:	All livestock products
91	*Costs for animal passport delivery for the cattle marked for the first time*[16]:	Beef & Veal
92	*Outstanding obligations from the previous year*:	All livestock products
93	***3. Based on use of fixed inputs***	
94	*Construction of anti-hail stations*:	All plant products
95	*Construction of silage holes*:	All livestock products

[16] According to OECD's cookbook on EU PSEs, most veterinary measures are classified as either "E2 Input use – on-farm services" or "GSSE K. Inspection Services"; the latter containing expenses for the Office for Veterinary and Plant Health Inspection and Control.

96	*Construction of water holes*:	All livestock products
97	*Vesting of state-owned agricultural land on usufruct to certain categories of socially insecure persons*:	All products
98	*Financial support to pig breeders for raised and sold high-quality sows and boars originating from selection centers*:	Pig meat
99	*IFAD 1*:	All products except tobacco
100	*IFAD 2*: *Credit lines*:	All products except tobacco
101	*Programme for increasing food production in Macedonia*:	All products
102	*Compensation of damages resulting from natural disasters*:	All products
103	*Payments for lost production of reproductive animals, and compensation for slaughtered animals*: 50% here and 50% under B.1.	All livestock products
104	*Partial interest refund on the granted domestic and foreign loans, intended for investment in small and medium sized production facilities, engaged in industrial, agricultural, production artisanship, and agricultural machinery repairing activities. (Total cost)*:	All products
105	*Guarantee on loan, granted for livestock supply on the basis of insurance premium payments*:	All livestock products
F. Payments based on input constraints		
107	***1. Based on constraints on variable inputs***	
108	***2. Based on constraints on fixed inputs***	
109	***3. Based on constraints on a set of inputs***	
G. Payments based on overall farming income		
111	***1. Based on farm income level***	
112	***2. Based on established minimum income***	
H. Miscellaneous payments		
114	***1. National payments***	
115	*Funds for payments that are not covered in 2002*:	
116	*Funds for payments that are not covered in 2002*:	All plant products
117	***2. Sub-national payments***	

118		
IV. General Services Support Estimate (GSSE): total budgetary expenditure to support general services provided to agriculture Sum of I to O.		
120	**I. Research and development**	
121	*Advisory services (Agency for Promoting the Development of Agriculture)(NEA)*: The same measure also to be found in E.2. 67% is allocated here and the remainder under E.2.	
122	*Research institutes*:	
123	*Private Farmer Support Programme*: The same measure also to be found in E.2. Allocation unknown due to lack of budgetary data.	
124	*Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services*:	
125	*Subsidy for introduction of new rice varieties*:	
126	*Preparation of adequate methods for plant protection for organic farming and presentation to the producers*: The same measure also to be found in E.2. 50% of total allocated here. The other half is under E.2.	
127	*Funds for developing methods for controlled production of non-viruses seed and seedlings materials*:	
128	*Etiology observation of some newly appeared pathogen changes in vine, with a special emphasis on high-quality red and white winemaking varieties*:	
129	*Virus, bacteriological and parasite research*:	
130	*Collecting materials for research*:	
131	*Funding the preparation of scientific research*:	
132	**J. Agricultural schools**	
133	*Organization of seminars with the producers, referring the application of the plant protection measures*:	All plant products
134	*Publishing appropriate literature, brochures, and propagandas' materials for plant protection*:	All plant products
135	*Integral protection of the agricultural production (crop production, green gardens, orchards, and the viticulture), as well as preparation of adequate methods for plant protection for organic farming and presentation to the producers*:	All plant products
136	*Organization of seminars with the producers (education), referring the application of the plant protection measures, and information for the*	All plant products

	availability of the regional advisors and inspectors for doing health controls:	
137	*Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services*:	
138	*Publishing appropriate literature, brochures, and propagandas' materials, for plant protection, education of the people working in the directorate for plant protection, organizing of seminars and symposiums etc.*: The same measure also to be found in K. 50% of total allocated here. The other half is under K.	
139	*Organizing education for farmers on veterinary medicine and publishing brochure*:	
140	*Participation in staff training for particular projects. Priority to retraining for agricultural and livestock breeding professions, and for professions related to agricultural and mixed farming products processing*:	
141	**K. Inspection services**	
142	*Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services*:	
143	*State Agricultural Inspectorate*: The same measure also to be found in E.2. Allocation unknown due to lack of budgetary data.	
144	*Plant variety testing*: *Programme for the support of agricultural production*:	
145	*Seed and Seedling Directorate*:	
146	*Funds for doing analysis for health diagnosis of the seed material, and controlled production of non-viruses seed and seedlings materials*:	
147	*Funds for experts' crop supervision during the vegetation and pests determination on the imported and domestically produced material*:	
148	*Fund for competent qualification and skills accomplishment for the inspectors working in the State inspectorate for agriculture and the in the State inspectorate for forestry*:	
149	*Material cost for doing health checking, equipment for pest determination, personal and technical equipment for the inspectors*:	
150	*Purchasing of vehicles (Plant Protection Directorate)*:	
151	*Health post-control of the buildings for the seed and seedling materials and pests determination of the seed and seedling materials*:	
152	*Funds provided for competent qualification and skills accomplishment for the advisors and regional inspectors for doing health controls and upgrading of the informative system*:	

153	*Membership and participation in the European and the regional institutions for information exchange for existence of quarantine pests and upgrading of the informative system*:	
154	*Covering the costs for registration of chemicals for plant protection, and issuing trade licenses*:	
155	*Sampling for health checking of the plants and plant products that should be imported, in order for determination the existence of some quarantine pests and diseases over the limited percent*:	
156	*Publishing appropriate literature, brochures, and propagandas' materials, for plant protection, education of the people working in the directorate for plant protection, organizing of seminars and symposiums etc.*: The same measure also to be found in J. 50% of total allocated here. The other half is under J.	
157	*Purchasing of technical and laboratory equipment, chemicals, staff uniforms, as well as funds for maintaining and upgrading the information system of the directorate for plant protection*:	
158	*Services given by local experts and operative expenditures for the working groups (translation, printing materials etc.)*:	
159	*Education provided for the advisors from the directorate for plant protection, purchasing adequate literature and studying materials, giving support for advices, participation at the advisory meetings, symposiums and other meetings in the country and abroad*:	
160	*Financing the activities and measures that are in direct function with the realization of the program activities*:	
161	*Establishment of new state phyto-sanitary laboratory*:	
162	*Expert commissions for pesticide registration and pests control*:	
163	*Costs for border disinfection barriers*:	
164	*Introducing and educating veterinary inspectors with new laws and regulations established by the EU*:	
165	*Seminars introducing new methods for control of food products of animal origin*:	
166	*Additional education (specialization) in the country and abroad*:	
167	*New specialized literature, certificates and other documents*:	
168	*Education for veterinary inspectors on public health issues*:	
169	*Seminars for veterinary inspectors on management practices*:	
170	*Education of veterinary inspectors on the control of veterinary medicine*:	

171	*Education of veterinary inspectors on animal health protection*:	
172	*Education of veterinary inspectors on introducing good production practices in facilities for production of veterinary medicine*:	
173	*Vehicle purchase*:	
174	*Maintenance of vehicles and some other costs*:	
175	*Fuel for the veterinary inspectors' vehicles*:	
176	*Equipment for veterinary inspection at borders*:	
177	*Purchase of laser printers to the Veterinary directorate*:	
178	*Equipment for fieldwork and surveillance for veterinary inspections*:	
179	*Preparing law acts*:	
180	*Education on veterinary legislation in the country and abroad*:	
181	*Introducing new laboratory methods*:	
182	*Preparing a study on the role and organizational allocation of veterinary health activities of RM*:	
183	*Study on optimal economic measures for brucellosis eradication in RM*:	
184	*Preparing digital epizootiological charts*:	
185	*Carrying out the operational plan for setting up a serum bank*:	
186	*Funds for membership in international organizations*:	
187	*Payment for membership in the International Organization for Animal Health Protection-OIE*:	
188	*Preparation and implementation of epizootiological studies of diseases unforeseen by the program*:	
189	*Preparation of report on veterinary-health inspection of fodder*:	
190	*Translating texts from the primary and secondary EU legislation (from English to Macedonian)*:	
191	*Engagement of professional translators (English-Macedonian)*:	
192	*Center for monitoring adverse effects of veterinary medicine*:	
193	*System to monitor the of use of antibiotics for animals*:	

194	*Monitoring residues in raw materials and products of animal origin*:	
195	*Introducing a system for better production practices in the facilities for producing veterinary medicine*:	
196	*Introducing HACCP-systems in facilities for fodder production*:	
197	*Information campaign (vet.programme)*:	
198	*Costs for training the system users (vet.programme)*:	
199	*Services for routine marking (vet.programme)*:	
200	*Rented line for computer center (vet.programme)*:	
201	*Telephone costs (vet.programme)*:	
202	*Office materials (vet.programme)*:	
203	*Transportation costs (vet.programme)*:	
204	*Maintenance and upgrading of information systems for animal health protection*:	
205	*Maintenance and upgrading of information systems for border veterinary inspection*:	
206	*Costs of veterinary program implementation*:	
207	*Construction of new and modernizations of existing health and veterinary stations*:	
208	*Outstanding obligations from the previous year*:	
209	**L. Infrastructure**	
210	*Financial support for founding a centre for reproduction of seed and planting material, and for obtaining certified and sanitary safe domestic grape vine planting material. (Centre)*: Allocated according to actual amount spent on each part of the measure. The same measure also to be found in C.1 (hectare payments) and E.1 (subsidised seed material).	
211	*Irrigation and drainage of agricultural land*:	
212	*Revitalization of the villages*:	
213	*Allotment of diesel fuel*:	
214	*Irrigation*:	
215	*Building and adaptation of roads, electrification, water and water holes supply for sheep farms, goat farms, cow farms and fish ponds*	

	(water supply):	
216	*Building and adaptation of roads, electrification, water and water holes supply for sheep farms, goat farms, cow farms and fish ponds (access roads to farms)*:	
217	*Building and adaptation of roads, electrification, water and water holes supply for sheep farms, goat farms, cow farms and fish ponds (electrification)*:	
218	*Drainage network*:	
219	**M. Marketing and promotion**	
220	*Establishment of vine cadastre*:	
221	*Financial support for organizing fairs and events*:	
222	*Market Information Systems funded by international institutions*:	
223	*The Public Enterprise for stock exchange operations*: *Agro-Stock Market*:	
224	*Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services*:	
225	**N. Public stockholding**	
226	*Costs for wheat storage, fumigation and wheat taxes*:	
227	**O. Miscellaneous**	
228	*Financial support for agricultural associations*:	
229	*Farmland surveying*:	
230	*Programme for Instigation of Agricultural Development*:	

Sources:

The identification and classification of the policy measures listed in the above table are based on the personal contacts and other sources pointed out below as well as on a detailed and thorough perusal of English documents such as the Macedonian Agricultural Reports and the Macedonian Governments questionnaire from the EU Commission.

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Table C2. *Sources and Definitions of Base Data*

I. Level of production

Wheat, maize, barley, rice, and potatoes: Volume of production [1].

Cucumbers: Production data is obtained from FAO for 1999 [1], and from SSO for the years 2000-2004 [2].

Alfalfa: Volume of production [2]. Production data for 2004 is estimated from FAO-data [1].

Apples: Volume of production [1].

Grapes: Volume of production [2].

Tobacco: Volume of production [1].

Cow Milk**:** Total production of whole fresh milk from dairy cows, excluding the milk sucked by young animals but including amounts fed to livestock [1].

Sheep Cheese**:** The production of sheep cheese is expressed in milk equivalents given the assumption that the bulk of the sheep milk produced in Macedonia is used for cheese production. The conversion factor used is 0.20 tonne sheep cheese per tonne of sheep milk produced [2].

Beef and veal, pig meat, and sheep meat: Production of cattle slaughtered in slaughterhouses, agricultural enterprises, and individual agricultural holdings. Exports of live cattle are not included. Data are expressed in terms of dressed carcass weight, excluding offal and slaughter fats. [2].

Eggs**:** Hen egg production (in shell), including eggs intended to be used for hatching but excluding waste on farms [1].

Sources:

[1] FAOSTAT, Supply Utilization Accounts and ProdSTAT, codes: *wheat*: 1001; *barley:* 1003; m*aize*: 1005; *rice, paddy*: 1006.10; *potatoes*: 0701; 0709.60; c*ucumber and gherkins*: 0707; *apples*: 0808.10; *watermelons*: 0807.11; *tobacco (unmanufactured)*: 2401; *cow milk, whole, fresh*: 0401.20_a; *cattle meat*: 0201.10_a; *pig mea*t: 0203.11; *sheep meat*: 0204.21_a; *hen eggs, with shell*: 0404.00a.

[2] State Statistical Office, FYR Macedonia

II. Producer prices (farm gate)

Wheat*:* Producer price is estimated on basis of data from [2]. It is a purchase price obtained by dividing total purchase value with total purchased quantity.

Maize: Producer price for 1995-2000 and 2002-2004 is estimated on basis of data from [2]. It is a purchase price obtained by dividing total purchase value with total purchased quantity. Due to discrepancies between sources the producer price for 2001 has been taken from a different source [3].

Barley: Produce price for 1995-2000 and 2002-2004 is estimated on basis of data from [2]. It is a purchase price obtained by dividing total purchase value with total purchased quantity. Due to discrepancies between sources the producer price for 2001 has been taken from a different source [3].

Rice, potatoes, cucumbers, alfalfa, apples, grapes, and tobacco: Producer price is estimated on basis of data from [2]. It is a purchase price obtained by dividing total purchase value with total purchased quantity.

Cow Milk*:* Producer price per ´000 liters is estimated on basis of data from [2] and is converted into its ton equivalent using the density 1,031. It is a purchase price obtained by dividing total purchase

value with total purchased quantity.

Sheep cheese: Producer price for white cheese. It is a purchase price and it is obtained by dividing total purchase value with total purchased quantity.

Beef and veal: Producer price expressed in carcass weight. The producer price is based on an average producer price for various categories of cattle, bullocks, and calves in live weight. The conversion factor, live weight to carcass weight, used is 0,506 (average for slaughterhouses, 1999-2003). [1].

Pig meat*:* Producer price expressed in carcass weight. The producer price is based on an average producer price for various categories of pigs and porklings in live weight. The conversion factor, live weight to carcass weight, used is 0,646 (average for slaughterhouses, 1999-2003). [1].

Sheep meat*:* Producer price expressed in carcass weight. The producer price is based on an average producer price for various categories of lambs in live weight. The conversion factor, live weight to carcass weight, used is 0,5 (average for slaughterhouses, 1999-2003). [1].

Eggs*:* Producer price per thousand eggs converted into producer price per ton (assuming 1 kg=18.54 eggs). Producer price is estimated on basis of data from [2]. It is a purchase price and it is obtained by dividing total purchase value with total purchased quantity. Due to discrepancies between sources the producer price for 2002 has been taken from a different source [3].

Sources

[1] State Statistical Office, FYR Macedonia.

[2] Department of Agricultural Economics & Organization, UKIM.

[3] Agricultural Report 2003 and 2004.

III. Level of consumption

If not mentioned otherwise, consumption is derived as follows:

Domestic Consumption = Food +Feed + Seed + Other Net Uses

Where:

Food is defined by FAOSTAT as "the total amount of the commodity available as human food during the reference period".

Feed is defined by FAOSTAT as the "quantity of the commodity in question available for feeding to the livestock and poultry during the reference period, whether domestically produced or imported".

Seed is defined by FAOSTAT as "the amounts of the commodity in question set aside for sowing or planting".

Other Net Uses is defined by FAOSTAT as the "quantities of commodities used for non-food purposes, e.g. oil for soap. In order not to distort the picture of the national food pattern quantities of the commodity in question consumed mainly by tourists are included here. In addition, this variable covers pet food".

Wheat, maize, barley, rice, and potatoes: Domestic consumption [1].

Cucumbers: Domestic consumption (Food + Other Net Uses) [1] for 1999 [1], and Total Supply minus Exports for the years 2000-2004 [2].

Alfalfa: Domestic consumption (Feed) [2].

Apples: Domestic consumption (Food + Other Net Uses) [1].

Grapes: Total supply minus exports. [2] and [3].

Tobacco: Total supply minus exports of tobacco, unmanufactured [1].

Cow Milk: Total supply minus exports. [1] and [2].

Sheep cheese: Total supply minus exports [4].

Beef and veal: Total supply minus exports. [1] and [2].

Pig meat*:* Total supply minus exports. [1] and [2].

Sheep meat: Total supply minus exports. [1] and [2].

Eggs*:* Total supply minus exports [1].

Sources*:*

[1] FAOSTAT, Supply Utilization Accounts.

[2] State Statistical Office, FYR Macedonia.

[3] Tasevska, Gordana Manevska. (2006). An Economic Analysis of the Macedonian Viticulture – A Competitiveness View of the Grape and Wine Sectors. MSc-Thesis in Business Administration. Uppsala: SLU, Department of Economics.

[4] MAFWE Report, first draft.

IV. Reference prices

Wheat*:* EU export price of standard quality wheat (FCW 2) to specified zones, fob Rouen, calendar year, minus handling and trading margin [1].

Maize: EU import price of USA Yellow Corn No. 3, c.i.f. Rotterdam, calendar year, minus handling and trading margin [1] extrapolated using the US Gulf No. 3 Yellow fob since 2002 [1].

Barley: EU export price, fob French (Rouen), calendar year, minus handling and trading margin [1].

Rice: EU import price of short-grain Japonica rice, husked (since 1999 rice type indica) c.i.f. Rotterdam, in "green ECU", calendar year, monthly data, converted to paddy rice by dividing the price by 1.25, minus handling and trading margin [2], and converted to market ECU using the "switchover coefficient" defining green ECU parity with the market ECU.

Potatoes: Unit value of Macedonian exports to the main export destination (Serbia & Montenegro) of potatoes, fresh or chilled except seed, [HS1992: 070190]. [3].

Cucumbers: Unit value of Macedonian exports to the main export destination (Serbia & Montenegro) of fresh or chilled cucumbers and gherkins, [HS1992: 070700]. [3].

Alfalfa: Import unit value of Lucerne (alfalfa) meal and pellets [HS1992: 121410]. [3].

Apples: Unit value of Macedonian exports to the main export destination (Serbia & Montenegro) of fresh apples, [HS1992: 080810]. [3].

Grapes: Unit value of Macedonian exports to the main export destination (Serbia & Montenegro) of fresh grapes, [HS1992: 080610]. [3].

Tobacco: Unit value of Macedonian exports of tobacco leaves (Unmanufactured tobacco; tobacco refuse, [HS1992: 2401]). [3].

Cow Milk*:* Farm gate price of milk, calendar year, actual fat content (X%) in New Zealand, plus transport cost for butter and skimmed-milk powder in milk equivalent (56 kg and 82 kg per tonne of milk, respectively) from New Zealand to the United Kingdom (NZP), adjusted to Macedonia's fat content (Y%) [OECD PSE/CSE database for European Union - EU reference price data]. Thus, the reference price equals: (NZP)*[(X%)+(Y%)]/2*(X%).The NZP for 2004 is an estimate based on the rate of change between 2003 and 2004 for the EU Reference Price (at farm gate).

***Sheep cheese**:* Unit value of Macedonian imports of cheese, except fresh, grated, processed or blue-veined, [HS1992: 040690]. [3].

Beef and veal: Unit export value in extra-EU trade of meat of bovine animal, fresh and chilled (code 0111, SITC, Rev. 3), in carcass weight equivalent, calendar year [OECD PSE/CSE database for European Union - EU reference price data], minus handling and trading margin.

***Pig meat**:* Unit export value in extra-EU trade of meat of swine, fresh, chilled or frozen (Code 0122, SITC Rev3) less exports to Japan, in carcass weight equivalent, calendar year [4] minus processing costs.

***Sheep meat**:* Since lamb is net-exported but mutton is not, a weighted average of the export price of lamb and the import price of mutton has been used. The effect of the export subsidy for lamb in effect 1999-2002 is captured in the export price of lamb and the import tariff benefiting the production of mutton is captured in the import price of mutton.

***Eggs**:* Unit export value in extra-EC trade of poultry eggs in shell, fresh or preserved, other than eggs for hatching (NIMEXE Code 040514 and since 1988 CN 04070030 of external trade statistics), calendar year [4], minus handling and processing margin.

Sources:

[1] International Grains Council (on line), as cited by OECD in the document “EU PSE Sources.doc” accompanying their PSE estimation for EU.

[2] European Commission.

[3] COMTRADE

[4] EUROSTAT, COMEXT.

[5] FAOSTAT, FAO Statistics Division.

Annex D: Policy Measures for which there are insufficient data

Row[17]	Measure	Allocation	1999	2000	2001	2002	2003	2004	OECD Sub-category	Source[18]	Ministry/Agency
97	Vesting of state-owned agricultural land on usufruct to certain categories of socially insecure persons	All products					**NN**	**NN**	Payments based on variable input use	GOV (2005a), p 88	MAFWE / M. of Labour and Social Policy
55	IFAD 1: Technical assistance for credit beneficiaries	All products	**N**	**N**	**N**	**N**	**N**	**N**	Payments based on input use	GOV (2005a), p 93	MAFWE
56	Loan users' training	All products				**N**	**N**	**N**	Payments based on input use	GOV (2005a), p 57 and 58; MAFWE (2004), p 78	
58	Private Farmer Support Programme	All products	**N**	**N**	**N**	**N**			Payments based on input use	GOV (2005a), p 99	
123	Private Farmer Support Programme	All products	**N**	**N**	**N**	**N**			Research and development	GOV (2005a), p 99	
94	Construction of anti-hail stations	All plant products	**NN**	**NN**	**NN**	**NN**	**NN**	**NN**	Payments based on fixed input use	GOV (2005a), p. 62-65.	
101	Programme for increasing food production in Macedonia	All products	**Yes**	**Yes**	**Yes**	**Yes**	**N**	**N**	Payments based on use of fixed inputs	GOV (2005a), p 57 and p 94	MAFWE / Japanese government

N = no data found; NN = no data found and implementation period unknown; Yes = Data is available; Shaded area = Not implemented.

[17] The row number refers to the corresponding row in the EXCEL-file containing the PSE-calculations. The EXCEL-file is available upon request.
[18] See sources in Annex C, table C1.

continued

Row	Measure	Allocation	1999	2000	2001	2002	2003	2004	OECD Sub-category	Source	Ministry/Agency
105	Guarantee on loan, granted for livestock supply on the basis of insurance premium payments	All livestock products	**NN**	**NN**	**NN**	**NN**	**NN**	**NN**	Payments based on use of on-farm services	GOV (2005a), pp 62-67 and answers to "Questions for the Bureau for Economically Underdeveloped Areas"	
124	Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services	All products	**N**	**N**	**N**	**N**	**N**	**N**	Marketing and promotion	GOV (2005a), p 104	MAWFE / Ministry of Economy
137	Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services	All products	**N**	**N**	**N**	**N**	**N**	**N**	Inspection Services	GOV (2005a), p 104	MAWFE / Ministry of Economy
142	Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services	All products	**N**	**N**	**N**	**N**	**N**	**N**	Agricultural schools	GOV (2005a), p 104	MAWFE / Ministry of Economy
224	Programme for use of funds generated from duties paid by business entities on import and export of products, goods and services	All products	**N**	**N**	**N**	**N**	**N**	**N**	Research and development	GOV (2005a), p 104	MAWFE / Ministry of Economy

N = no data found; NN = no data found and implementation period unknown; Yes = Data is available; Shaded area = Not implemented.

continued

Row	Measure	Allocation	1999	2000	2001	2002	2003	2004	OECD Sub-category	Source	Ministry/Agency
145	Seed and Seedling Directorate	Seed	**NN**	**NN**	**NN**	**NN**	**NN**	**NN**	Inspection Services	MAFWE (2004), p 84	
220	Establishment of vine cadastre	Grapes						**N**	Marketing and promotion	GOV (2005a), p 84	
222	Market Information Systems funded by international institutions					**N**	**N**		Marketing and promotion	GOV (2005a), p 103; MAFWE (2003), p 104; CECI	USAID / MAMA
228	Financial support for agricultural associations		**NN**	**NN**	**NN**	**NN**	**NN**	**NN**	Miscellaneous	GOV (2005a), p 59	
230	Programme for Instigation of Agricultural Development		**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**NN**	Miscellaneous	GOV (2005a), p 108	MAFWE

N = no data found; NN = no data found and implementation period unknown; Yes = Data is available; Shaded area = Not implemented.

Annex E: Value of Agricultural Output, MPS commodities 2001-2003

	Value (million denar)				Value share per product group				Value share in gross output			
	2001	**2002**	**2003**	**Average**	**2001**	**2002**	**2003**	**Average**	**2001**	**2002**	**2003**	**Average**
Ag. Gross Output	**33497**	**35319**	**37344**	**35387**					**1.00**	**1.00**	**1.00**	**1.00**
1) Crop Production	*22708*	*24162*	*26562*	*24477*	***1.00***	***1.00***	***1.00***	***1.00***	*0.68*	*0.68*	*0.71*	*0.69*
2) Animal Production	*10790*	*11157*	*10782*	*10910*	***1.00***	***1.00***	***1.00***	***1.00***	*0.32*	*0.32*	*0.29*	*0.31*
Wheat	2498	2672	2258	2476	0.11	0.11	0.09	0.10	0.07	0.08	0.06	0.07
Maize	968	1177	1328	1158	0.04	0.05	0.05	0.05	0.03	0.03	0.04	0.03
Barley	765	1093	687	848	0.03	0.05	0.03	0.03	0.02	0.03	0.02	0.02
Rice	660	299	174	378	0.03	0.01	0.01	0.02	0.02	0.01	0.00	0.01
Potatoes	1818	1821	2152	1930	0.08	0.08	0.08	0.08	0.05	0.05	0.06	0.05
Cucumbers	500	563	542	535	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.02
Alfalfa	748	787	587	707	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02
Apples	441	850	678	656	0.02	0.04	0.03	0.03	0.01	0.02	0.02	0.02
Grapes	3923	1537	4438	3299	0.17	0.06	0.17	0.13	0.12	0.04	0.12	0.09
Tobacco	2594	2905	1951	2483	0.11	0.12	0.07	0.10	0.08	0.08	0.05	0.07
Milk (cow)	3464	3518	3335	3439	0.32	0.32	0.31	0.32	0.10	0.10	0.09	0.10
Milk (sheep)	1593	1655	1734	1661	0.15	0.15	0.16	0.15	0.05	0.05	0.05	0.05
Beef and Veal	854	1154	1263	1090	0.08	0.10	0.12	0.10	0.03	0.03	0.03	0.03
Pig meat	1226	1609	1312	1382	0.11	0.14	0.12	0.13	0.04	0.05	0.04	0.04
Sheep meat	1489	1305	1502	1432	0.14	0.12	0.14	0.13	0.04	0.04	0.04	0.04
Eggs	1418	1242	949	1203	0.13	0.11	0.09	0.11	0.04	0.04	0.03	0.03
MPS Commodities	24940	24171	24871	24661					**0.75**	**0.68**	**0.67**	**0.70**
1) MPS Crops	*14915*	*13704*	*14795*	*14471*	***0.66***	***0.57***	***0.56***	***0.59***	***0.45***	***0.39***	***0.40***	***0.41***
2) MPS Livestock	*10026*	*10467*	*10076*	*10190*	***0.93***	***0.94***	***0.94***	***0.94***	***0.30***	***0.30***	***0.27***	***0.29***

Source: Agricultural Report 2003 and 2004.

Annex F: Commodity Coverage

The commodities included in the PSE calculations were selected on the basis of their contribution to the total value of agricultural production. The commodity selection is of crucial importance since the aggregated market price support for all commodities is extrapolated from the individual levels of MPS for these commodities. The commodities that contributed the most to the total value of production were selected given that they passed a certain threshold, which was set at 1 percent of total output value. The larger the share of production covered by the MPS calculation, the smaller the risk of under- or overestimating the overall level of agricultural support. The aim of the commodity selection was to achieve a three-year average of at least 70 percent of total agricultural production. The selection is based on data for 2001, 2002, and 2003, which are the only years for which detailed data on the value of agricultural production in Macedonia was available.

The 16 commodities selected represent 70 percent of the output value for 2001-2003 (table F1). However, due to insufficient and/or inconsistent data certain commodities that were included originally given their economic importance had to be replaced with other less important commodities. Noteworthy, is the exclusion of tomatoes, peppers, and watermelons, which represent 7, 6, and 1 percent of the agricultural output, respectively.

Table F1. *Value Shares of MPS Commodities in Gross Output*

	Average 2001-2003
Agricultural Gross Output	**1.00**
Wheat	0.07
Maize	0.03
Barley	0.02
Rice	0.01
Potatoes	0.05
Cucumbers	0.02
Alf-alfa	0.02
Apples	0.02
Grapes	0.09
Tobacco	0.07
Milk (cow)	0.10
Milk (sheep)	0.05
Beef and Veal	0.03
Pigmeat	0.04
Sheepmeat	0.04
Eggs	0.03
MPS Commodities	**0.70**
MPS Crops	*0.41*
MPS Livestock	*0.29*

Source: MAFWE, 2003 and 2004.

The price gap between producer and border prices are measured at the farm gate as explained in Box 1 in the main text. The marketing margins used when computing the reference prices are listed in table F2. As mentioned in the main text, due to difficulties in the identification of appropriate reference prices and marketing margins and in absence of any policy measure that would justify a price gap it has not been possible to explicitly calculate the MPS for seven of the 16 commodities. Consequently, the products, for which complete estimates have been derived, represent only about 42 percent of the total value of agricultural production. The

coverage in terms of crops is thus reduced to 18 percent, whereas the coverage in terms of livestock remains the same. However, it is reasonable to assume that these commodities enjoy none or only minor market price support, which warrant the continued use of the 70 percent coverage. Hence, MPS is assumed zero for these commodities, and in the absence of consumer subsidies, the resulting CSE will also be zero.

Table F2. *Handling Margins*

Commodity	Unit	1999	2000	2001	2002	2003	2004
Wheat	%	13	11	10	10	10	10
Maize	%	12	10	11	11	11	11
Barley	%	12	10	10	10	10	10
Rice	%	2	3	2	2	3	3
Potatoes	%	20	20	20	20	20	20
Cucumber	%	15	15	15	15	15	15
Alfalfa	%	10	10	10	10	10	10
Apples	%	15	15	15	15	15	15
Grapes	%	13	13	13	13	13	10
Tobacco	%	5	5	5	5	5	5
Sheep cheese	%	10	10	10	10	10	10
Beef and Veal	%	17	15	15	15	15	15
Pig meat	%	15	13	13	13	13	13
Sheep meat	%	7	7	7	7	7	7
Eggs	%	14	15	15	15	15	15

A precondition, when calculating MPS, is that it exist at least one policy measure that creates a gap between the price received by farmers and the price paid by consumers at farm gate for a certain commodity. When it is the case, we measure the price gap and calculate MPS. The specific policy measures, however, are not explicitly accounted for in the calculations. Table F3 lists the various policy measures that would justify the existence of MPS. It shall be noted that if a commodity is net-exported and if there is no export subsidy, any policy measure restricting imports will not be captured by the price gap and will not be added to the MPS.

Table F3. *Policy Measures Justifying MPS*

Measure	Commodity	Trade Position	Implementation Year	Source[19]
Guaranteed price	Wheat	Net importer	1999 to 29 March 2005	GOV (2005a), p 12; MAFWE (2003), p 19; MAFWE (2004), p 27
Duties and tariff quotas	Wheat	Net importer		GOV (2005a), p 14
Preferential tariff treatment for imports	Wheat	Net importer	1999 to 30 June 2004	GOV (2005a), p 15
Preferential tariff treatment for imports	Meslin	Net importer	1999 to 30 June 2004	GOV (2005a), p 16
Duties and tariff quotas	Maize, Barley	Net importer		GOV (2005a), p 14
Duties and tariff quotas	Rice	Net exporter (mostly)		GOV (2005a), p 20
Duties and tariff quotas	Potatoes	Net exporter (food) Net importer (seed)		GOV (2005a), p 51
Duties and tariff quotas	Tomatoes, Peppers (green), Cucumbers	Net exporter		GOV (2005a), p 26
Duties and tariff quotas	Apples	Net exporter		GOV (2005a), p 26
Duties and tariff quotas	Watermelon	Net exporter		GOV (2005a), p 26
Duties and tariff quotas	Grapes	Net exporter		GOV (2005a), p 26
Duties and tariff quotas	Wine	Net exporter		GOV (2005a), p 30
Guaranteed price	Tobacco	Net exporter	1999 to 29 March 2005	GOV (2005a), p 32
Duties and tariff quotas	Tobacco	Net exporter		GOV (2005a), p 33
Duties and tariff quotas	Seed			GOV (2005a), p 35
Duties and tariff quotas	Feed			GOV (2005a), p 40
Preferential tariff quota on imports	Feed			GOV (2005a), p 40
Duties and tariff quotas	Cow milk	Net importer		GOV (2005a), p 43
Duties and tariff quotas	Beef & Veal	Net importer		GOV (2005a), p 44
Duties and tariff quotas	Pig meat	Net importer		GOV (2005a), p 49
Subsidies for disposal of surplus agricultural product - lamb	Lamb	Net exporter (lamb)	1999 to 2002	GOV (2005a), p 45; Prog. for Inst. of Ag.Dev
Duties and tariff quotas	Lamb & Mutton	Net exporter (lamb) Net importer (mutton)		GOV (2005a), p 47
Duties and tariff quotas	Eggs	Net exporter (mostly)		GOV (2005a), p 50
Produce purchase intervention	Potatoes	Net importer	2002	GOV (2005a), p 97; MAFWE (2004), pp 28-29

[19] See sources in Annex C, table C1.

Since MPS is so important in the support to agricultural producers in Macedonia, the estimates presented in this report are somewhat sensitive to the choice of producer and reference prices. Better estimates of the different handling margins, for instance, may improve the results on MPS. All along, data issues have been the main and recurrent problem of this study and more reliable estimates of Macedonia agricultural support will be attained with more accurate and better statistical information on prices, production, and consumption of agricultural commodities.

In what follows, is reported an analysis of the commodities excluded due to insufficient or inconsistent data and thereafter commodities for which MPS is assumed to be equal to zero.

Commodities excluded due to insufficient or inconsistent data

Tomatoes

The production of tomatoes represents 11 percent of total crop value and 7 percent of total agricultural output value. Macedonia is a net exporter of tomatoes. For the estimation of market price support in Macedonia, tomatoes definitely qualify. However, the discrepancy among producer prices from different sources depicted in figure F2 and the fact that the producer prices tend to be much lower than expected relative to the reference price makes the inclusion of tomatoes hard to defend.

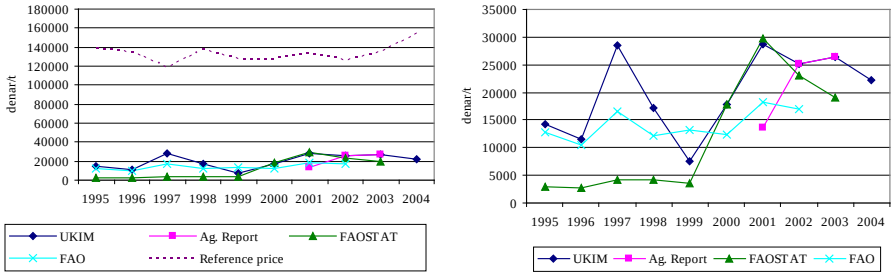

Figure F1. Producer prices from different sources relative to the reference price (left) and alone (right).

Peppers

Macedonia is a net exporter of peppers. With 9 percent of the total value of crop output and 6 percent of total agricultural output value, peppers certainly would qualify among the MPS commodities. However, the lack of a reliable producer price does not warrant that. Figure F2 illustrates the discrepancies between producer prices from different sources. In addition, the producer prices are higher than the reference prices for various years and that is not realistic.

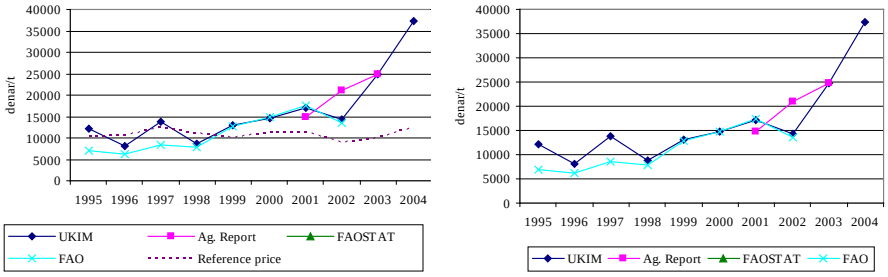

Figure F2. Producer prices for peppers from different sources relative to the reference price (left) and alone (right).

Watermelons

With 1 percent of total agricultural output value and 2 percent in total crop value, watermelons do pass the threshold to be included among the MPS commodities. However, as depicted in figure F6, the available data does not lend itself to that. The producer prices diverge substantially depending on the source and the various producer prices are higher than the reference price, which does not make sense for an export commodity.

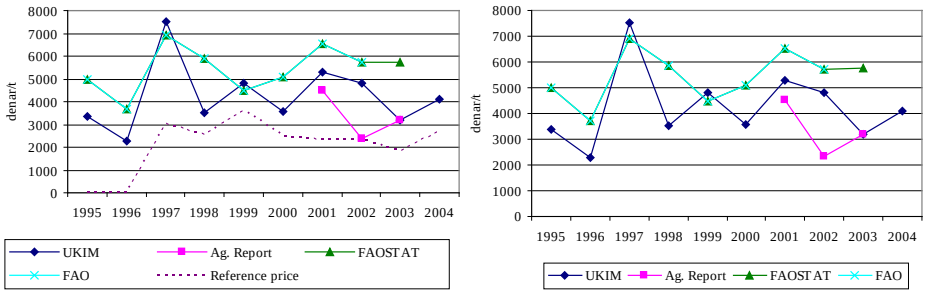

Figure F3. Producer prices for watermelons from different sources relative to the reference price (left) and alone (right).

Commodities for which MPS is assumed zero

The MPS commodities for which MPS has not been explicitly calculated are rice, potatoes, cucumbers, alfalfa, apples, grapes, and tobacco. With the exception of alfalfa and potatoes, which are special cases, they are all export commodities. The reason why not to calculate MPS for these eight products is the fact that they all have unrealistically large price gaps between producer and reference prices, which in turn is due to unreliable reference prices and/or marketing margins. The price gaps obtained using the available, although flawed data are shown in figure F4. Each of the eight commodities is analyzed below.

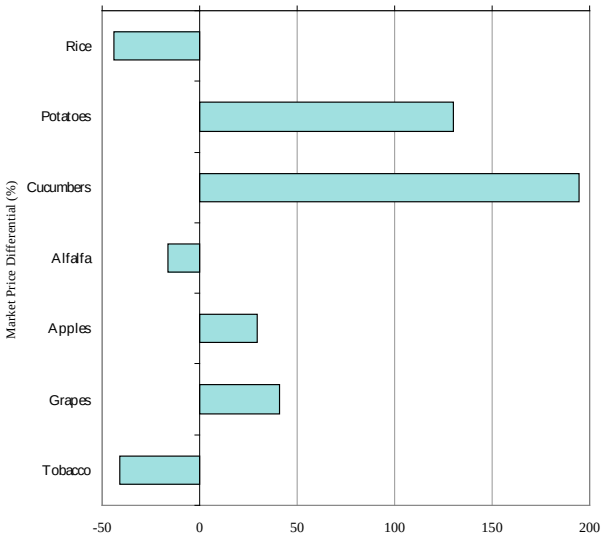

Figure F4. Percentage Market Price Differentials for commodities for which MPS is assumed to be zero.

Rice

Rice, which for most of the time is net-exported, accounts for 1 percent of total agricultural output value. Serbia and Montenegro is the primary destination for Macedonia's rice exports. Semi-milled or wholly milled rice (HS92: 100630) dominates total exports (HS92:1006) in terms of value and quantity. The border price used is thus the unit export value of semi-milled or wholly milled rice.

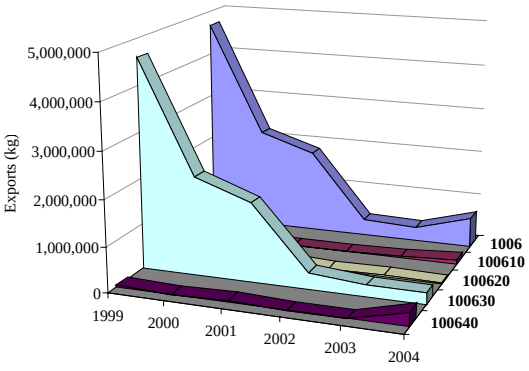

Figure F5. Rice Exports per HS92-category.

As shown in figure F6, however, the use of this reference price generates a large price gap and a negative MPS. This is not credible since there are no records of any tax on rice exports or any other policy measure that would justify the existence

of market price support for rice. Assuming no market price support and with a total budgetary support at only 1 million denar on average a year, the percentage PSE was 1 percent on average.

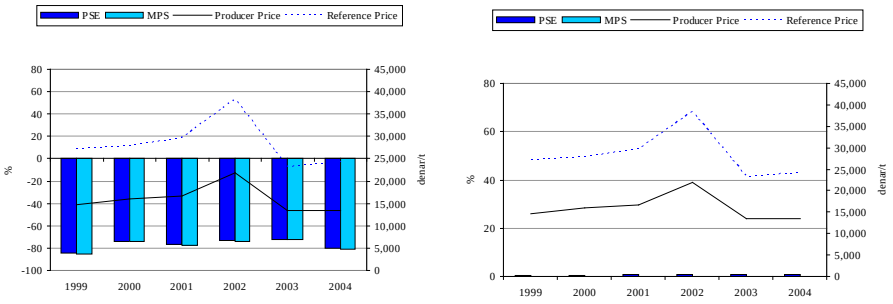

Figure F6. Percentage PSEs with (left) and without (right) MPS for Rice.

Potatoes

Potatoes accounts for 5 percent of total agricultural output value. Macedonia is a net importer of potatoes on aggregate. However, a large share of the imports is seed potatoes (mainly from the Netherlands) and Macedonia is a net exporter most years if this share is deducted. The border price used is therefore the unit export value of HS1992: 070190 (Potatoes, fresh or chilled except seed) from the main export destination, Serbia and Montenegro. Even so, the market price support obtained using this border price (see figure F7 left) must be considered unrealistically high. Since non-seed potatoes are net-exported and since there are no support measure for exports of potatoes it is assumed that there is no MPS. Given this assumption, the percentage PSE never reached above 1 percent (see figure F7 right). Total budgetary support averaged at 16 million denar.

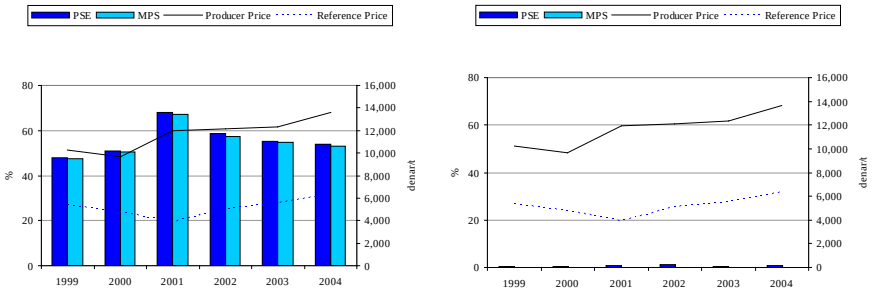

Figure F7. Percentage PSEs with (left) and without (right) MPS for Potatoes.

Cucumbers

Cucumbers, which are net-exported, accounts for around 2 percent of total agricultural output value. Since Serbia and Montenegro is the main export destination, the unit export value of HS1992: 070700 (Cucumbers and gherkins, fresh or chilled) to this country has been used as border price. The resulting MPS,

however, is unrealistically high. Since cucumbers are net-exported and since there are no support measure for export of cucumbers it is assumed that there is no MPS (see figure F8 left). Given this assumption and with 7 million denar on average in total budgetary support the percentage PSE for cucumbers averaged at only 1 percent during the period (see figure F8 right).

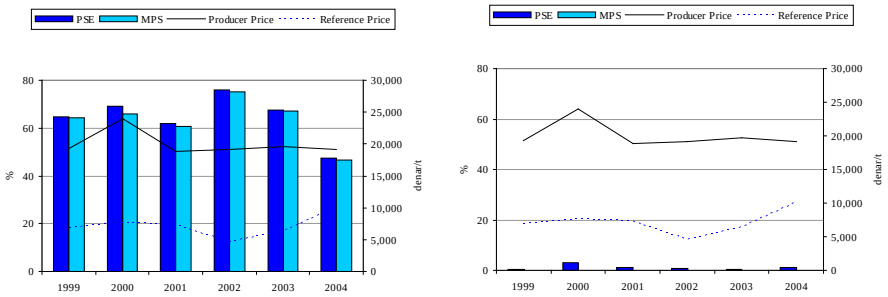

Figure F8. Percentage PSEs with (left) and without (right) MPS for Cucumbers.

Alfalfa

Alfalfa accounts for around 2 percent of total agricultural output value and is produced purely for the domestic market. There are no imports. There is thus no unit import or export value that can be used as border price of alfalfa. Macedonia does have a small import of alfalfa in the form of meal and pellets but the use of its unit import value as a proxy for the border price yields a negative MPS (see figure F9 left). Such support pattern is simply not realistic in the case of alfalfa. Given the miniscule trade in alfalfa it can be assumed that there is no MPS for this commodity. With a total budgetary support averaging at 10 million denar and assuming zero MPS, the percentage PSE is small and never surpassed 1 percent.

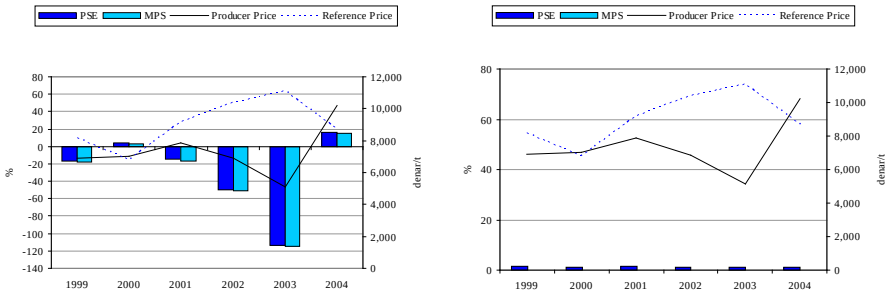

Figure F9. Percentage PSEs with (left) and without (right) MPS for Alfalfa.

Apples

Apples, which are net-exported, accounts for around 2 percent of total agricultural output value. The border price used is the unit export value of HS1992: 080810 (Apples, fresh) to the main export destination, Serbia and Montenegro. The resulting MPS, however, do not comply with the fact that apples are net-exported (see figure F10 left) and there exist, furthermore, no support measure to justify it.

For that reason, it is assumed that there is no MPS. With a total budgetary support of 4 million denar on average during the period, the percentage PSE was 1 percent on average (see figure F10 right).

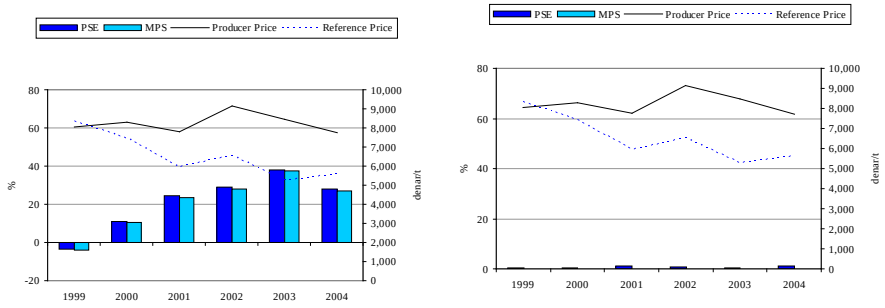

Figure F10. Percentage PSEs with (left) and without (right) MPS for Apples.

Grapes

Grapes, which are net-exported, accounts for around 9 percent of total agricultural output value. Macedonia is a net-exporter of fresh grapes and a net-importer of dried grapes. The border price used to compute MPS is therefore HS1992 080610 (Grapes, fresh), to the main export destination, Serbia and Montenegro. There is no reason to believe that Macedonia supports the market price of grapes as figure F11 (left) indicates. Instead, it is assumed that there is no MPS. Although total budgetary support, which was 58 million denar on average, was somewhat higher than for most other crop products, the resulting percentage PSE averaged at only 3 percent.

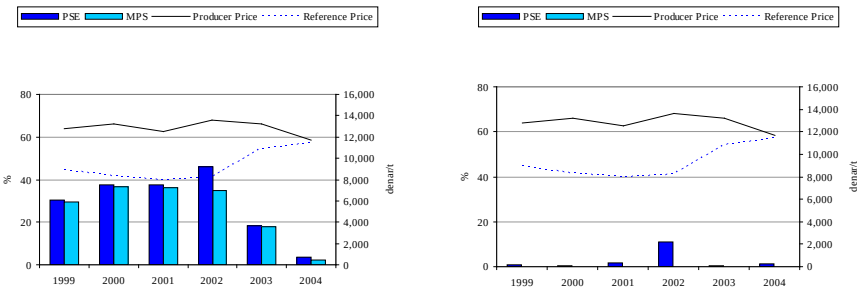

Figure F11. Percentage PSEs with (left) and without (right) MPS for Grapes.

Tobacco

Macedonia is a net exporter of tobacco and the production accounts for around 7 percent of the total agricultural output value. Given that the production of tobacco benefited from a guaranteed price during the period, the inclusion of tobacco in the estimation of the market price support is warranted. However, an analysis of price series does not lend itself to any concluding finding and makes any estimate of the market price support (MPS) component unreliable. COMTRADE data on Macedonian exports of unmanufactured tobacco and tobacco refuse (HS96: 2410)

indicates that the bulk both in terms of quantity and value regards tobacco that are not stemmed/stripped (HS96: 2401**10**). Tobacco that are partly or wholly stemmed/stripped (HS96: 2401**20**) has only a minor share of the exports in terms of quantity and value and tobacco refuse, which is a by-product, represents even less (HS96: 2401**30**). As indicated by figure F12, the export unit values of these different qualities of unmanufactured tobacco, which can be used to approximate the border reference price, thus differ widely.

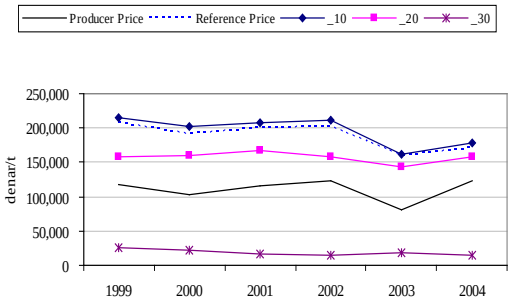

Figure F12. Unit export values of HS96: 240110, 240120, 240130 relative to the producer price (dry leaf) and reference price (HS96: 2401).

A weighted unit export value of all three different qualities of unmanufactured tobacco (HS96: 2401) should give a good approximation of the border reference price. However, the results obtained in figure F12 suggest that Macedonian tobacco production have a negative market price support, and that exports are explicitly or implicitly taxed (see OECD, 2002). Only if using the unit export value of tobacco refuse as reference price or alternatively the use of a lower producer price would yield a positive market price support. The producer price of tobacco sold undried (raw leaf) for instance is far lower than the producer price of dried tobacco (dry leaf). A substantial amount of farmers in Macedonia does indeed sell their tobacco undried. The question is if it is enough to justify the use of this lower producer price in the estimation of market price support.

There is no explicit tax on tobacco exports in Macedonia and there is no reason to believe that Macedonia can afford to tax one of their foremost export commodities. Other forces must be at hand. To use the unit export value of tobacco refuse as the reference price does yield a neat and understandable result but the unimportance of tobacco refuse in terms of quantity and value makes such a solution hard to defend. As long as the wide discrepancy between the producer and reference price cannot be explained by something else than a tax on exports we have chosen to estimate the producer support estimate and to exclude the calculations of market price support for tobacco (see figure F13). Total budgetary support averaged at 67 million denar and the percentage PSE assuming no market price support averaged at 2 percent.

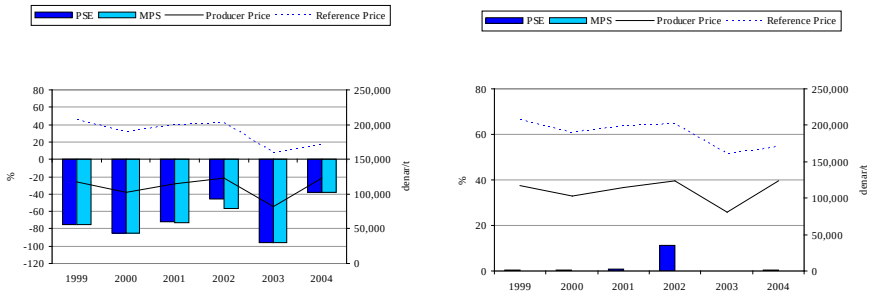

Figure F13. Percentage PSEs with (left) and without (right) MPS for Tobacco.

The OECD producer support estimates for Turkey includes tobacco and may shed some light on this problem. Turkey is the main producer of the oriental-leaf tobacco in which also Macedonia is specialized (FAO, 2003). As shown in figure F14 (left), the producer and reference prices for Turkey and Macedonia are quite close to each other and in both countries the reference prices tend to be higher than the producer prices. The reference price used in the Turkish calculations is lower but follows the unit export value of unmanufactured Turkish tobacco and tobacco refuse (HS96: 2401). It would be interesting to know what causes the negative market price support in Turkey.

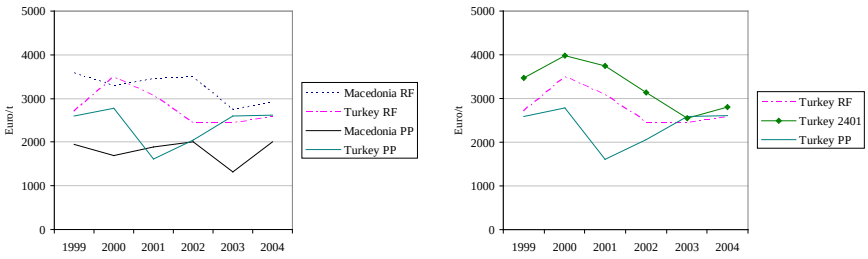

Figure F14. Macedonian and Turkish reference prices (RF), producer prices (PP), and the unit export value of Turkish HS96: 2401.

Annex G: Calculations of MPS for Cow Milk, Beef & Veal and Pig Meat

Market Price Support is calculated as the price gap between the domestic producer price and the reference border price at the farm gate level. Both prices should refer to the same marketing and geographical level so to not include differences based on natural protection, quality differences, marketing margins, and internal transportation costs. The reference border price for a net importing country, such as Macedonia, is the c.i.f. price; while the marketing margin should reflect the costs associated with the processing, marketing, and transport infrastructure of the country. See box 1 on p 8 for more information.

As mentioned earlier, the quality and availability of data on agricultural commodities in Macedonia is problematical and several different prices were analyzed before a decision was made on which should be included in the calculations. As reference border prices were mostly used either EU's export or import prices adjusted with the transportation cost from the port in Thessaloniki, Greece, to Skopje, the capital of Macedonia; or the import or export unit value for the main trading partner for a specific commodity. The transportation cost from Thessaloniki to Skopje was used as a proxy due to lack of data on the costs of transport for imports through/from Bulgaria and Serbia. The domestic producer prices are the prices paid to farmers by processors, wholesalers, or in green markets depending on the commodity in question; in addition, for products with different sub-categories, *e.g.* beef and veal, a simple average of the sub-categories were used.

Marketing margins capture the costs of transportation, processing, and marketing of the commodity, thus characterizing the infrastructure particular to the country. Nonetheless, due to lack of Macedonian data, the marketing margins used in these estimations are based on figures for neighbouring countries, *e.g.* Bulgaria, Slovenia, and Hungary.

For three commodities: cow milk, beef and veal, and pig meat, the first set of PSE that was calculated implied commodity prices considerably higher than in the EU and not in line with income levels in Macedonia. Since all efforts had been made to double-check the conversion coefficients and the marketing margins, it was concluded that the border reference prices used, the New Zealand price of milk and the export unit value of extra-EU trade for the meat products, may be the source of error. As a consequence, and in line with OECD recommendations, the price gap for the MPS was instead calculated using tariffs. When an acceptable reference border price is not available, a last option is to use tariffs as a proxy. If the commodity is homogenous, non-perishable, and the market is competitive, the nominal applied tariff (t) should reflect the difference between the domestic producer price (P_p) and the border reference price (P_b) according to the formula (OECD, 2005):

$$P_p = (1+t)P_b \Leftrightarrow unit\ MPS = P_p - P_b = \frac{tP_p}{(1+t)}$$

In order to use a tariff as an alternative to the price differential it is necessary that a representative summary tariff rate can be calculated which considers the different types and levels of tariffs in place for the specific commodity. The calculation requires information on statutory (nominal) tariff rates, tariff quotas and preferential tariffs, as well as import statistics for all trading partners of the commodity. In practice, the representative tariff is a sum of the marginal tariff applied to each sub-category of the product, which in turn may depend on whether imports are lower than, equal to, or higher than an import quota. This is explained by OECD (2005, p 2) as follows:

- "If current imports are higher than the import quota, the *over-quota tariff*, would be a good estimate of the unit MPS as it triggers marginal imports.
- If current imports are lower than the import quota, i.e. if the quota is under filled, then the *in-quota tariff* would be a good estimate of the unit MPS.
- If current imports coincide with the import quota, the price gap is situated between the in-quota tariff and the over-quota tariff and should be estimated by the difference between the domestic price and the external reference price (if that is not feasible we can't estimate the price gap, hence the commodity is not included in the extended coverage)."

The calculation of representative summary tariffs for cow milk, beef and veal, and pig meat were done in four steps. The sub-categories were defined on a 6 digits level according to the HS-classification.

1. Determining if the imports from each trading partner of every sub-category of the commodity is in-quota or over-quota according to trade agreements.
2. Converting the ad valorem and the specific tariffs for each trading partner of every sub-category of the commodity into *ad valorem equivalents* (AVE) taking into account preferential tariffs on in-quota or over-quota amounts depending on the outcome of step 1. The conversion into AVE is done to enable aggregation over sub-categories.
3. Each AVE is weighted according to the item's (the import value of a specific sub-category from a certain trading partner) share of the total import value of the product.
4. The weighted AVEs were aggregated to attain a representative summary tariff rate for the commodity in question, see table G1 for the results.

The representative tariff rates were then used in the calculation of new PSEs for the three commodities, with more reasonable estimates as a result; see table 9 and table 10, and confer the supporting Excel-file for the complete calculation.

Table G1. *Representative Summary of tariff rates for Cow Milk, Beef and Veal, and Pig meat, in percent*

	1999	*2000*	*2001*	*2002*	*2003*	*2004*
Cow Milk	38	33	32	25	20	15
Beef and Veal	21	21	21	21	17	18
Pig meat	49	42	38	42	25	21

Pris: 100:- (exkl moms)

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