

AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE III

Sponsored by the
U.S. Agency for International Development

Assisting USAID Bureaus, Missions and Developing Country Governments
to Improve Food & Agricultural Policies and Make Markets Work Better

Prime Contractor:
Subcontractors:

Abt Associates Inc.
Development Alternatives Inc.
Food Research Institute, Stanford University
Harvard Institute for International Development, Harvard University
International Science and Technology Institute
Purdue University
Training Resources Group
Associates for International Resources and Development
International Food Policy Research Institute
University of Arizona

Affiliates:

PN-ACA-290

**AGRICULTURAL SUBSIDIES AND
PROTECTION FOR SELECTED
COMMODITIES IN THE FORMER
YUGOSLAV REPUBLIC OF
MACEDONIA**

FINAL REPORT

April 1996

**APAP III
Research Report
No. 1010**

Prepared for

Agricultural Policy Analysis Project, Phase III, (APAP III)

USAID Contract No. DAN-4084-Z-11-8034-00

**Authors: Ismael S. Ouedraogo, Abt Associates Inc.
Christopher L. Shaw, Associates for International Resources
and Development**

**With the collaboration of: Prof. Todor Galev Giorgiev
Dragan Dimitrievski
Nenad R. Georgiev
Dragan Gjosevski
Faculty of Agriculture,
University of Skopje,
Macedonia
and
Dimitri Lokoski**

B

TABLE OF CONTENTS

LIST OF TABLES	v
LIST OF FIGURES	vi
ACRONYMS and ABBREVIATIONS	vii
ACKNOWLEDGEMENTS	viii
WEIGHTS AND MEASURES	ix
EXECUTIVE SUMMARY	x
1. INTRODUCTION	1
2. POLICY MEASURES AFFECTING MACEDONIAN AGRICULTURE	3
2.1 Price Support and Agricultural Subsidies	4
2.2 Trade Regime	10
2.2.1 Custom Tariffs	10
2.2.2 Variable Import Levies	11
2.2.3 Quantitative Restrictions and other non-tariff barriers	13
2.3 The European Union and the World Trade Organization	13
2.3.1 Accession to the WTO and EU	15
2.3.2 Changes Under the Uruguay Round and the CAP	16
2.4 Trade Patterns	17
2.5 Credit Policies	18
2.6 Foreign Exchange	21
2.7 Research and Extension	24
3. AGRICULTURAL SUBSIDIES	25
3.1 Budget Subsidies	25
3.2 Agricultural Credit Rediscount	27
3.3 Commodity Shares of the 1994 Agricultural Subsidies	28

4.	MEASURES OF PROTECTION AND IMPACT	30
4.1	Nominal Protection Coefficient for Wheat	30
4.2	Producer Subsidy Equivalent for Wheat	32
4.3	Nominal Protection Coefficient for Cowmilk	34
4.4	Producer Subsidy Equivalent for Cowmilk	35
4.5	Nominal Protection Coefficient for Sugarbeet	37
4.6	Producer Subsidy Equivalent	39
4.7	Nominal Protection Coefficient for Sunflowerseed	40
4.8	Producer Subsidy Equivalent for Sunflowerseed	41
4.9	Nominal Protection Coefficient for Fertilizer	42
4.10	Levels of protection for Table Grapes	43
5.	IMPLICATIONS AND RECOMMENDATIONS	44
5.1	Highlights and Findings	44
5.1.1	Overall high levels of protection	44
5.1.2	Strain of budget subsidies	44
5.1.3	High support prices	45
5.1.4	Trade regime	46
5.1.5	Impact on taxpayers and consumers	46
5.1.6	Skewed farm structure	47
5.1.7	Critical role of economy-wide policies	47
5.1.8	Monitoring and analytical capacity	47
5.2	Implications and Recommendations	47
5.2.1	Implications	47
5.2.2	Recommendations	48
Appendix A:	The NPC Methodology	A-1
Appendix B:	PSE: Methodological Notes	B-1
Appendix C:	The Agricultural Sector in Macedonia	C-1
Appendix D:	Study Commodity Subsectors	D-1
Appendix E:	The Cap: A Moving Target	E-1
Appendix F:	NPC for Wheat: Sensitivity Analysis	E-1

REFERENCES

LIST OF TABLES

Table 2.1:	1995 Cost of Production Estimates for Selected Commodities From the Ministry of Economy and the Ministry of Agriculture (den/ha)	5
Table 2.2:	Agricultural Subsidies in Macedonia: Commodity Coverage Since Independence	6
Table 2.3:	Budget Allocations for Agricultural Subsidies in Macedonia Since Independence (millions of denars)	8
Table 2.4:	Macedonia's Schedule of Import Tariffs in 1994 and 1995	11
Table 2.5:	Variable levies as of July, 1995	12
Table 2.6:	Quotas applied to key agricultural commodities and products	14
Table 3.1:	Agricultural Subsidies on 1994 Production (million denars)	26
Table 3.2:	Total Agricultural Subsidies in 1994 (million)	27
Table 4.1:	NPC for Wheat	31
Table 4.2:	Producer Subsidy Equivalent (PSE) for Wheat, 1994	33
Table 4.3:	Percent PSE for Wheat in the EFTA Countries, EU, and USA, 1991-1993	33
Table 4.4:	NPCs for Cowmilk and Cheese, 1994	35
Table 4.5:	PSE for Cowmilk	36
Table 4.6:	Percent PSE for Milk the EFTA Countries, EU, and USA	37
Table 4.7:	NPC for Sugarbeets	38
Table 4.8:	Producer Subsidy Equivalent (PSE) for Sugarbeets,	39
Table 4.9:	NPC for Sunflower seed	40
Table 4.10:	Producer Subsidy Equivalent (PSE) for Sunflowerseed,	41
Table 4.11:	PSE% for Oilseeds in the EU, USA, and EFTA Countries	42
Table 4.12:	NPCs for Fertilizers,	43
Table 5.1:	NPC Summary Results	45
Table 5.2:	Summary PSEs and Transfers from Taxpayers and Consumers to Producers, 1994	46

LIST OF FIGURES

Figure 2.1:	Monthly Inflation and Loan Rates	20
Figure 2.2:	Annualized Inflation and Loan Rates	20
Figure 2.3:	Denar Exchange Rate Indices	23
Figure 2.4:	Comparative Exchange Rate Indices	23
Figure 3.1:	Credit Rebate and Loan Rediscount	28
Figure 3.2:	Shares of Total Subsidies, 1994	29
Figure 3.3:	Shares of Budget Subsidies, 1994	29

F

ACRONYMS and ABBREVIATIONS

AMS	Aggregate measure of support
CAP	EU Common Agricultural Policy
CEEC	Central and Eastern European Countries
CEFTA	Central European Free Trade Agreement
CIF	Cost, insurance, and freight
CMEA	Council for Mutual Economic Assistance
CSE	Consumer subsidy equivalent
DM	Deutsche Mark
DAP	Diammonium phosphate
EFTA	European Free Trade Agreement
ERS	Economic Research Service (USDA)
EU	European Union
FAS	Foreign Agricultural Service (USDA)
FOB	Fee on board: export prices at the border of the origin country
FYRM	Former Yugoslav Republic of Macedonia
GATT	General Agreement on Tariffs and Trade
IDA	International Development Assistance (World Bank)
IMF	International Monetary Fund
MAFWE	Ministry of Agriculture, Forestry, and Water Economics
MAP	Monoammonium phosphate
MY	Marketing year
NBM	National Bank of Macedonia
NPK	Nitrogen phosphate potassasium (aka kalium)
NPC	Nominal protection coefficient
OECD	Organization for Economic Cooperation and Development
PSE	Producer subsidy equivalent
REER	Real effective exchange rate
SBA	Stand-by Arrangement
SFRY	Former Socialist Federal Republic of Yugoslavia
SOM	Statistical Office of Macedonia
SDR	Special drawing right of the IMF
STE	State-owned enterprises
STF	Strategic Transformation Facility (IMF)
TSP	Triple superphosphate
UHT	Ultra-high temperature (pasteurization of milk)
USDA	United States Department of Agriculture
WTO	World Trade Organization

ACKNOWLEDGMENTS

Several people contributed to make this report possible. All were invaluable to us. The authors, however, wish to single out a few who were particularly instrumental. Dr Ivan Angelov, Minister of Agriculture Forestry and Water Economy, expressed keen interest in the study and urged us to provide practical recommendations. Risto Kruntowski, Dimitar Todevski, Tahir Shakiri, Simeski Aleksandr, Orovčanec Ognen, Dona Pljakova, *Petar Kustovski, Mile and Mirjana Zafirovi* provided key data that allowed us to conduct our analysis. Rajna Krtova-Cmerska, Alexander Nacev, Bekim Imeri, and Jasna Nedelkovska greatly facilitated our contacts with Macedonian officials and private entrepreneurs.

We are grateful to Steven Sposato, Charles Antholt, and Gary Ender who reviewed early drafts and identified improvements and corrections. Our special thanks go to Marsha Strother, who put this report together.

All mistakes and inaccuracies, however, remain ours.

Weights and Measures¹:

1 hectare	=	2.74109 acres
1 kilogram	=	2.204622 pounds
1 metric ton liquid milk	=	971 liters
1 metric ton	=	2204.622 pounds
1 US dollar	=	43.2583 denars (1994 average) ²
1 deutsche mark	=	26.6137 denars (1994 average) ²

¹ "Tons" in this report, whether referring to US or foreign goods, are metric tons. In cases where quantities were expressed in short tons in source citations, they have been converted.

² Unless otherwise noted.

EXECUTIVE SUMMARY

This study was initiated to assist the Government of FYRM in developing a new policy framework that promotes competition in agricultural markets and efficiency in agricultural production. The analysis is part of the preparation for a proposed World Bank project to support private farmers. The study also aims to provide a learning experience for Macedonian professionals on the study team and concerned officials in ministries who will make use of its results. The study was funded by USAID/Skopje, under the Agricultural Policy Analysis Project (APAP III).

Five key commodities were assigned to the study: wheat, sunflower seed, sugarbeet, fluid milk, and fertilizer (urea and NPK mix), which are all deficit commodities. At the request of USAID/Skopje, an export commodity, table grapes, was added to provide added perspective. Because of time and data constraints, however, grapes could not be covered as extensively as the other commodities.

Analytical methods

The key analytical tools used by this study are the nominal protection coefficient (NPC) and the producer subsidy equivalent (PSE). The NPC is a ratio that compares domestic price to adjusted world price to assess the level of protection given to the producers of a commodity. Although the world price is often distorted, it still represents the opportunity cost for Macedonia. The world price of a commodity is the "opportunity cost" for Macedonia. That is, during the period of analysis, the country can obtain the commodity at this price on the world market. By providing protection ($NPC > 1$), a government distorts the incentive to producers and transfers extra resources from consumers or taxpayers to producers.

The PSE is an amount of money. The PSE represents the payment required to compensate producers of a particular commodity for the loss of income resulting from the removal of a given package of policy measures. The PSE is an Aggregate Measure of Support (AMS) such as used by FAO, OECD, USDA, and the new WTO to gauge a country's level of support to commodities or the overall agricultural sector. The PSE can also be stated as a percent. Then the PSE is the total support to the commodity as a percent of the total value of production of that commodity.

Highlights and Results

Wheat takes the lion's share of agricultural subsidies: 58.2 % of budget subsidies (premium, seed rebate, and credit rebate) and 53.3 % of total subsidies, including the non-budget subsidy of the 1994 agricultural credit rediscount, compared with milk (15.55 and 11.4%) sunflower seed (5.1 % and 4.7 %) and sugarbeet (1.9 % and 1.6 %). Agricultural budget subsidies may appear small in absolute terms (less than \$40 million in 1993/94), but they remain a strain on the government budget as Macedonia often struggles to pay them on time. Also since 1992, planned budget allocations for agricultural subsidies have steadily increased their shares of the

central government revenues, MAFWE's budget, and agriculture sector Gross Social Product. The true impact of agricultural subsidies may be their opportunity cost, that is, what MAFWE loses by not using these resources in other ways to increase farm productivity in Macedonia.

The estimates of NPCs clearly show that Macedonia provides a high level of protection for wheat, milk, cheese, sugarbeet, and fertilizer production. Only sunflower production is currently competitive relative to world markets. The percentage PSE for wheat was higher in Macedonia (in 1994) than in the European Union (in 1993), which Macedonia would like to join. The percentage PSE for cowmilk and sunflower, however, were lower than in the EU and the USA.

More than the agricultural subsidies, however, the high level of protective prices was the driving force behind agricultural protection in 1994. Protective prices are based on cost-of-production estimates, which have a built-in upward bias on the pan-territorial and pan-seasonal administrative prices. The result is that consumers more than taxpayers shoulder the burden of supporting producers of wheat, milk, and sugarbeet. Sunflower producers, however, actually transferred resources to consumers because world prices were higher than domestic prices in 1994.

NPC Summary Results					
Product	Domestic price to Producer (a)		Border price of competing import (b)		NPC (a/b)
	Den/ton	US\$/ton	Den/ton	US\$/ton	
Wheat	12,000	277	5,494	127	2.18
Cowmilk	20,323	470	11,485	266	1.77
White cheese (belo)	150,000	3,468	51,994	1,202	2.88
Yellow cheese (kashkval)	280,000	6,473	71,688	1,657	3.91
Raw sugar	23,770	549	14,293	330	1.66
Refined sugar	24,245	560	17,674	408	1.37
Raw sunflower seed	9,649	223	22,114	511	0.44
Raw sunflower oil	24,121	558	33,950	785	0.71
Urea	7,200	166	5,797	134	1.24
NPK 15-15-15	8,800	203	4,031	93	2.18

Notes: \$1 = Den 43.259 in 1994

All domestic prices based on Macedonian producer price or factory raw input equivalent, including price premium. Border prices based on actual prices for 1994 or estimates from published data. Border price for wheat via Burgas and Bulgaria and overland through CEEC for cowmilk and sunflower, and cheese.

K

Summary PSEs and Transfers from Taxpayers and Consumers to Producers								
	Wheat		Cowmilk		Sunflower		Sugarbeet	
	Den	US\$	Den	US\$	Den	US\$	Den	US\$
Transfers (million)								
From taxpayers	830	19.20	144	3.34	67	1.55	27	0.62
From consumers	1,964	29.40	896	20.70	(217)	(5.02)	52	1.20
To producers (total PSE)	2,794	48.59	1,040	24.04	(150)	(3.47)	79	1.82
PSE%	69%		44%		-87%		48%	

Note: \$1 = Denar 43.259 in 1994

Trade via Burgas or overland through Central and Eastern Europe.

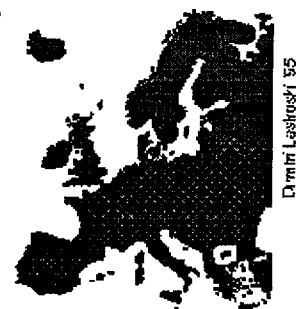
Recommendations

The study suggests recommendations to strengthen agricultural development:

- **Promote more competitiveness through price signals closer to world prices.** To act on its own commitment to price signals closer to world prices, Macedonia should do away with cost-of-production. Costs-of-production have inherently a built-in bias toward price increases. If price signals are needed, a reasonable alternative to cost-of-production is a moving average of border prices, such as those calculated for the NPCs in this study.
- **Include financial constraints in agricultural strategy.** A strategy of food self-sufficiency in all key agricultural commodities, except meat, could only be achieved at extremely high cost. A strategy of food reliance is a more realistic approach. Macedonia could concentrate production in the most advantageous areas and shift resources to other activities, particularly agricultural exports to help pay for the cheap imported wheat.
- **Revise trade regime to comply with WTO requirement.** Macedonia's regime of quotas, variable levies, and export subsidies run counter to WTO's requirements and should be revised accordingly.
- **Increase monitoring and analytical capacity of agricultural policies.** MAFWE's monitoring and analytical capacity needs strengthening. It is difficult to design and implement a coherent agricultural strategy without accurate information on expenditures on this strategy's core commodities. Estimates of NPC and PSE, as calculated in this study, should be routinely performed by MAFWE.

L

- **Increase, in particular, knowledge of the private farm sector.** Better advice to private farmers can only be built on a solid knowledge of the private farm sector. Macedonia's small size and educated labor force should make it easy to establish an efficient agricultural statistical system. Such a systems would allow periodic multiple purpose surveys (combining agricultural and socio-economic statistics) using established multiple sampling frames (area sampling plus list frames) for good representative data.
- **Determine long-term agricultural comparative advantage.** MAFWE should lead the effort to quantify the comparative advantage in key products to refocus the policy debate on products with long-term future in European and global markets. Such a policy would reorient public and private investment away from high-cost commodities toward those with the potential to generate income and jobs for Macedonians. Macedonia's wheat is of high quality, but could doubtfully compete effectively with European wheat. In contrast, Macedonia appears well endowed to produce lamb, tomatoes, cucumbers, and grapes at higher quality and lower cost than competitors in Europe and elsewhere.



Republic of Macedonia-main roads map

Republic of Macedonia
in Europe

N

1. INTRODUCTION

The need for this study became apparent in the preparation work for the proposed Private Farmer Support Project that is currently under pre-appraisal by the World Bank (see attached Scope of Work). MAFWE and its development partners seek to examine the pattern and extent of agricultural subsidies and protection to determine their likely impacts and recommend courses of action consistent with private sector development in a country in transition toward a market economy. This USAID-funded activity is at the request of the Ministry of Agriculture, Forestry and Water Economics (MAFWE) of the Former Yugoslav Republic of Macedonia (FYRM). It is timely for the strategy for the "Long-term Agricultural Development of Agriculture, Forestry and Water Economy in Macedonia from 1995 to 2010" (often referred as the Agricultural Strategy 2010), commissioned by MAFWE to the Institute of Economics of Macedonia.

Macedonia is grappling with a socialist legacy of agricultural subsidies and protection that is increasingly at variance with its budgetary resources and attempts to promote private sector development in agriculture. Macedonia's specialization in agriculture within Yugoslavia was supported by the budgetary resources of the entire former socialist federation, though mostly only for primary production. Its socialist orientation has continued to favor the social and public farms and mostly ignored the private farm sector. The constraints that confront Macedonia include, inter alia, agroecological conditions, but also budgetary discipline in relation to stabilization programs; requirements of the World Trade Organization (WTO), where Macedonia's membership is pending; prerequisites for acceding to the European Union (EU), which the country hopes to join in the next century; and also low agricultural productivity, which must increase if Macedonia is to compete successfully in world markets. These constraints are currently aggravated by the extraordinary disruptions to Macedonian vital trade routes stemming from the United Nations sanctions against Serbia and Greece's blockade against Macedonia.

The objective of this study is to assist the Government of Macedonia in its move to a policy framework that promotes competition in agricultural markets and efficiency in production. The study also aimed to provide a learning experience for Macedonian professionals on the study team and concerned officials in ministries who will make use of its results.

Five commodities were initially assigned to the study: wheat, sunflower seed, sugarbeet, fluid milk, and fertilizer (urea and NPK mix); Macedonia is a net importer of all of these. At the request of USAID/Skopje, an export commodity, table grapes, was added to this list to provide added perspective. Because of time and data constraints, however, grapes could not be covered as extensively as the other commodities.

The key analytical tool selected for this study is the nominal protection coefficient (NPC), because it is conceptually straightforward and because it requires a minimum amount of data. (The length of the field study, two months, reflects the well anticipated difficulty in data

gathering.) The NPC is a ratio that compares domestic price to adjusted world price to assess the level of protection given to the producers of a commodity (see methodological notes on NPC in Appendix A). Although the world price is often distorted, it still represents the opportunity cost for Macedonia. The world price of a commodity is the "opportunity cost" for Macedonia. That is, during the period of analysis, the country can obtain the commodity at this price on the world market. There is hardly a country in the world that does not subsidize or tax domestic products and producers in some form. (Tweeten, 1992). Although the world price is often distorted³ by such policies, it still represents the short-run opportunity cost for Macedonia and any other countries that import. By providing protection ($NPC > 1$), a government distorts the incentive to producers and transfers extra resources from consumers or taxpayers to producers.

Despite its simplicity, the NPC is an important tool. It is a measure of protection and incentives, and provides an indication of resource use. It enters in the calculation of Producer Subsidy Equivalent (PSE) and Consumer Subsidy Equivalent (CSE). As an amount of money, the PSE (CSE) represents the payment required to compensate producers (consumers) of a particular commodity for the loss of income resulting from the removal of a given package of policy measures (see methodological notes on PSE in Appendix B). The PSE is an aggregate measure of support (AMS) used by FAO, OECD, and USDA. The new GATT will measure support to the agricultural sector with a total aggregate measure of support, which is the sum of individual AMSs for each commodity (ERS, 1994). The PSE can also be stated as a percent; then it is the total support to the commodity as a percent of the total value of production of that commodity.

The report is structured as follows: Chapter 2 analyzes the range of policies that affect agriculture, with particular emphasis on pricing and trade policies related to the study commodities. Chapter 3. presents estimates of agricultural subsidies for 1993/94 disaggregated by commodity. Chapter 4 provides estimates of NPCs and PSEs for these commodities. Finally, chapter 5 draws the implications of the study and recommends courses of action for agricultural policies in Macedonia. The appendices present complementary information: overview of the contribution of the agricultural sector to Macedonian economy and the country's farm structure (see Appendix C: Overview of the agricultural sector); detailed background information about the commodity subsectors under investigation (see Appendix D: commodity subsectors); discussions about the significance to Macedonia of the contemplated changes of the European Union's Common Agricultural Policy (CAP) .

³ A reference price based on world market equilibrium prices derived from a non-distorted market and world market equilibrium exchange rates would remove these distortions. This is an impractical approach, however. As international markets are distorted to varying and unpredictable degrees the reference prices used do not reflect true comparative advantage but rather changing opportunity costs over time. The problem is additionally complicated by the variability and speculative nature of exchange rates.

2. POLICY MEASURES AFFECTING MACEDONIAN AGRICULTURE

Macedonia's agriculture is affected by a wide range of policies: sectoral, institutional, and economy-wide policies. The focus of this section is on agricultural subsidies and trade policies affecting the study commodities. Credit, land reform, and extension are also discussed, as they shed important light on the design and implementation of agricultural subsidies. Although as important as other policies, water rights so critical in irrigated agriculture and the overall business regulatory environment are not reviewed because of time constraints.

The Ministry of Agriculture is one among many ministries and agencies that play important roles in the design and implementation of agricultural policy in Macedonia. These include the Ministries of Development, Economy, Finance, and Foreign Affairs; the National Bank, the Agency for Strategic Reserves (in the Ministry of Development), the Economic Chamber (in the Ministry of Economy), and the Institute of Economics of Sciences. The latter is cited in reference to Macedonia's Agricultural Strategy 2010. At times, the Ministry of Agriculture plays more a supporting rather than the primary role in the formulation of agricultural policy.

The Ministry of Development, together with the Ministry of Economy, prepares the general annual development policy, published by the Ministry of Development. Officials report that no plan was published in 1993 and 1994⁴ because the sanctions against Serbia and the blockade imposed by Greece disrupted data collection and analysis. A macroeconomic policy was published in 1995 (Gazette no.23 dated March 13, 1995). This document provides a general account of agricultural subsidies and support in Macedonia (though export subsidies are not mentioned) including protective prices, premium seed rebate, credit rebate, and the special Program for Supporting the Development of Agriculture.

The macroeconomic policy also outlines the general direction for agricultural support and subsidies. It states that "the protective prices of certain commodities shall be determined on the basis of the lowest production costs ... in the country, and may not exceed the world price of the respective commodity in the previous year." The macroeconomic policy also declares that to rationalize the budget, the government will reduce funds for agricultural subsidies by decreasing the average rate of subsidized credit by 24% compared to 1994. In both instances, as will be seen later, the actual policy measures did not follow these guidelines. For example, actual prices are still based on cost of production without reference to world prices. The credit

⁴ The Government did release, however, a Letter of Development Policy (MIC, 1993.).

rebate has changed only for storage, from 15% to 10%. This change is not enough to reduce the total credit rebate by 24%.⁵

2.1 Price Support and Agricultural Subsidies

Agricultural support and subsidies receive considerable attention from Macedonian authorities and its development partners as well. Pricing policy measures include price support, budget-support for subsidies and programs, and non-budget subsidies. The large array of agricultural subsidies can be grouped in two main categories, at least until mid-1995: budget-support and non-budget agricultural subsidies. Budget-support agricultural subsidies cover six measures: premium, input rebate, credit rebate, export subsidies, and the whole or part of the special Program for Encouraging the Development of Agriculture, depending on whether one considers government provided extension as a subsidy. The non-budget agricultural subsidy is made up of the agricultural credit rediscount, terminated in May 1995, that was part of a series of special credit rediscounts through money creation by the central bank, the National Bank of Macedonia (NBM).

For protective prices, MAFWE collects the basic data on costs of production, which the Ministry of Economy uses to submit the final proposal⁶ to the Government. There are sometimes some discrepancies between this final version and costs of production estimates from MAFWE, though these differences had no bearing on the 1995 prices (Table 2.1). MAFWE collects cost of production data from a few dominant social farms. There has been no felt need to collect costs on private farms because the rationale of protective prices is to support social farms. Also, private farms do not keep the detailed accounting records that agrokombinats do. For wheat, MAFWE selects the agrokombinats of Pelagonija (Bitola), Kumanovo (Kleohovci), and St Nikola; for sunflower, Pelagonija and St. Nikola; and for sugarbeet, Pelagonija. De facto, the largest agrokombinat Pelagonija (24,000 ha) is the reference point for costs of production and guaranteed prices for commodities and seeds. This method of data collection does not necessarily produce the lowest cost of production, nor does it reflect world prices as stated in the macroeconomic policy.

⁵ The macroeconomic policy was published after the official announcement of the 1995 credit rebate (Gazette No. 8, dated February 15, 1995).

⁶ Until 1991, a 5-year average cost of production/ price of wheat serves as reference for protective prices of other crops. In 1991 the guaranteed price for corn was 134% that of wheat. The parity concept still drives milk producer price, officially determined as 65% of the retail price, which is in turn set up by the Government.

Table 2.1: 1995 Cost of Production Estimates for Selected Commodities From the Ministry of Economy and the Ministry of Agriculture (den/ha)			
Items	Wheat	Sugarbeet	Sunflower seed
Seed	4,500	2,770	2,450
NPK	3,405	7,065*	5,130*
Urea	1,080	0*	0*
Chemicals	5,778	13,040	2,556
Mechanization	8,100	10,325	7,888 (7,686)
Tieing (harvesting)	340	0	0
Irrigation	0	6,000	0
Other material costs	1,508 (1,509)	0	0
Labor	2,862	0	0 (2,600)
Fixed costs	2,426	16,800	4,678 (4,578)
Yield (kg/ha)	3,000	28,000	1,800 (2,000)
Cost/Intervention price (den/kg)	10.0	2.0	12.6 (12.5)

Source: Ministry of Economy and Ministry of Agriculture

Notes: MAFWE's estimates are in parenthesis when they differ from the Ministry of Economy's. Sunflower seed price of den 12.5/kg is reported by both ministries

* On sunflower and sugarbeet, NPK is for both NPK and urea.

Table 2.2 summarizes the commodity coverage of agricultural subsidies with budget outlays since independence. The study commodities wheat, milk, sunflower, and sugarbeet have been consistently covered by all measures of agricultural subsidies (except the input rebate for milk production), because they are considered strategic commodities. The major changes concern the elimination of the fertilizer subsidy and the level of the credit rebate.

The price premium is a bonus paid to farmers on top of a "protective" or support price set by the government. The input rebate allows farmers to acquire at a discount inputs for the commodities that qualify. Its purpose is to encourage the use of productive inputs, such as fertilizer (until 1993) and high yielding varieties (HYV) of wheat, sunflower, sugarbeet, and also corn and alfalfa. The credit rebate provides a reduced short-term interest rate to borrowers of working capital for activities such as: production of "protected" crops and milk; production of lamb and veal; stocks maintained by processors (millers, sugarbeet and sunflower seed processors) but also producers; production (multiplication) of HYV seeds; and strategic reserves of locally produced strategic commodities. In 1994, three credit rebate rates were applicable: 20% for production of all strategic crops (except tobacco), milk, and livestock; 15% for stocks, and production of tobacco and HYV seeds; and 10% for strategic reserves.

Table 2.2: Agricultural Subsidies in Macedonia: Commodity Coverage Since Independence

Subsidy	1992	1993	1994	1995
Premium	Wheat, sunflower (20%), oilseed rape, sugar beet (15%) milk (20%)	Wheat (20%) sunflower, oilseed rape, sugar beet (15%), milk (20%)	Wheat (20%), sunflower, oilseed rape, sugar beet (15%), milk (den 3/l)	Wheat (20%), sunflower, oilseed rape, sugar beet (15%), milk (den3/l)
Input rebate	Seeds of wheat, sunflower, oilseed rape, sugar beet, rice, tobacco, alfalfa (30 %); fertilizer and agrichemicals (20%)	Seeds of wheat, sunflower, oilseed rape, sugar beet, rice, tobacco, alfalfa (30 %); fertilizers and agrichemicals (20%)	Seeds of wheat, sunflower, oilseed rape, sugar beet, alfalfa (20%)	Seeds of wheat, sunflower, oilseed rape, sugar beet, alfalfa (20%)
Credit rebate for working capital	For the production of wheat, sunflower, oilseed rape, sugarbeet, rice, tobacco, seed, fertilizers, milk, and selected livestock youth (50 %)	For the production of wheat, sunflower, oilseed rape, sugarbeet, rice, tobacco, seed, fertilizers, milk, selected livestock youth (50 %)	For the production of wheat, sunflower, oilseed rape, sugarbeet, milk, lambs and calves (20%)	For the production of wheat, sunflower, rapeseed, sugar beet, milk, lambs and calves (20%)
	For the storage of: wheat, corn, sunflower, raw oil, seeds, tobacco, rice, wine, fertilizers, plant protection means, seeds (40%)	For the storage of: wheat, corn, sunflower, raw oil, , seeds, tobacco, rice, wine, fertilizers, agrichemicals and protection of seeds (40%)	For the storage of: wheat, corn, sunflower, oilseed rape, production of seeds, production and storage of tobacco (15%)	For the storage of: wheat, corn, sunflower, oilseed rape, production of seeds, production and storage of tobacco (10%)
	For strategic reserves of: wheat, corn, sugar, raw and refined cooking oil, rice and meat (30%)	For strategic reserves of: wheat, corn, sugar, raw and refined cooking oil, rice and meat (30%)	For strategic reserves of: wheat, corn, raw and refined sugar, cooking oil (10%)	For strategic reserves of: wheat, corn, raw and refined sugar, cooking oil (10%)
Agricultural Development Program	Cattle, sheep, goats, hogs, horses breeding, fisheries, beekeeping, worm farming, silage pits, plus extension services	Cattle, sheep, goats, hogs, horses breeding, fisheries, beekeeping, worm farming, silage pits, plus extension services	Cattle, sheep, goats, hogs, horses breeding, fisheries, beekeeping, worm farming, silage pits, plus extension services	Cattle, sheep, goats, hogs, horses breeding, fisheries, beekeeping, worm farming, silage pits, plus extension services
Agricultural export	Lambs/veal, wine and grapes, fruits/vegetables (rate n/a)	Lambs/veal, wine and grapes, fruits/vegetables (rate n/a)	Lamb (30%), veal (15%), wine and grapes (12%), fruits/vegetables (5%)	Lambs/veal, wine and grapes (4%), fruits/vegetables (3.2%)

Source: Official Gazettes 1995 (Nos. 8; 17; 20); 1994 (Nos. 9; 56; 57); 1993 (11; 27; 37; 46); 1992 (Nos. 14; 24; 32; 45; 61; 82)

Notes: Export subsidies cover also tobacco and manufactured goods (Ministry of Finance).

Rates of premium (above support prices) and interest rebates are given in parenthesis.

The agricultural credit rediscount is usually overlooked in the discussion of agricultural subsidies in Macedonia for two main reasons. First, it is a non-budget subsidy (and consequently does not appear in table 2.1). Second, at the urging of its development partners, the Government terminated in May 1995 this and similar other programs because of their inflationary nature. Private banks were instructed to charge agricultural loans at a rate lower than the market rate and went to National Bank to recoup the balance. These credit rediscounts were financed through money creation by the National Bank of Macedonia. While it lasted, however, the agricultural loan rediscount added a substantial subsidy to the other forms supported by the government budget. Future study of subsidies in 1995 should include its impact in the first semester.

The Program for Promoting the Development of Agriculture is primarily an extension program (the English versions of the texts of these programs from 1992 to 1995, as well as the implementation report for the 1994 program are available from the authors upon request). This program also includes subsidies for the improvement of the breeding stock of various animals and funds for land operations as well.⁷

Table 2.3 shows planned budget allocations for agricultural subsidies and support since independence. These obligations depend on budgetary resources and may change during the year. Faced with budgetary constraints, funds are often carried over the next budget cycle, so that it is not always clear which budget officials are referring to. For MAFWE, these obligations were for premium (den 889 million), seed rebate (den 327 million), and credit rebate (den 1,185 million). Sometimes even the official budget figures do not always give a true picture of the budget allocated to MAFWE. For example, though premium, seed rebate and credit are shown on the budget of the Ministry of Agriculture, MAFWE actually controls only the budget for premium and seed rebate. On the other hand, the official budgets for 1994 and 1995, as published at the end of the previous year, do not include the special program for promoting the development of agriculture (which includes the protection and use of land). In previous years (1992 and 1993), this special program was part of MAFWE's budget, though protection of land was in the general budget. As for export subsidies, there is confusion as to

⁷ These include subsidies for sheep, goats, cattle, horses, and hogs; the development of pastures; and the promotion of fisheries, beekeeping and even earth-worm farming. Livestock producers are offered discounts to acquire breeding stocks as well as for the sterilization of less productive genitors. Since 1994, this program also includes activities related to the "protection and use of agricultural land," whose previous allocations were in the general government budget. The activities related to the "protection of land" are a mix of land clearing and reclamation, but also acquisition and consolidation by the MAFWE. It appears that reclaimed land is offered for sale to social farms. The 1991 "law for the protection and use of agricultural land" (see section of structural land reform) and this program provide the Ministry with legal and financial means (though funds have been limited thus far) to intervene in the land market mostly for the benefit of public farms.

what the line in the Ministry of Finance budget "transfers in agricultural and exports" applies to.

Table 2.3: Budget Allocations for Agricultural Subsidies in Macedonia Since Independence (millions of denars)				
Items	1992	1993	1994	1995
Premium	30	260	1,084	891
Input Rebate	43	240	435	278
Credit rebate	24	301	1,100	719
Total subsidies	97	801	2,619	1,888
Development program	5	33	75	92
Total budget MAFWE	126	925	2,829	2,174
Central Govt.. revenue	2,214	13,411	37,993	n/a
Total GSP	16,016	71,526	146,656	n/a
Agricultural GSP	2,850	12,084	27,865	n/a
Agricultural GSP/Total GSP	17.8%	16.9%	19.0%	n/a
MAFWE/Govt. revenue	5.7%	6.9%	7.4%	n/a
MAFWE/Agricultural GSP	4.4%	7.6%	10.1%	n/a
Subsidy/MAFWE	76.7%	86.5%	92.6%	86.8%
Subsidy/Govt. revenue	4.4%	6.0%	6.9%	n/a
Subsidy/Agricultural GSP	3.4%	6.6%	9.4%	n/a

Source: Official Gazettes 1995 (No. 69/1994); 1994 (No. 79/1993); 1993 (No. 40/93 July 1993); 1992 (84/92 of December 1992: Revised budget); Ministry of Agriculture (1994); World Bank (1995)

Notes: MAFWE (total budget of the Ministry of Agriculture, Forestry and Water Economy) includes subsidies, program, salaries, and other items not shown here
GSP is Gross Social Product.

Unlike the funds for the program for stimulating agriculture, MAFWE may lose funds not spent on premiums and seed rebates unless budgetary difficulties caused delays in payment. In this case, funds are carried over to the next year's budget, as has happened every year since independence for at least some of the subsidies. This year also, officials anticipate delays in

premium payment, especially for wheat. On the other hand, funds have been reallocated to cover budget shortfalls on credit rebate.

Table 2.3 also shows increases in the shares of budget allocations for subsidies (premium, input and credit rebate) relative to MAFWE budget, government central revenue, and agricultural Gross Social Product (GSP) from 1992 to 1994. Though the planned budget subsidies for 1995 are substantially lower than that for 1994, their level may increase following the recent government decision to finance the purchase of the 1995 wheat bumper crop. It should be noted, however, that actual budget expenditures are often different from budget allocations (see section 4). Table 2.3, shows the increases, until this year, the share of agricultural subsidies of government revenue.

The assigned role of the Ministry of Agriculture, Forestry and Water Economy is to promote primary agriculture. This role stops at the farmgate. MAFWE is in full control for the formulation and implementation of the Special Program for Stimulating the Development of Agriculture. Funds are earmarked and are not returned to the budget pool should the Ministry not spend it all within the fiscal year. MAFWE plays a supportive role in the formulation of support prices, premiums, interest rebate, and export subsidies.

Another major role of MAFWE is to implement the premium and seed rebate measures. Social farmers are paid the premiums through their bank accounts by the Ministry to whom they submit the appropriate documentation. Most private farmers, who have no bank accounts, are paid the premiums by the processors to whom they sell their crops and milk. In recent years, private farmers have complained of long delays in premium payments (and the fixed price as well) by processors. This year, MAFWE have decided to pay the milk premium directly to private farmers through extension agents. Officials declare that similar measures may be taken for wheat if buyers fail to pay the premium promptly (within a month). Farmers get an instant discount for the seed rebate by seed distributors, who then must file documents with MAFWE to get reimbursed. Although the credit rebate appears on the MAFWE's budget, it is implemented by the Ministry of Finance and the National Bank, to the extent that MAFWE has little information about it. Similarly, MAFWE has little information about export subsidies, which the Ministry of Finance and Foreign Affairs implement.

The Agency for Strategic Stock Reserves in the Ministry of Development is the buyer of last resort for any quantity of strategic commodities not bought by processing plants (excluding milk). In 1994, however, the Strategic Reserves did not fully play its role. It bought 5,000 tons of wheat at den 8/kg, below the protective price of den 10/kg, though the agrokombinat filed for and was paid the premium of two denars 2/kg. This year, the Agency is expected to buy only part of the bumper wheat crop not taken by processors. To relieve the pressure on the Agency, whose stocks are filled with last year's bumper crop, the Government has requested millers to buy more than they anticipated. In return, the price of 600g loaf of

bread was increased from den 18 to den 21 (Nova Makedonija, July 14, 1995). In addition to the large budget outlay committed to buy the crop (den 2 billion), this action will undoubtedly increase the size of the credit rebate for stocks, undercutting the Government's desire to reduce credit subsidies.

2.2 Trade Regime

Macedonia's trade regime is in transition with the rest of the economy. The current trade regime includes import tariffs, import variable levies, quotas and other non-tariff barriers. Work is underway to overhaul the old regime, which owes much to the former Yugoslavia, and implement a new one. Officials emphasize that the current regime met the old GATT's requirements, since the former Yugoslavia was a member of this body. Macedonia expects to meet WTO requirements and become a member in early 1996; officials refer to another former Yugoslav republic, Slovenia, which has already become member of the WTO. Part of these requirements includes changes in four areas of agricultural policy: reduced tariffs, reduced domestic support, reduced export subsidies, and bilateral agreement in sanitary and phytosanitary measures. (tariffs)domestic support).

2.2.1 Custom Tariffs

Macedonia's import tariff schedule follows guidelines inherited from the former federation of Yugoslavia, which set import tariffs ranging from 0% to 25%. For raw materials and goods not produced in Macedonia, import tariffs vary from 0% to 5%; for raw materials and goods not currently produced in Macedonia but with possibility of local production, they vary from 5% to 8%; for raw materials and goods produced in Macedonia, they vary from 8% to 10% ; and for Macedonia's exportable products, they vary from 10% to 25%, the maximum rate.

Table 2.4 shows the current tariff schedule applied to the study commodities and related products. In addition to the import tariff schedule, Macedonia also levies three additional taxes at import: a special tax of 7.5%, another custom charge of 7.5%, and a statistical tax of 1%. Total revenue from import taxes was estimated at Den 6 billion in 1994 and projected at Den 8.5 billion for 1995. According to officials, the projected increase in tariff revenue is due to increased transport costs that add to the cif prices of imported goods. An expressed goal of the Government is to eliminate most of these taxes and/or fold them into a tariff schedule to comply with WTO's requirements⁸.

⁸ The GATT Agreement on Agriculture commits countries reduce trade distorting effects of agricultural policies in four areas: improvement of market access (reduced tariffs); reduction of domestic support (measured by AMS); reduction of export subsidies (in value and volume); and establishment of multilateral rules governing sanitary and phytosanitary measures.

There are no export taxes in Macedonia, but instead export subsidies (based on export value) for some commodities, including agricultural products. In 1994 export subsidies for key agricultural products ranged from 3.2 % (fruits and vegetables) to 4% (lamb/veal, grapes and wine). There are no export subsidies for wheat, milk, sugarbeet, and sunflower seed. Agricultural export subsidies have been increased substantially in 1995, according to custom officials. Lamb now enjoys an export subsidy of 30%, meat products 13%, grapes and wine 12%, and fruits and vegetables 5%.

Table 2.4: Macedonia's Schedule of Import Tariffs in 1994 and 1995	
Product	Import Tariff
Rice, potassium	3%
Urea	4%
Wheat, Maize, Sugarbeet	5%
Wheat flour	8%
Super phosphates, other mineral fertilizer	8%
Edible oil (sunflower, soya, rapeseed), Milk, Corn flour	10%
Cheese	12%
Sugar	17%
Yogurt, butter, grapes	15%
Tobacco	25%

Source: Custom Administration, Macedonia.

2.2.2 Variable Import Levies

In addition to the import tariff schedule, a number of products are assessed special levies or "*prelevements*," which aim to bring the prices of imported goods to the level of protected domestic products. "*Prelevements*" are variable import levies, although officials do not recognize them as such. Initiated in early 1994, variable import levies are to be revised periodically depending on world market conditions. They appear to be determined on an ad hoc basis, although the Ministry of Economy remains attuned to world market prices and conditions. The Economic Chamber often initiates requests for revisions in variable levies on behalf of

producers or processors. The Chamber usually backs up these requests with estimates based on some world prices and vigorously publicizes them in local papers.

Table 2.5 shows variable import levies as of July 1995. Surprisingly, these levies have not been revised for a full year despite the momentous changes in Macedonia (for example, in inflation and exchange rates). Officials at the Ministry of Economy explain that there has not been any need for revision because they contend both world and domestic markets have remained stable since then.

Table 2.5: Variable levies as of July, 1995	
Commodities	Import variable levies
Wheat	Dn 5/kg (\$135/ton) applied 6/8/94 Dn 6/kg (\$162/ton) as of 7/29/94
Wheat flour	Dn 3.56/kg (\$96/ton) applied 3/31/94: Dn 7.25/kg (\$196/ton) revised 5/30/94 Dn 11.5/kg (\$311/ton) as of 7/29/94
Edible oil	Dn 6/kg (\$162/ton) applied 6/14/94 No revision since.
Sugar	Dn 5/kg (\$135/ton) applied 4/18/95 No revision since.
Fluid milk	Dn 5/liter (\$135/1,000l) applied 7/29/94 No revision since.
Soft cheese	Dn 50/kg (\$1351/ton) on 7/29/94 No revision since.
Hard cheese	Dn 70/kg (\$1892/ton) applied 7/29/94 No revision since.

Note: \$1 = Dn37.4

Import variable levies contribute substantially to the protection of domestic commodities. They are larger than the price premiums offered to protected commodities (wheat, milk, sunflower, and sugarbeet) and represent a sizable proportion of the support prices for these commodities. For 1995, import variable levies represent 60% percent of the guaranteed price for wheat (Den 10/kg); 31 percent of the reference price for milk (Den 16.25/l, which is 65% of the retail price of den 25/l); 32 percent of the guaranteed price for sugarbeet (den 2/kg, a drop from the den 2.5/kg of 1994); and 10% percent of the guaranteed price for sunflower.⁹

⁹ Based on conversion factors raw to refined: sugar 7.8:1 and sunflower: 5 kg to 1 liter.

Variable import levies run counter to WTO's requirements; this is one of the areas in which Macedonia would need to revise its trade regime.

2.2.3 Quantitative Restrictions and Other Non-Tariff Barriers

Another source of protection of Macedonian domestic production is quotas placed on imports. Export quotas have also been used to prevent the outflow of so-called "strategic" commodities, those considered essential to survival. Quotas continue to affect both imports and exports (table 2.6), but the list of those goods that are subject to restrictions is growing shorter. Of 7,200 goods on the international trade roster, some 150 currently qualify for import quotas in Macedonia, about 2%. Likewise, some 130 of these goods, about 2%, are also subject to export quotas.

Administrative decisions made through an inter-ministerial committee (including Finance, Foreign Affairs, and Economy) regarding which goods will be subject to quotas in the coming year are announced annually in the Official Gazette. Auctions for licenses to trade in these goods occur four times per year under the aegis of the Ministry of Foreign Affairs, coinciding with the beginning of each quarter. Local newspapers publicize the auctions in advance, and they are open to any legal enterprise.

Known as the "LB regime," seasonal import quotas apply to certain fresh fruits and vegetables during the production and marketing season in Macedonia. For tomatoes, imports are commonly restricted between March 15 and January 15 of the following year. During the two months leading up to the onset of the quota, imports are labeled with a sticker declaring them "LB" for free to import. In 1995, the import quota for tomatoes during the ten-month season is zero. The quota for cucumbers applies to seven and one-half months from February 15 to October 31, excluding the month between July 15 and August 15, during which the quota is suspended. During this period, for 1995, the quota on cucumber imports is zero. Throughout the year, tomatoes and cucumbers may be exported without restriction.

In recent years, the government has chosen to replace most quantitative trade restrictions with tariffs and levies, in keeping with international trends and guidelines for increased transparency under the WTO. The LB regime and the other quota restrictions appear to represent the only non-tariff barriers to trade apart from those relative to phytosanitary standards and other internationally recognized barriers in food trade for reasons of health and freshness.

2.3 The European Union and the World Trade Organization

Macedonia's intention to join the European Union and the World Trade Organization (WTO) is clear. In response to a question about the future of Macedonian agricultural policy,

**Table 2.6: Quotas applied to key agricultural commodities and products,
1994 and 1995 (tons)**

	1994:iii	1994:iv	1995:i	1995:ii-iv
Imports				
Crisp bread	n/m	10	10	10
Bread (twice baked)	150	10	10	20
Tomatoes	0	0	0	0
Cucumbers	0	0	0	15
Table grapes	40	0	0	0
Wines (various)	40	60	60	120
Mineral/chem fertilizers inc NPK	1500	1500	1500	3000
MAP	1000	1000	1000	3000
Complex fertilizers	300	300	300	900
Exports				
Milk/sour cream	0	0	0	0
Wheat	0	0	0	0
Wheat flour	0	0	0	3
Sunflower seed	0	0	0	0
Sugarbeet	0	0	0	0
Raw oil	0	0	0	3
Refined oil	16	10	..	0
Raw sugar	0	0	0	0
Refined sugar	0	0	0	0
Mineral/chem fertilizers including NPK	n/m	15,000	20,000	60,000
Ammonium phosphate mixtures	n/m	15,000	15,000	45,000
Complex fertilizers (N, P)	n/m	1000	1000	6000

Sources: Official Gazettes 38-94 (7.18), 52-94 (9.30), 70-94 (12.31), 20-95 (4.11). Quotas are announced at or near the beginning of each quarter and pertain to that quarter. The exception is the April 11, 1995 Gazette, which published quotas for the last three quarters of 1995.

"n/m" for product not mentioned in the official list; 0 means a zero quota, making trade in the roduct illegal.

the Minister of Agriculture¹⁰ stated that it will be "just like Europe's." What is less clear is what European agricultural policy will be in five or ten years, since the Common Agricultural Policy (CAP) is currently under internal reform to be concluded in 1996, and since the EU has pledged additional changes over the next six years in order to meet its obligations as a member of the WTO. The WTO launched operations on January 1, 1995 as a result of the successful conclusion of the Uruguay Round of the GATT.

2.3.1 Accession to the WTO and EU

Accession of the FYRM to the EU is blocked both by Greek non-recognition of Macedonia as a state and by the large number of countries ahead of Macedonia in line for accession. The procedure for admitting the FYRM to the Council of Europe was postponed from September, 1995 to January, 1996, in response to Greek opposition, and may be postponed again.¹¹ However, the EU has become more sanguine in recent years to enlargement. In contrast to the caution over expansion voiced in 1989 through 1991 as the Soviet Union disintegrated and the Central and Eastern European countries (CEECs) began their transformation, the EU agreed in June, 1993 to eventual membership of the six CEECs that currently hold Association Agreements with the EU: Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovakia. The EU expanded in June 1994 from its original twelve to fifteen members by signing accession agreements with the European Free Trade Agreement (EFTA) countries: Austria, Finland, Norway, and Sweden.¹² Next in line after the Association countries are likely to be the Baltic states.

Currently, the FYRM holds observer status in the Council of the General Agreement on Tariffs and Trade (GATT) and has been assigned a working party to examine its request for accession to the WTO. As of July 3, 1995, the CEECs that had participated in the Uruguay Round and signed the Marrakesh Agreement in April 1994, effectively becoming full members of the WTO, include the Czech Republic, Hungary, Poland, and the Slovak Republic.¹³ Romania, which also signed at Marrakesh, is a full member with developing country status.

¹⁰ Dr. Ivan Angelov, June 8, 1995.

¹¹ Because of that, FYRM is not officially considered a PHARE country, and must rely on status as a recipient of humanitarian aid in order to participate in the PHARE program.

¹² The EU-15 comprises Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom. Norway, although admitted, had not acceded to the EU as of July 1995.

¹³ The Czech Republic, Hungary, Poland, and the Slovak Republic are the four signatories to the Central European Free Trade Agreement (CEFTA), a free trade area planned for implementation no later than 1 January 2001 and currently under examination by the General Secretariat of the GATT in Geneva.

Bulgaria, which did not sign, is nonetheless expected as an Association Agreement country to become a full member soon with developing country status. Like Macedonia, Albania, Bulgaria, and Croatia have been assigned accession working parties and hold observer status as of July 5, 1995.

Thus the current atmosphere for accession of the FYRM to the WTO in the medium term is favorable. Its accession to the EU appears less favorable due to impediments stemming from Greek opposition in the short term, and more importantly the structural reforms needed for this accession.

2.3.2 Changes Under the Uruguay Round and the CAP

The Round commits developed countries to reduce total agricultural subsidies as measured by the Aggregate Measure of Support (AMS)¹⁴ by 20% over a 1986-88 base period (including rates of less than 5%). Export subsidies must be reduced on a product-by-product basis by 36% in value terms and 21% in volume terms over a 1986-90 base. Developed countries have six years to phase in the reforms. Developing countries must reduce their agricultural subsidies 2/3 of the level agreed to by developed countries (i.e. 13.3%) as measured by the AMS. Developing countries have ten years, instead of six, to implement the changes and the reductions apply to subsidies only over 10%. Developing countries may maintain input subsidies *for low-income farmers* (emphasis added), investment subsidies, and export subsidies related to export marketing and internal distribution. Export subsidies must fall by 24% in value terms and 14% in volume terms (again 2/3 of the developed country commitment).

A particularly noteworthy outcome of the Uruguay Round was the Agreement on Subsidies and Countervailing Measures, which defined "subsidy" for the first time in global trade negotiations. The agreement states that a subsidy exists if there is "a financial contribution by a government or a public body," including direct transfers (grants, loans, equity infusion), potential direct transfers (loan guarantees); government revenue otherwise due (tax exemptions, concessions on credits); provision or purchase of goods or services other than general infrastructure; any form of income or price support; and anything where a benefit is conferred.¹⁵

¹⁴ The AMS amounts to the calculation of producer subsidy equivalents (PSEs), as conducted in this report. The AMS is a measure of total level of support to producers based on the gap or price wedge between world and domestic prices, using nominal protection coefficient (NPC), and subsidies for commodities or entire subsectors.

¹⁵ Bernard Hoekman, *Trade Laws and Institutions-Good Practices and the World Trade Organization*, World Bank, Washington, April 1995: p. 19.

Import tariffs are the protection of choice under the GATT. Member states may impose import tariffs as long as they are applied in a nondiscriminatory fashion. As member nations sign bilateral agreements on tariffs, these rates become "bound," that is, considered as upper limits and unchangeable unless the changes meet specific criteria set out by the GATT. There are no requirements with respect to the structure of tariffs or the increase of unbound tariff rates.

By contrast, quantitative restrictions on imports are forbidden (GATT Article XI) unless they are used for balance-of-payments reasons (Article XII), in which case they must be nondiscriminatory (Article XIII) unless specifically waived (Article XIV). Import licensing rules are carefully laid out to standardize procedures across member nations, reduce transaction costs, level access to foreign exchange for licensed and non-licensed importers, and discourage denial of licenses on the basis of minor documentation irregularities.

Macedonia's desire to be "just like Europe" in terms of agricultural policy requires deeper analysis than lies within the purview of this study. Not only is the CAP in the midst of significant reform, but also Europe's accession to the Uruguay Round Agreement obligates European policy makers to implement additional reforms that overlap with CAP reform. (Appendix E: The CAP: a moving target, presents a general overview of the trends under way that are particularly pertinent to the Macedonian case.)¹⁶

2.4 Trade Patterns

The current development of trade within the southern rim, with the rest of Europe, and with the world has a direct bearing on how fruitful accession to these international trade organizations will be; joining Europe and the WTO means access to one of the world's largest markets. While Macedonia has completed the initial preparation for joining the global economy through macroeconomic stabilization, its trade patterns have been buffeted by volatile political conditions pursuant to its declaration of independence, the war in the former Yugoslavia, and the isolation imposed by the Greek blockade. Despite UN sanctions cutting off non-food trade with Serbia and Montenegro early in 1993, and the imposition of the trade embargo by Greece in February, 1994, Macedonia has maintained important trade links with countries of the former Council for Mutual Economic Assistance (CMEA), the former Yugoslavia (SFRY) and with Europe.

Trade patterns from 1990 to 1994 indicate adjustment to the sanctions and the embargo through marked shifts in regional trade, and the gradual erosion of the proportions of both imports from and exports to the EU (Appendix F). A fourfold increase in the proportion of

¹⁶ Several studies have been completed recently with indirect bearing on Macedonia's situation, and are included in the bibliography. Additional studies are required which will speak to the particular issues surrounding accession of developing nations.

Bulgarian imports is matched by a fivefold increase in the proportion of exports through Bulgaria, reflecting Macedonia's increasing dependence on its eastern neighbor not only for goods originating in Bulgaria but also access to the only deep water port in the region (other than Thessaloniki) at Burgas.¹⁷ Increasing reliance on the Albania/Adriatic route for trade with Europe has undoubtedly contributed to the decreasing share of European exports and imports in the total. Macedonia has been forced to replace the direct trucking route through Serbia with reliance on trucking on poor roads to the shallow port of Durrës, and ferrying on the Adriatic Sea to Trieste, Ancona, and Brindisi. Prior to the UN sanctions, for example, goods headed to Germany would likely have been trucked overland on major North-South axis highways through Serbia, Hungary, and Austria, crossing four international borders. The alternative now requires use of secondary roads, and five or six border crossings (Bulgaria, Romania, Hungary, Slovakia/Czech Republic or Austria, and Germany), many of which require delays of several days due to traffic and customs.

While both Europeans (including Greek traders) and Macedonians hope these external shocks will be short-term, the medium- and long-term costs are likely to be high in terms of disrupted trade relationships. The CEFTA countries already have access to Europe that far exceeds Macedonia's and the Accession Agreements have greased the wheels of not only EU membership but also the development of market and supply links within the private sector. Bulgaria and Romania are not far behind. Albania is currently deepening its trade dependence on Italy and is more likely to gain access to other European markets through this relationship.

When Greece and Macedonia resolve their dispute, the FYRM could enjoy unprecedented power in linking the southern rim of a future EU-20(+) via its strategic placement at the crossroads of North-South and East-West trade. The FYRM will not only control key access routes from the Aegean to Western Europe, but also access from the Black Sea to the Mediterranean, and may well be able to boast a major rail linkage and improved highways, brought on at least in part by the current crisis.

2.5 Credit Policies

Agricultural production, processing and distribution, as well as a viable land market depend on the health of the banking and credit systems. Macedonia, furthermore, needs to reestablish the credibility of the banking system, which was severely damaged when depositors lost about USD 1 billion of savings following the break-up with Yugoslavia. Commercial banks are in the process of rehabilitation to allow them to play their role in savings and investment.

¹⁷ It is likely as well that these shifts tell an impartial story given the clandestine trade that is taking place with Greece via Bulgaria and with Serbia in violation of the sanctions. The IMF notes that a surge in the relative import of imports may be largely offset by unrecorded exports to third countries.

enterprises owe banks. Extensive discussions about credit can be found in the preparatory documents of the Private Farmer Support Project.¹⁸ Both the World Bank and USAID have proposals for the development of agricultural credit in Macedonia, for example, using savings houses. This section is limited to the impact of credit measures on agricultural subsidies in 1994 and 1995.

The fight against inflation is truly a success story of Macedonia's stabilization program (Appendix G). Figure 2.1 shows monthly inflation and loan interest rates for 1994 and the first six months of 1995. Inflation rate had reached a peak of 80% per month in early 1992 and 30% per month in 1993. If the inflation of 6% annual percentage rate (APR) in the first six months of 1995 holds,¹⁹ the Government could do much better than its target of 18% APR (figure 2.2).

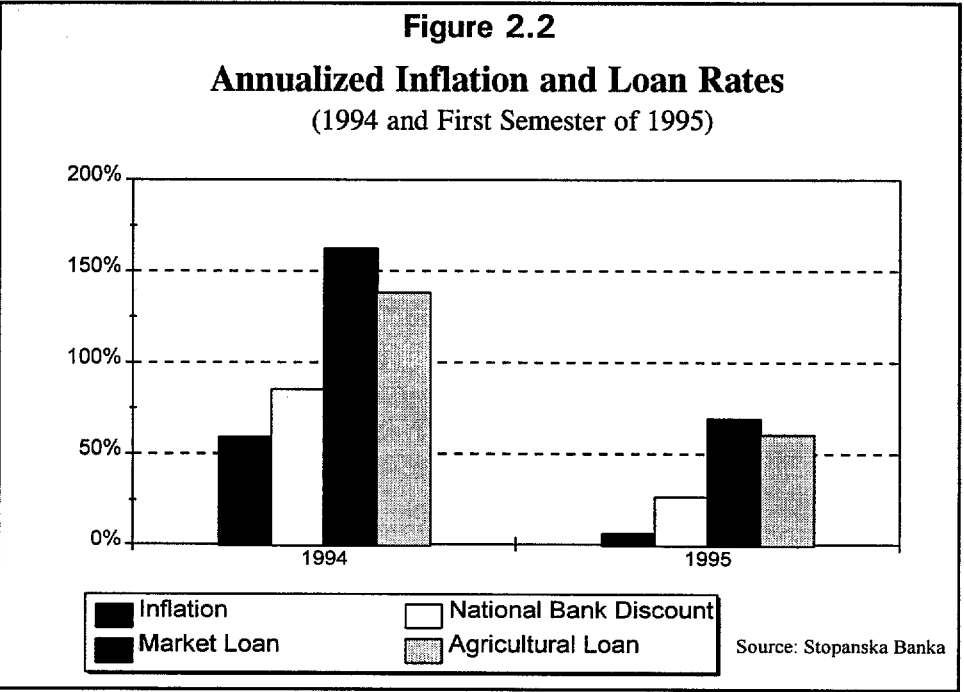
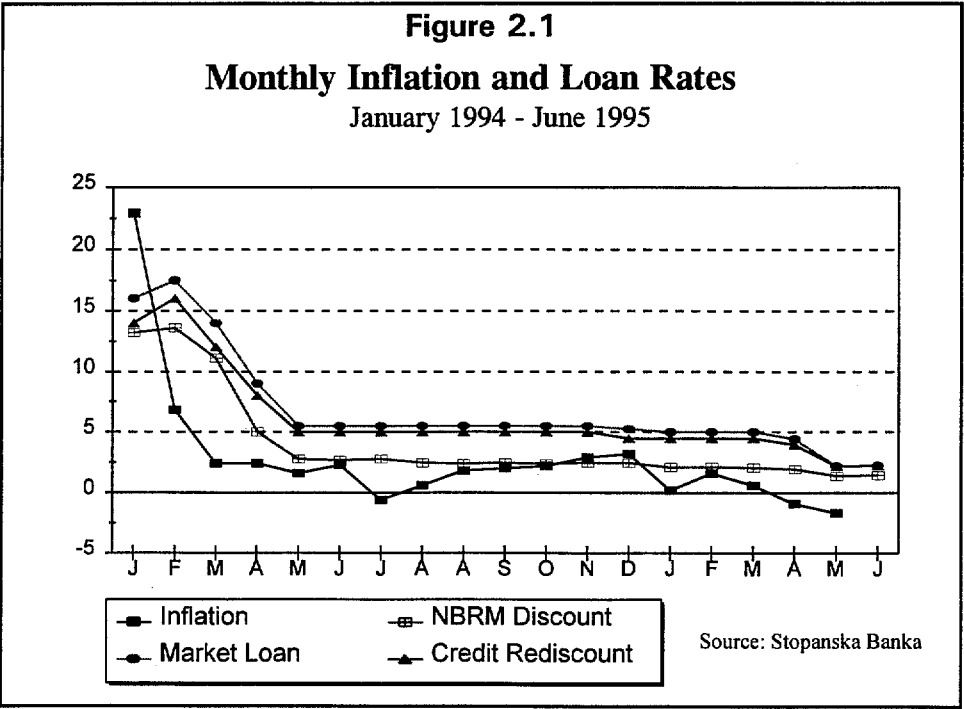
The success of bringing down inflation, however, resulted in the extremely high cost of borrowing in Macedonia. In its policy statement for 1994, the Government declared that "market-based interest rates alone would not ensure an efficient allocation of credit because banks' decision making is distorted by a high level of impaired assets, and because weak financial discipline makes enterprises insensitive to interest rates. Therefore we intend to impose maximum limits both on individual banks's access to National Bank credits and on each bank's extension of credits." The government also decided that the discount rate will be set a level that is clearly positive in real terms, and that it will not be adjusted for seasonal changes in the monthly inflation rate²⁰.

The National Bank of Macedonia (NBM) maintained a high discount in real rate of 26% per annum in 1994 and 20% APR in the first six months of 1995. In turn the commercial banks, notably Stopanska Banka, charged high real interest of 104% in 1994 and 50% in the first six months of 1995. For 1995, commercial banks have agreed to charge a real interest rate of 12% APR, on top of the targeted 18% APR inflation rate this year. Because lending interest rates are not brought down with inflation, Macedonia has one of the highest positive real lending rates in the world. If deposit rates were on par with lending rates and if foreign investors were confident in the stability and strength of Macedonia, the country would have seen an influx of investment. As it is, foreign-denominated deposits yield no more than similar rates elsewhere. Also real short-term deposit rates have been negative since 1991 (World Bank, 1995) and until recently.

¹⁸ Classen (1994) also provides a general treatise of the critical role of agricultural credit in the Central and Eastern European countries in transition.

¹⁹ In June, retail prices actually fell by 1.7%, and cost-of-living by 2.9%, led by decreases in energy (-2.2%), food (-6.2%), and a seasonal drop in vegetable prices (-38%).

²⁰ Policy Statement of the Government of the Republic of Macedonia, January 1994



To partly relieve the credit squeeze²¹, the Government had instituted rediscounting of selective credit as the main vehicle of money injection in the economy. Agriculture benefited from such a program in addition to the credit rebate. Because of its inflationary nature, the Government decided to terminate this program in March, 1995, and did so in May, 1995. While it lasted, agricultural producers and processors eligible for the budget-support credit rebate also benefited from this special credit.

Budget credit rebate	Effective credit subsidy
10%	38%
15%	45%
20%	52%

The 1994 agricultural loan rate was 24.3% APR below the market rate. The effective agricultural credit subsidy rate increases with the agricultural credit rebate (box).²² As will be seen later, the subsidy from the agricultural credit discount was larger than the credit rebate for most commodities.

Despite this significant subsidy, the lowest real interest for agriculture (for example for the production of wheat) was still an extremely high 27.2% per annum. Producers and processors complain about the high cost of capital. They refer to the credit rebate as merely a drop in the bucket. Many public and private enterprises have defaulted on their loans when their return on investment could not match this real high interest rate. Most have resorted to some barter trade when faced with customers with similar lack of cash or limited access to credit²³. A reasonably low positive real interest rate would certainly increase access to credit, and possibly reduce the level of agricultural subsidies.

2.6 Foreign Exchange

Since the introduction of the "new denar" (hereafter denar) in May 1993, the value of the Macedonian currency has been determined by a managed float. Commercial banks and licensed traders are free to exchange the denar. They report the results of trades daily to the National Bank of Macedonia (NBM), which publishes average values against major currencies on the following day.

From May 1993 to the end of the year, the denar depreciated in nominal terms (denars/unit foreign currency) by 94% against the US dollar, and 80% against the Deutsche

²¹ The credit constraint is eased somewhat by the informal credit sector, with apparent dissaving, however, as agricultural exports earnings dry up because of the sanctions.

²² The effective agricultural credit subsidy rate is: $(\text{market interest} - \text{agricultural interest}) + \text{agricultural interest} \times \text{rebate}$.

²³ In the USA small businesses that face similar limitations in cash flow and access to credit may also engage in barter trade (The Washington Post, July 17, 1995). However, members of barter networks must sign a fair trade declaration, pay membership fees and a commission on each barter transaction.

mark, reflecting continued domestic inflation. In 1994, the denar began to appreciate in nominal and real terms (Figure 2.3). The real effective exchange rate (REER), which measures changes in relative prices between nations, has appreciated steadily since May 1993. Measured by consumer prices, the REER had appreciated 36% by the end of 1994 (Figure 2.4); measured by relative unit labor costs, the appreciation totaled 68%, reflecting enterprises' decisions to continue to increase wages above increases in labor productivity (Appendix H).

In 1995, the denar continued to appreciate in both nominal and real terms. An upward movement suggests that a currency is currently undervalued relative to its long-term equilibrium level. However, the pressure on the Denar is likely to be a function of temporary internal and external shocks. The result may be that the denar only appears to be undervalued temporarily and is, in fact, overvalued with respect to its long-term equilibrium.

These developments have resulted in a marked appreciation of the denar against the Albanian lek, the Bulgarian lev, and the Greek drachma (Figure 2.4), and the US dollar as well. The result of these currency pressures for the agricultural sector may be a form of Dutch disease. As clandestine trade in finished goods with Serbia and other sources provide capital inflows that push up the value of the denar, exporters of agricultural goods suffer because their products become relatively more expensive in foreign markets relative to competing imports. This is especially true in Bulgaria, where marked increases in trade since the onset of the Greek embargo may be jeopardized in the medium term. While the lev has continued its downward march against the dollar since 1993, the appreciation of the denar signifies an erosion in the terms of trade for exports of fresh and processed foods (see figure 2.4). Exports of lamb, fruits, and vegetables to other European destinations may also be affected but transport constraints present a far greater obstacle to European trade than overvaluation, at least in the short term.

Most important for the purposes of this study is that the growing strength of the denar increases the nominal protection of domestic production of key commodities, including wheat and milk, by lowering relative prices of competing imports and increasing the pressure to raise special levies on those imports. The relative importance of this phenomenon is discussed later in the sensitivity analysis.

Figure 2.3

Denar Exchange Rate Indices Nominal & Real Effective Exch. Rates

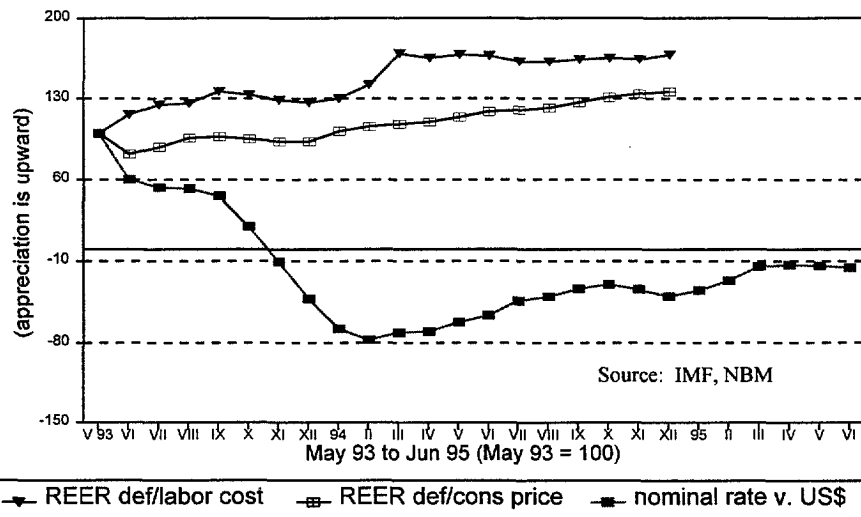
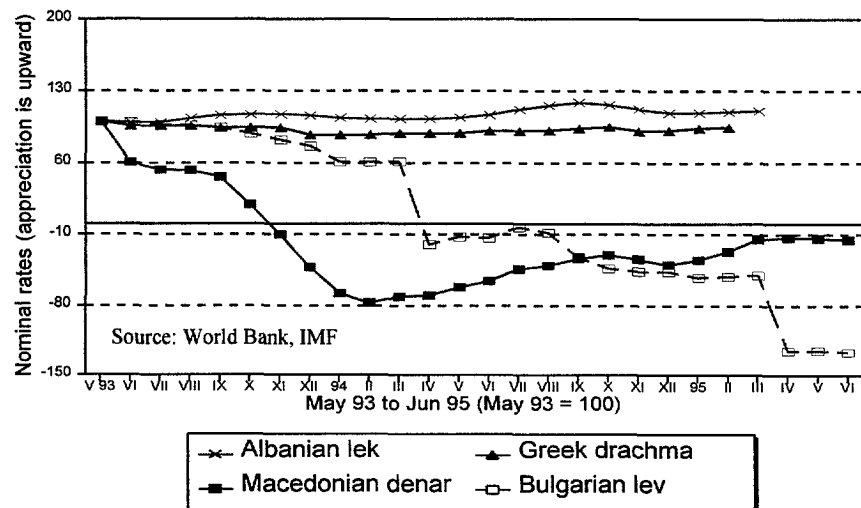


Figure 2.4

Comparative Exchange Rate Indices Albania, Greece, Macedonia, Bulgaria



2.7 Research and Extension

Both agronomic and agricultural economic research programs are funded and conducted by the Ministry of Science. Since 1987, the Faculty of Agriculture has been restricted to teaching while agricultural economics research has been assigned to the Institute of Economics in the Ministry of Science. Surveys of private farmers by the Faculty of Agriculture have stopped since 1974 for lack of funds (Todor Galev, personal communication). Since then, data collection on all agricultural aspects has been the domain of the Office of Statistics. At the Faculty of Agriculture, students focus research on the large agrokombinats, mostly ignoring private farms. To a large extent this is dictated by the job opportunities presented by the agrokombinats. Also, data collection is much easier with the agrokombinats that keep records than with private farmers who don't. It appears that scientific investigations based on random sampling techniques are seldom used by such students at the Faculty of Agriculture partly because the linear programming models most preferred in academic circles may not require such survey techniques.

MAFWE provides extension services through its program for the development of agriculture. Because the focus of MAFWE is primary agriculture, extension agents emphasize agronomic practices and little economics. The recent change in the implementation of the premium for milk raises some concern because extension agents now handle cash payments. Though no misdeed has been reported thus far, experience elsewhere shows strong temptations on part of extension agents to misuse funds. This financial responsibility may reduce the role of extension agents as service providers.

3. AGRICULTURAL SUBSIDIES

Actual expenditures on agricultural subsidies by commodity are needed to monitor public expenditures. These estimates are required to calculate producer subsidy equivalents (PSEs) and assess the impact of protection on producers and consumers. The Ministry of Finance provides information on total expenditures for the main categories of agricultural subsidies, but there are no official records of their breakdown by commodity. Because agricultural subsidies are designed and implemented by several ministries and agencies, reconstructing the distribution of agricultural subsidies by commodity is an arduous task. The estimates provided here are the best approximations available as of July, 1995. They rely on several partial official figures and the authors' interpolations when official data are lacking or conflicting.

A two-step approach was used in this exercise. First total budget expenditures for 1994 production were estimated.²⁴ Then each category of the subsidies was broken down by commodity.

3.1 Budget Subsidies

Budget subsidies and programs concern the premium, the seed rebate, and the credit rebate, as well as export subsidies and the program for stimulating the development of agriculture. Export subsidies cover more than agricultural products and do not apply to the study commodities, except grapes. Not all of the program for stimulating agriculture may be considered subsidies if one excludes state-provided extension services. Other measures that are considered as subsidies in this program are not directly related to the study commodities although one could have tried to trace some of these subsidies (breeding and range development) back to milk production. This study provides estimates of budget outlays for the premium, the seed rebate, and the credit rebate by commodity.

The 1994 fiscal year (FY) budget expenditures are adjusted for budget carryovers to estimate the budget subsidies for the 1993/1994 production year (table 3.1). Actual FY 1994's subsidies are smaller than planned (Den 2,619 million). This results on smaller shares of actual expenditures of the central government revenue (5.3%) and the agriculture GSP (7.2%) than what the government might have intended, 6.9% and 9.4% respectively. Actual budget subsidies could not be compared to actual expenditures of MAFWE for lack of information. (It should be noted that subsidies for the 1993/94 production season cannot be compared to the FY 1994 government revenue and GSP.)

²⁴ Wheat seed presents some difficulty since wheat is planted in November and harvested the following summer. (Other crops are planted and harvested the same year.) Instead of the 1993 expenditures on Wheat seed rebate and credit rebate we used those of 1994 for lack of information on 1993. The bias on the seed rebate may be minimal since the acreage planted in wheat has been stable in recent years. The bias on the credit rebate, however, could be much larger and downward, since the loan rate was higher in 1993 than in 1992.

Table 3.1: Agricultural Subsidies on 1994 Production (million denars)				
Items	Premium	Seed	Credit	Total
Total 1994 Budget Expenditures	889	176.5	953.7	2,019.3
Less 1993 Carryover in 1994	153	64	393	610
Plus 1994 Carryover in 1995	0	0	18	18
Expenditures for 1994 production	736	112.5	578.7	1,427.3

Source: Ministry of Agriculture and Ministry of Finance (July 21, 1995)

The breakdown of subsidies by commodity uses information from the Ministry of Agriculture and the Ministry of Development. MAFWE provides detailed information on premium and seed rebate expenditures disaggregated by commodity, but their total conflicts with the official figure from the Ministry of Finance. The two ministries could not reconcile the discrepancies. Therefore the shares by commodity calculated from MAFWE detailed figures were applied to the total from the Ministry of Finance.

MAFWE does not provide information on the agricultural credit rebate because this subsidy is outside its domain of implementation. In principle, the Social Accounting Office (SOK), a branch of the Statistical Office at the National Bank, is the repository of such information. SOK is mandated to receive and approve requests for payment of the credit rebate (see Official Gazette No. 03, April 1995) and receives as well all financial statements of registered enterprises, including banks that provide agricultural credit under the credit rebate program. (Only registered companies benefit from the credit rebate.) SOK, however, has had little time, but also to its credit, no demand thus far, to collate this information.²⁵

The Ministry of Development is another source of information on agricultural subsidies. Its information on credit rebate for production and storage is disaggregated by commodity, but not the credit rebate for the production of high quality seeds. The credit rebate for strategic reserves in 1994 only applied to locally produced wheat. Strategic Reserves include imported corn and probably imported sugar and cooking oil, but imported products do not qualify for the credit rebate. The Ministry of Development gathered information from Stopanska Banka, which had a quasi-monopoly on agricultural credit until mid-1994. When other banks were allowed to deliver agricultural credit, the Ministry did not continue its collection efforts with these other banks. Instead, it projected actual expenditures for 1994 based on the first semester of 1994.

²⁵ The Ministry of Finance, which could not provide this disaggregated data has since realized the importance of actual expenditures on credit rebate as a budget planning and monitoring tool. It plans to ask SOK to routinely assemble this information. SOK has promised to provide data for the first six months of 1994 in 30 days.

These projections (Den million 792 for the credit rebate) are well above official final estimates. For lack of better information, however, we have retained the shares of the credit rebate by commodity and activity. Officials at both Ministry of Agriculture and Ministry of Finance concur that this is the best approach.

The data on the credit rebate on seed production from the Ministry of Development were disaggregated by estimating the proportion of seed produced (or multiplied) locally for which seed providers could apply for the credit rebate program. Sources of information for these shares include the Ministry of Agriculture, Agrounija, the largest private seed grower and distribution, and Pelagonija agrokombinat in Bitola, the single most important seed producer in the country.

3.2 Agricultural Credit Rediscount

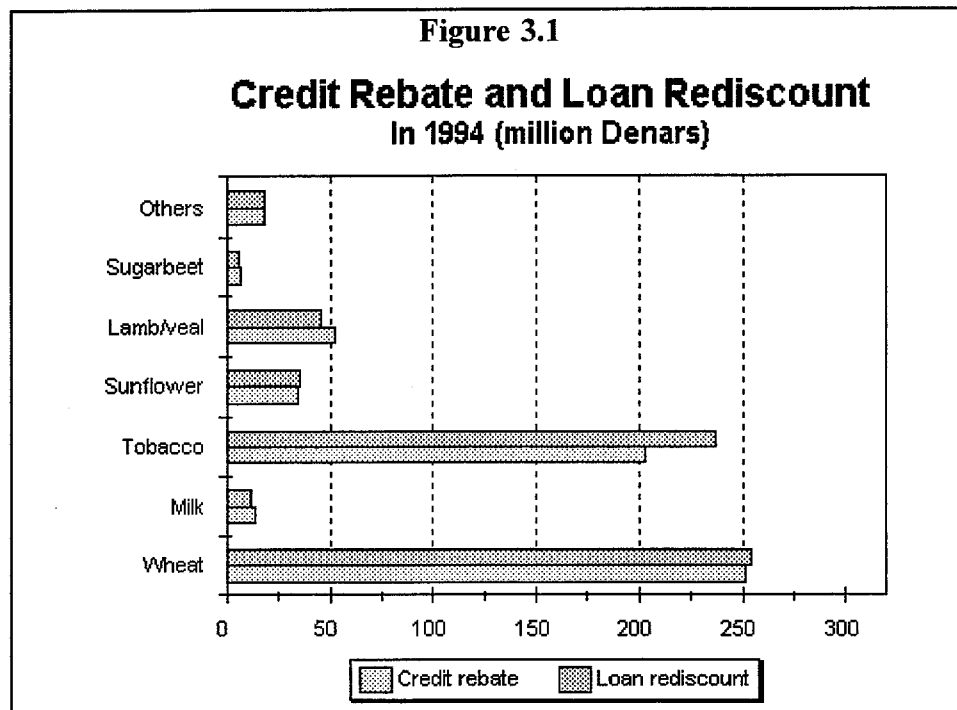
The calculation of the agricultural credit rediscount based on the estimated total credit rebate is straightforward.²⁶ In 1994, the subsidy from this measure surpassed the credit rebate for most commodities (figure 3.1). This result is achieved when the agricultural credit rediscount (24.3%) is much larger than the credit rebate, such as the 15% for storage of wheat, sunflower, and sugarbeet, and for production of tobacco and seeds, and 10% for strategic reserves.

Table 3.2: Total Agricultural Subsidies in 1994 (million)												
Commodity	Premium		Seed Rebate		Credit Rebate		Total Budget		Ag Loan Rediscount		Total Subsidy	
	Den	US\$	Den	US\$	Den	US\$	Den	US\$	Den	US\$	Den	US\$
Wheat	478	11.0	102	2.3	257	5.9	836	19.3	250	5.8	1,086	25.1
Milk	207	4.8	0	0.0	13	0.3	221	5.1	12	0.3	232	5.4
Tobacco	0	0.0	0	0.0	199	4.6	199	4.6	233	5.4	432	10.0
Sunflower	30	0.7	2	0.1	34	0.8	67	1.5	35	0.8	102	2.3
Lamb/veal	0	0.0	0	0.0	51	1.2	51	1.2	45	1.0	96	2.2
Sugarbeet	19	0.4	1	0.0	7	0.2	27	0.6	6	0.1	32	0.7
Other	2	0.0	8	0.2	18	0.4	27	0.6	18	0.4	45	1.0
Total	736	17.0	113	2.6	579	13.4	1,427	33.0	598	13.8	2,025	46.8

Source: Ministry of Agriculture, Ministry of Development, and Ministry of Finance

Notes: Exchange rate in 1994: \$1 = Den 43.3

²⁶ Total agricultural rediscount is $\text{rediscount\%} \times (\text{total credit rebate}) / (\text{agricultural interest\%} \times \text{rebate\%})$



3.3 Commodity Shares of the 1994 Agricultural Subsidies

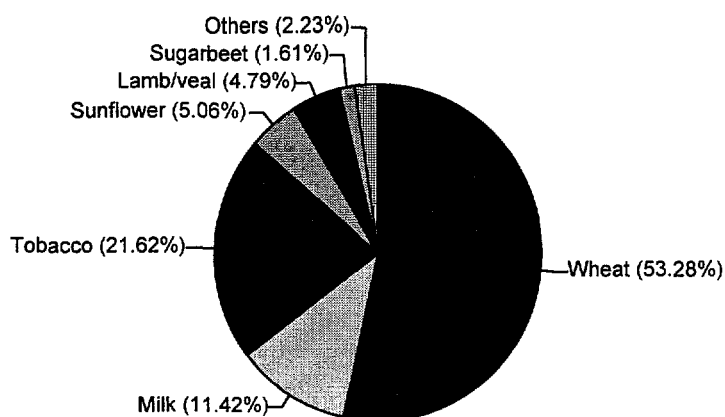
Table 3.2 shows the estimated 1994 agricultural subsidies by commodity. Wheat draws subsidies from all available categories: price premium, seed rebate, credit for production of seed, for crop production, for storage at miller's warehouses, and in strategic reserves. There has been little storage and no strategic reserves for sunflower and sugarbeet in 1994, though they would have qualified if their production were adequate. Milk draws subsidies only for the premium and credit for production. Tobacco, added for reference, is a close competitor to wheat for agricultural production subsidies, but only for the credit rebate, since there was no premium or seed rebate for tobacco in 1994.

Table 3.2 and Figures 3.2 and 3.3 confirm the general view that wheat is the largest beneficiary of agricultural subsidies, whether one refers to the budget supported subsidies or to total subsidies that include the non-budget agricultural loan rediscount. The non-budget subsidy becomes a major source of support for those commodities that are not entitled to premiums in contrast to wheat, milk, and sugarbeet. Despite this fact, wheat still accounts for more than half of the total agricultural subsidies in 1994.²⁷

²⁷ Note that these subsidies do not include export subsidies, which only benefit tobacco and lamb/veal among the commodities included here.

Figure 3.2

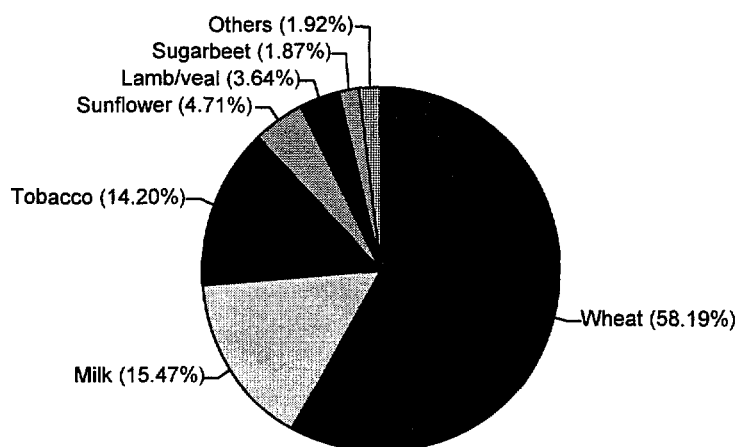
Shares of Total Subsidies*, 1994



* Total subsidies include budget and non-budget subsidies (agricultural loan rediscount by National Bank). The National Bank terminated this agricultural loan and other special credit rediscounts in May 1995.

Figure 3.3

Shares of Budget Subsidies, 1994



Note: Agricultural budget subsidies include price premium, seed rebate, and credit rebate, when applicable.

4. MEASURES OF PROTECTION AND IMPACT

Macedonia considers bread, milk, butter, and edible oil as survival goods and thereby exempts them from a standard 5% sales tax in effect since 1994. Worry about import dependency for "strategic" food crops, particularly wheat, has deepened in response to the trade shocks imposed by UN sanctions against Serbia in 1993 and the Greek trade embargo in 1994. Even in the past two years of record wheat harvests—the expected 1995 harvest is enough to meet total demand in Macedonia anticipated in the year 2010 (Murarcaliev,²⁸ personal communication) —Macedonian policy makers, academics, and regular citizens understandably shrink from permitting wheat exports, equating exports with food insecurity.

NPCs are calculated for wheat, cowmilk and cheese, sunflower, sugarbeet, and fertilizer at the factory gate, where producers are paid price premium, when applicable. Because of Macedonia's small size, transport cost from Burgas (or Thessaloniki) to border is essentially the same to any major city (notably Titov Veles and Bitola). Thus, border price is practically the same as factory gate price. The PSEs are estimated for wheat, cowmilk, sunflower, and sugarbeet. No NPC or PSE is calculated for grapes because of constraints in data collection and time. Appendix D provides detailed background information about the commodity subsectors under investigation.

4.1 Nominal Protection Coefficient for Wheat

The domestic price of wheat is legally free and market driven, but functionally the guarantee price set by government dictates the market price. The government price constitutes the government's promise to purchase (through the Agency for Strategic Reserves) all excess wheat at a minimum of Den 10/kg (in 1994 and 1995). With the 20% production premium, the effective producer price is Den 12/kg.²⁹

Nominal protection coefficients have been calculated based on two wheat imports: actual French soft wheat, with a border price of \$127 imported through Burgas, and US soft red winter #2, with a border price of \$174.50 that might have been imported through Thessaloniki (Table

²⁸ Prof. Aleksandar Murarcaliev is the chief author of the Agricultural Strategy for 2010 commissioned by the Macedonian Ministry of Agriculture from the Economic Research Institute.

²⁹ The only instance the team encountered of a price different from Den 12/kg was, ironically, the price at which ZK Pelagonija, the largest public sector agro-kombinat in the country sold its surplus in 1994 to the Agency for Strategic Reserves, the state agency charged with maintaining wheat stocks and purchasing excess wheat at the guarantee price. The total sale in this case was 5,000 tons at the end of the 1993-94 season (about 14% of the total 1994 Pelagonija harvest) at a price of Den 8/kg. The Ministry of Agriculture agreed in this special case to pay the "full" premium of Den 2/kg instead of the strictly legal 20%, so that the effective producer price for this portion of Pelagonija's harvest was Den 10/kg.

4.1) The results indicate that protection levels range from +59% for the American wheat to +118% for the French wheat. Protection should have been high when the border price is calculated assuming Thessaloniki as the port of entry and rail transport to the border. In 1994, however, the French wheat came at a very low price through Burgas, suggesting that it was either undersold or of a lower quality compared to the American wheat. The relative importance of prevailing exchange rates, costs of transport, and changes in world market prices are examined through a sensitivity analysis presented in Appendix I.

Table 4.1: NPC for Wheat, 1994							
Wheat	Prices in denars/ton						NPC
	Producer price	Import fob	Shipping to port of entry	Port cif	Port to border	Border price	
		[b]					
	[a]		[c]	[b+c]	[d]	[b+c+d]	
Macedonian wheat	12,000	n/a	n/a	n/a	n/a	5,494	2.18
vs. French wheat via Burgas							
Macedonian wheat	12,000	5,996	1,298	7,293	260	7,553	1.59
vs. US #2 SRW via Thessaloniki							

Notes:

1. Macedonia domestic price of wheat delivered to millers includes 20% premium.
2. Den/\$ conversion rate is Den 43.2583 per US\$ (average 1994 rate).
3. SRW: soft red winter wheat #2 (soft or common wheat).
4. Import prices are actual for 1994 (French soft wheat) and 1994 average (US).
5. Regional transport costs based on observed rates 1994-95; international rates from the International Wheat Council.
6. Bulgarian wheat not included due to 1994 export ban and reports of low quality by bakers.
7. fob: free on board (exit price at border of country of origin).
8. cif: cost, insurance and freight (entry price at border of country of destination, all costs included).

It should be pointed out that a recent FAO agricultural study assessed protection levels of wheat and a number of other commodities.³⁰ The tool used in their analysis, "conversion factor (economic/ finance)," is functionally the reciprocal of the NPC. Their implied NPC for wheat in 1994 is 0.69, a markedly different figure. The reasons appear to be due to their

³⁰ FAO, *Former Yugoslav Republic of Macedonia Private Farmer Support Services Project, Preparation Report*, Report No. 76/94 CP-MCD 4, 21 June 1994 (hereafter FAO 1994).

manipulation of a world market price via a MUV index (not defined) to arrive at a border price (Thessaloniki) of \$233, and their comparison to Macedonian wheat at Den 8/kg.³¹

4.2 Producer Subsidy Equivalent for Wheat

The Producer Subsidy Equivalent (PSE) is used to analyze the protection resulting from both the trade regime and various agricultural subsidies affecting the commodities for which nominal protection coefficients were calculated: wheat, cowmilk, sunflower seed, and sugarbeet. Technically, the PSE for crops should include the implicit fertilizer subsidy/tax as revealed by the NPC for fertilizer. However, the NPC for fertilizer calculated here applies only to the domestic fertilizer production and not total fertilizer use (including imports) on farm.³² Furthermore, estimates of fertilizer use by commodity are not available. Given that actual fertilizer use has dropped in recent years, the bias introduced by not accounting for the implicit subsidy/tax was judged minimal.³³ Given data inconsistency regarding processing and domestic marketing, no NPC for consumers were calculated. Therefore, no consumer subsidy equivalent is derived.

Table 4.2 shows the producer subsidy equivalent for wheat under two scenarios: current trade via Burgas and hypothetical trade via Thessaloniki. The PSE is the sum of the price wedge (price differential times quantity), seed rebate, credit rebate, and the agricultural credit rediscount. The percent PSE at domestic price measures the incentive within the current policy framework, while the percent of PSE at world price measures incentives with respect to the economy as a whole (Tsakok, 1990). The price wedge (value of production at the difference between domestic and adjusted world prices) is created by the government price fixing and the trade regime (tariff and quotas) affecting wheat. As indicated in the calculation of the NPC, the domestic price reflects the premium paid to producers. It is assumed that the Government's pricing policy drives the internal markets and results in a domestic price of Den 12/kg applicable to domestic production and uses, although the premium is paid only on wheat marketed to millers and bakers.

The PSE represents 69% (via Burgas and 52% via Thessaloniki) of the value of the wheat production at domestic price. Trade via Burgas, with high transport costs, provided some natural protection. It means that Macedonia provided more protection than the United States in 1993 (table 4.3) whether trade went through Thessaloniki or Buras, and more protection than the European Union with trade through Burgas. Given that the EU and US have pledged to reduce

³¹ FAO 1994: Working Paper 7.

³² An NPC for fertilizer use on farm greater (less) than 1 translates into a tax (subsidy) for farmers. The NPC for domestic production fertilizer greater than 1 suggest that the factory is protected and farmers implicitly taxed. However, the factory only satisfies only part of domestic consumption.

³³ Alternatively, the PSEs for crops may considered as including subsidies instead of net subsidies, i.e, subsidy less tax.

their level of support, Macedonia would need also to review its support given to wheat to reduce misallocation of resources. However, rather than trying to match other countries' protection, Macedonia should look at the opportunity cost that represents the PSE and at alternative uses of these resources to promote agricultural productivity and competitiveness.

Table 4.2 Producer Subsidy Equivalent (PSE) for Wheat, 1994		
Items	Via Burgas	Via Thessaloniki
Production (tons)	336,113	336,113
Domestic price (Pd)	12,000	12,000
World parity price (Pw)	5,494	7,553
NPC	2.18	1.59
Price Wedge (million denars)	2,187	1,495
Seed rebate (million denars)	102	102
Credit rebate (million denars)	251	251
Credit rediscount (million denars)	255	255
Total PSE (million denars)	2,794	2,102
Unit PSE (denars/ton)	8,313	6,254
PSE% @ Pd	69.3%	52.1%
PSE% @ Pw	151.3%	82.8%

Over 70% of the wheat PSE is made up of the price wedge. The other components of the PSE are the seed rebate, the credit rebate, and the agricultural credit rediscount.

Table 4.3 Percent PSE for Wheat in the EFTA Countries, EU, and USA, 1991-1993							
Year	Austria	Finland	Norway	Sweden	Switzerland	EU	USA
1991	71	83	84	82	78	62	54
1992	68	73	77	56	80	48	36
1993	55	67	74	39	79	57	51

Source: USDA/ERS, 1994

Note: All EFTA countries except Norway have since joined the European Union

The PSE represents transfers to producers from taxpayers (through government subsidies, including the price premium) and consumers. For trade via Thessaloniki (PSE of Den 2,102 million), the transfer from taxpayers amounts to denars 830 millions, while the transfer from consumers totals denars 1,272 million. For trade vis Burgas (PSE of Den 2,794 million), the transfer from taxpayers stays at the same level, which means that the transfer from consumers is much larger (Den 1,964). The credit rediscount is treated as a transfer from consumers given that the agricultural loan rediscount is money creation that adds to inflation supported by the population at large, which is represented by consumers. It should be noted that these transfers do not represent the total costs supported by taxpayers and consumers.³⁴

4.3 Nominal Protection Coefficient for Cowmilk

Protection of Macedonian dairy farmers is difficult to measure with accuracy because of the quality disparity between imported UHT milk and domestic milk, for which pasteurization consists of boiling at 90°C for 7 to 8 seconds. All Macedonian citizens, including the Advisor to the Minister of Agriculture on Livestock and Dairy, boil local milk. Packaging is also a distinguishing factor. In contrast to the square, wax paper tetrapak cartons in which imported milk is packaged, Macedonian milk is marketed in heavy plastic bags. Dairy managers report that tetrapak packaging is prohibitively expensive.

Because fluid milk imports are fundamentally incomparable with domestic milk, the nominal protection coefficient for milk has been calculated on the basis of milk produced in Macedonia to offset winter supply constraints. Skopje Dairy Plant produces a milk in the winter by reconstituting German evaporated milk, which contains 40% dry matter and 11.5% fat. The resulting milk is marketed as a close substitute to fresh Macedonian milk. The evaporated milk costs DM 2/liter (including transport) and each liter yields 4.5 liters of 3.2% milkfat equivalent. Using this milk product as an import comparable to domestic milk reveals that Macedonian milk producers enjoy 77% protection levels compared to world producers (Table 4.4).³⁵ The FAO study also found milk to be highly protected, on the order of 100%.³⁶

Protection of Macedonian cheese producers is substantial. NPCs indicate 188% protection levels for makers of *belo* (hard white) cheese, and 291% for makers of *kaškaval* (soft yellow cheese). Domestic producer prices for these cheeses are based on reported unit costs of

³⁴ A detailed welfare analysis, with more taxing data requirements, is required to estimate these total costs. Such an analysis is not conducted here for lack of data.

³⁵ NPCs comparing domestic milk to tetrapak UHT imports at a trade-weighted border price of 47c per kilo had values close to 1.00. This underscores the level of protection of domestic producers since UHT imports in high-cost packaging are about as expensive as bulk milk purchased directly from Macedonian farmers.

³⁶ FAO 1994: Working Paper 7. The conversion factor (economic/financial)—functionally the reciprocal of the NPC—was 0.3.

production in vertically integrated companies that market the cheese through their own stores. The prices are therefore analogous to wholesale levels.

Table 4.4: NPCs for Cowmilk and Cheese, 1994									
Milk and Cheese	Producer price (Den/kg)	Prices in denars/ton							NPC [a/ (b+c+d)]
		Producer price [a]	Factory gate [a']	Import fob [b]	Shipping to port of entry [c]	Port cif [b+c]	Port to border [d]	Border price [b+c+d]	
Cow milk 3.2% fat vs. import equivalent	20.93	20,323	..	n/a	n/a	n/a	n/a	11,485	1.77
White cheese (belo) vs. Bulgarian import			150,000	50,566	n/a	n/a	1,428	51,994	2.89
Yellow cheese (kashkaval) vs. Bulgarian import			280,000	n/a	n/a	n/a	1,428	71,688	3.91

Notes:

1. Macedonian milk producer prices @ Den 17.93/l + Den 3/l premium (Source: SOM).
2. Macedonian wholesale cheese prices from Lokva Dairy, Titov Veles, @ unit production cost (effective wholesale to Lokva retail stores).
3. Den/\$ conversion rate is Den 43.2583 per US\$ (average 1994 rate).
4. Den/DM conversion rate is Den 26.6137 per DM (average 1994 rate).
5. World price for milk obtained from Skopje Dairy Plant, which markets in the winter a 3.2% fat milk made from German evaporated milk mixed with water, at a ratio of 1 liter German (11.5% fat) :4.5 liters local (3.2% fat); German price is DM 2/liter.
6. Bulgarian cheese prices 1994, from PKB Skopje food importers and distributors.
7. Overland standard trucking rates from Maktrans, Inter Falco, &MHK Zletovo Hemiska Industria, \$40 Burgas to Skopje, prorated to the border.
8. Milk liter to metric ton = 971:1 (USDA/ERS).
9. fob: free on board (exit price at border of country of origin).
10. cif: cost, insurance and freight (entry price at border of country of destination, all costs included).

4.4 Producer Subsidy Equivalent for Cowmilk

Table 4.5 shows the producer subsidy equivalent for cowmilk. Because of data limitations (qualitative differences between domestic and imported milk products), the NPC was calculated only for cowmilk. The PSE includes the price wedge (between domestic and adjusted

world prices) created by the government price fixing (at retail and translated into producer price) and the trade regime (tariff and quotas) affecting cowmilk. The domestic price for milk includes the premium of Den 3/l paid to milk producers.

Over 98% of the cowmilk PSE is made up of the price wedge. As shown in the estimates of subsidies, milk derives smaller benefits than wheat from the credit rebate and the agricultural credit rediscount in 1994. The subsidies for total milk are disaggregated into cowmilk and sheepmilk, based on their share in total production.

Table 4.5 PSE for Cowmilk, 1994	
Items	From Germany overland
Production (tons)	115,791
Domestic price (Pd, den/ton)	20,323
World parity price (Pw, den/ton)	11,485
NPC	1.77
Price Wedge (million denars)	1,023
Seed rebate (million denars)	0
Credit rebate (million denars)	9
Credit rediscount (million denars)	8
Total PSE (million denars)	1,040
Unit PSE (denars/ton)	8,980
PSE% @ Pd	44.2%
PSE% @ Pw	78.2%

Note: Credit rebate and loan rediscount prorated for cowmilk (65.35% of total milk in 1994) Conversion factor liter:ton = 971.1 for the price of milk of 20.93 Den/l

The PSE for cowmilk is equal to 44% of the value of cowmilk production at the domestic price. Though large, this level of protection for milk in Macedonia in 1994 was smaller than that in the EU and USA, where milk enjoys heavier protection (Table 4.6). Here again, Macedonia should not feel content to match other countries' support for cowmilk, instead it should think of the opportunity cost of the PSE.

Table 4.6: Percent PSE for Milk the EFTA Countries, EU, and USA							
Year	Austria	Finland	Norway	Sweden	Switzerland	EU	USA
1991	65	75	83	76	83	66	55
1992	67	76	83	69	82	64	53
1993	67	75	82	66	81	61	53

Source: USDA/ERS, 1994

Reflecting the large share of the price wedge in the PSE, transfers from consumers reached Den 896 million, while transfers from taxpayers were only Den 14 million in 1994. The small size of taxpayers' transfers stems from the fact that milk is mostly covered by the price premium. Here again, these transfers to producers do not represent the total costs born by consumers and taxpayers.

4.5 Nominal Protection Coefficient for Sugarbeet

As with the other commodities considered fundamental to Macedonia's standard of living, sugar is a commodity characterized by heavily protected domestic production and heavily taxed imports, despite the country's fundamental dependence on imports for consumption. The Bitola factory will have produced only 7,000 tons of refined sugar in 1994-95, equal to about 35% of domestic consumption. The rest is imported, about 33,000 to 43,000 tons annually.

The sources of imported refined sugars, according to Bitola factory management, are Bulgaria and Turkey, which process raw sugar from Central America. The factory argues that Bulgarian processing is more expensive than Macedonian, but that both are far less costly than European beet processing.

Given Macedonia's desire to retain some sugar manufacturing capacity for strategic purposes, NPCs have been calculated on the basis not only of the refined product (Appendix J), but also on the basis of comparing the raw sugar equivalent value of semi-processed Macedonian beets with imported raw sugar from Caribbean ports. As mentioned, the Bitola factory expressed strong interest in complementing their beet processing with processing of imported raw sugar in the off-season. A comparison between U.S. beets or European beets imported for processing in Macedonia is not practicable given the high transport costs even under normal conditions, since the raw beet:raw sugar ratio is approximately 8:1.³⁷

³⁷ The volume of beet imports would need to be eight times the volume of raw sugar imports to yield the same amount of raw sugar.

Nominal protection coefficients comparing Macedonian raw sugar made from beets with imported raw sugar indicate that Macedonian beet producers are highly protected. Assuming a port of entry at Burgas for the raw sugar imports, the NPC indicates protection of domestic beet production at 66%. With raw sugar inputs entering Greece at Thessaloniki and traveling to the Macedonian border by rail, nominal protection is 81% (table 4.7).

Table 4.7: NPC for Sugarbeets, 1994								
Raw sugar	Prices in denars/ton							NPC
	Producer price	Raw sugar equiv.	Import fob	Shipping to port of entry	Port cif	Port to border	Border price	
		[a]	[b]	[c]	[b+c]	[d]	[b+c+d]	[a/(b+c+d)]
Macedonian raw beet sugar vs. world raw sugar via Burgas	3,013	23,770	11,568	1,298	12,866	1,428	14,293	1.66
Macedonian raw beet sugar vs. world raw sugar via Thessaloniki.	3,013	23,770	11,568	1,298	12,866	260	13,125	1.81

Notes:

1. Macedonia producer price includes 15% production premium (base price is Den .62/kg).
2. Den/\$ conversion rate is Den 43.2583 per US\$ (average 1994 rate).
3. Domestic raw sugar equivalent value based on estimate of conversion beet:raw of 7.889:1, based on average conversion rates at Bitola sugar factory 1990-1994.
4. Wholesale and retail prices provided by Bitola sugar factory.
5. Shipping rates Caribbean/Europe rates for Dec 1994 quoted in New York and London by Maritime Research Inc., Parlin New Jersey.
6. World raw sugar prices provided by New York Coffee Sugar & Cocoa Exchange, Inc., 1994 average.
7. Regional transport costs based on observed rates 1994-95 by transporters in Macedonia.
8. fob: free on board (exit price at border of country of origin).
9. cif: cost, insurance and freight (entry price at border of country of destination, all costs included).
10. Sugarbeets are not traded in international markets due to the prohibitive cost of transport (land or sea).

4.6 Producer Subsidy Equivalent

Table 4.8 shows the producer subsidy equivalent for sugarbeets. It includes the price wedge between domestic and adjusted world prices (over 83% of the total PSE) created by government price fixing and the trade regime (tariff and quotas). The domestic price for sugarbeets includes the premium paid to sugarbeet producers, whose sole buyer is the public sugarbeet factory.

Table 4.8: Producer Subsidy Equivalent (PSE) for Sugarbeets, 1994		
Items	Via Burgas	Via Thessaloniki
Production (tons)	54,103	54,103
Domestic price (Pd)	3,013	3,013
World parity price (Pw)	1,757	1,609
NPC	1.66	1.81
Price Wedge (million denars)	65	73
Seed rebate (million denars)	1	1
Credit rebate (million denars)	7	7
Credit rediscount (million denars)	6	6
Total PSE (million denars)	79	87
Unit PSE (denars/ton)	1,455	1,603
PSE% @ Pd	48.3%	53.2%
PSE% @ Pw	80.3%	96.4%

Note: Conversion factor 1:7.899

The size of transfers for sugarbeets is the smallest of the four commodities for which PSEs were calculated. In 1994, transfers to producers from taxpayers were Den 27 million and transfers from consumers were den 55 million for trade via Burgas. If Macedonia were trading via Thessaloniki, transfers from consumers would have been higher (Den 63 million) because of the smaller border price via Thessaloniki. Transfers from taxpayers would have remained the same.

4.7 Nominal Protection Coefficient for Sunflowerseed

In contrast to those for wheat, milk, and sugarbeet, nominal protection coefficients for sunflowerseed indicate that domestic producers are negatively protected, that is, producers operate at a disadvantage compared with their counterparts elsewhere in the world. Comparing the domestic price with international prices in 1994 yields an NPC of 0.44 assuming that imports come through Burgas; the NPC is 0.57 if the port of entry is Thessaloniki (table 4.9).

Calculation of the NPC for raw sunflower oil equivalent (appendix K) indicates that the Blagojdorev factory is quite competitive in raw oil production (including the premium in the beet price of raw oil produced at the factory).

Table 4.9: NPC for Sunflower seed, 1994							
Sunflowerseed	Prices in denars/ton						NPC [a/ (b+c+d)]
	Producer price	Import fob	Shipping to port of entry	Port cif	Port to border	Border price	
	[a]	[b]	[c]	[b+c]	[d]	[b+c+d]	
Macedonian sunflower seed vs. seed all origins cif Rotterdam by land	9,649	13,464	8,649	22,114	0.44
Macedonian sunflower seed vs. seed all origins cif Rotterdam via Thessaloniki	9,649	13,464	3,194	16,658	260	16,917	0.57

Notes:

1. Macedonia domestic sunflower seed price including 15% premium (base seed price is Den 8.39/kg).
2. Den/\$ conversion rate is Den 43.2583 per US\$ (average 1994 rate).
3. Domestic raw oil value based on estimate of conversion seed:raw of 1:0.4, based on reported conversion rates at Veles oil factory.
4. Rotterdam/Burgas trucking rate for 1994 and 1995 from PKB Skopje, food importer and distributor.
5. Sea freight rates from PKB Skopje; rail rates from fertilizer factory, Veles.
6. World Sunflowerseed prices provided by USDA/FAS (any origin) average Sep-Dec 1994.
7. fob: free on board (exit price at border of country of origin).
8. cif: cost, insurance and freight (entry price at border of country of destination, all costs included).

4.8 Producer Subsidy Equivalent for Sunflowerseed

Table 4.10 shows the producer subsidy equivalent for sunflowerseed. It includes the price wedge between domestic and adjusted world prices created by government price fixing and the trade regime (tariff and quotas). The domestic price for sunflower includes the premium paid to sunflower producers, who sell all production to the public sunflowerseed factory.

Table 4.10: Producer Subsidy Equivalent (PSE) for Sunflowerseed, 1994		
Items	Via Burgas	Via Thessaloniki
Production (tons)	17,880	17,880
Domestic price (Pd)	9,650	9,650
World parity price (Pw)	22,114	16,917
NPC	0.44	0.57
Price Wedge (million denars)	(223)	(130)
Seed rebate (million denars)	2	2
Credit rebate (million denars)	35	35
Credit rediscount (million denars)	36	36
Total PSE (million denars)	(150)	(57)
Unit PSE (denars/ton)	(8,396)	(3,199)
PSE% @ Pd	-87.0%	-33.2%
PSE% @ Pw	-38.0%	-18.9%

Contrary to wheat and milk, the PSE for sunflower is negative, which means a transfer from producers to consumers and taxpayers. In effect, the subsidies for sunflower did not overcome the size of the negative NPC. The negative price wedges are equal to 227% and 148% of the sunflower PSEs for trade via Burgas and Thessaloniki. The other agricultural subsidies that benefit sunflower, such as the seed rebate, the credit rebate, and the agricultural credit rediscount do not compensate for the impact of the price wedge. Sunflower benefits from the seed rebate and the credit rebate and agricultural credit rediscount for production, seed multiplication, and storage, but not for strategic reserves, since domestic output is in deficit.

This analysis indicates that sunflower production was not protected overall in 1994 despite the support price and subsidies. The government fixed pricing amounted to an implicit tax on producers. By comparison, oilseed production (which includes sunflowerseed) was heavily protected in the EU and only slightly in the United States in 1993 (table 4.11).

Table 4.11: PSE% for Oilseeds in the EU, USA, and EFTA Countries							
Year	Austria	Finland	Norway	Sweden	Switzerland	EU	USA
1991	n/a	142	n/a	67	97	66	8
1992	n/a	80	n/a	71	94	66	7
1993	n/a	94	n/a	52	92	63	8

Source: USDA/ERS, 1994

The breakdown of the PSE for sunflower shows transfers from taxpayers to producers in the amount of Den 67 million, but transfers from producers to consumers of Den 217 million. If Macedonia could have traded through Thessaloniki in 1994, the size of the negative transfers from producers would have been much lower (Den 124 million) since the producer price would have been much closer to border price. It should be noted that though consumers benefited from transfers from producers, they still lose from the import tariff imposed to protect producers.

4.9 Nominal Protection Coefficient for Fertilizer

NPCs for fertilizers have been calculated both in terms of actual imports competing with domestically produced NPK (15:15:15 in this case), and in terms of mixes of internationally marketed chemical sources of nitrogen, phosphates, and potassium for which published fob prices are available (NPK 10:20:30). Since the Macedonian factory recently issued a new product known as "Uras," which is 27% nitrogen, a separate coefficient was also calculated comparing this domestic product with internationally marketed urea (Table 4.12).

The results of the analysis suggest that, especially in comparison to NPK imported for direct marketing and use by Macedonian farmers, the domestic product is not competitive, with a protection level of 118%. Comparisons to mixes of individual ingredients, the factory continues to enjoy protection but at a lower level: 43% for NPK and 24% for urea. The FAO study also suggested levels of protection in this range.³⁸ The sources of protection in this case stem exclusively from import taxes on competing inputs, but factory management reports that lower prices for imports are cutting deeply into their market. The factory continues, however, to sell its products in part because it can mix ingredients according to specific needs.

A Producer subsidy equivalent is not calculated for inputs such as fertilizer. Rather, the implicit tax/subsidy as revealed by the NPC should be added to the PSEs for commodities using this input. Lack of data prevented calculation of NPC for fertilizer used on farm. Also allocation to commodities of this implicit tax/subsidy would have been difficult because of little information.

³⁸ FAO 1994, Working Paper 7. The conversion factor for NPK 15:15:15 was calculated at 0.68, for an implied NPC of 1.47.

Table 4.12: NPCs for Fertilizers, 1994

Fertilizers	Prices in denars/ton						NPC [a/ (b+c+d)]
	Factory gate	Import fob	Shipping to port of entry	Port cif	Port to border	Border price	
	[a]	[b]	[c]	[b+c]	[d]	[b+c+d]	
NPK mix 15:15:15 vs. actual NPK 1994 imports	8,800	n/a	n/a	n/a	n/a	4,031	2.18
NPK mix 10:20:30 vs. world prices of ingredients	11,440	5,337	1,216	6,553	1,428	7,980	1.43
"Uras" v. Bulgarian urea	7,200	n/a	n/a	n/a	n/a	5,797	1.24

Notes:

1. Macedonian domestic fertilizer prices ex-factory @ Titov Veles (wholesale), MHK Zletovo Hemiska Industria.
2. Den/\$ conversion rate is Den 43.2583 per US\$ (average 1994 rate).
3. World prices: SOM, actual border prices paid for NPK mix in 1994 (NPK 15:15:15).
4. World prices: WB Comm. Mkts (May 1995), avg 1994 for TSP, Potassium Chloride; SOM for Bulgarian urea import 1994 (NPK 10:30:20).
5. Shipping rates: urea (Bulgaria) @\$33/ton (ZHI); TSP (fob Gulf) @\$30 cif Burgas +\$33 to border (USDA/ERS); K (fob Vancouver) @\$40 cif Burgas + \$33 to border (AIRD estimate tbc).
6. "Uras" is a special 27% nitrogen product developed and marketed by MHK ZHI
7. fob: free on board (exit price at border of country of origin).
8. cif: cost, insurance and freight (entry price at border of country of destination, all costs included).

4.10 Levels of protection for Table Grapes

Protection of grape growers is slight in Macedonia compared with the other primary products studied. Despite growers' best efforts to have the government set up a full subsidy regime, grapes were protected only by an import quota (set at 40 tons in 1994 (Gazette no. 38-94), and zero in 1995), and a 4% export subsidy (for wine grapes and wine only).

Nominal protection coefficients could not be calculated in the absence of a world price for fresh table grapes. Given the lack of export subsidies for table grapes and the competitive market within which Macedonia is operating successfully, however, it is likely that NPCs would be considerably lower for grapes than those calculated for wheat, milk, sugarbeets, and fertilizer.

5. IMPLICATIONS AND RECOMMENDATIONS

This study has highlighted several important issues regarding the agricultural sector in Macedonia. Based on these findings, it draws implications and suggests recommendations for agricultural policy and development in Macedonia.

5.1 Highlights and Findings

Key highlights and findings of the study include the overall high level of protection for most of the commodities under review; strain of agricultural subsidies on the budget; the high level of domestic prices supported by a tariff regime, some elements of which run counter to GATT requirements; the skewed farm structure with low productivity, and economy wide policies such as the foreign exchange and credit systems.

5.1.1 Overall high levels of protection

The estimates of nominal protection coefficients clearly show that Macedonia provides a high level of protection for wheat, milk, cheese, sugarbeets, and fertilizer production. Only sunflower production is currently competitive relative to world markets (table 5.1). Wheat is protected the most. The percentage producer subsidy equivalent (PSE) for wheat was higher in Macedonia (in 1994) than in the European Union (in 1993), which Macedonia would like to join. The percentage PSE for cowmilk and sunflower, however, were lower than in the EU and the United States, and producers of sunflower actually received no protection in 1994. Clearly, the sanctions against Serbia, one of Macedonia's largest trade partners, and the blockage imposed by Greece are reflected in the Government's decision to protect "survival goods." These external factors result in high transport costs that should have provided adequate natural protection for Macedonian agriculture. Moreover, when the border is opened with Thessaloniki and trade resumes with Serbia, the level of protection will be even higher than that with trade via Burgas or overland from Western Europe through CEECs.

5.1.2 Strain of budget subsidies

Agricultural subsidies contribute marginally to the PSEs for all commodities investigated and appear small in absolute terms (less than \$50 million in the 1993/94 production season). Nonetheless they are a strain on the government budget, as seen in the difficulty (since independence) in paying them on time. Notably, planned budget allocations for agricultural subsidies (excluding the extension program) have steadily increased their shares of central government revenues, MAFWE's budget, and the agricultural sector Gross Social Product. Budget subsidies obligated in 1994 accounted for 93% of MAFWE's total budget, 7% of the central government revenue, and 9% of the agricultural sector GSP. MAFWE appears to be consumed by the implementation of these subsidies at the expense of other critical roles in support of agricultural development. The true impact of agricultural subsidies may very well

be their opportunity cost, that is, what the Ministry of Agriculture loses by not using these resources in other ways to increase farm productivity in Macedonia. Alternative uses of these resources include focused research, extension beyond primary production, and market information.

Table 5.1: NPC Summary Results					
Product	Domestic price to Producer (a)		Border price of competing import (b)		NPC (a/b)
	US\$/ton	Den/ton	US\$/ton	Den/ton	
Wheat	277	12,000	127	5,494	2.18
Cowmilk	470	20,323	266	11,485	1.77
White cheese (belo)	3,468	150,000	1,202	51,994	2.88
Yellow cheese (kaskval)	6,473	280,000	1,657	71,688	3.91
Raw sugar	549	23,770	330	14,293	1.66
Refined sugar	560	24,245	408	17,674	1.37
Raw sunflower seed	223	9,649	511	22,114	0.44
Raw sunflower oil	558	24,121	785	33,950	0.71
Urea	166	7,200	134	5,797	1.24
NPK 15-15-15	203	8,800	93	4,031	2.18

Note: All domestic prices based on Macedonian farmgate or factory raw input equivalent, including price premium. Border prices based on actual prices for 1994 or estimates from published data.

Border price for wheat via Burgas and Bulgaria and overland through CEEC for cowmilk and sunflower, and cheese

5.1.3 High support prices

More than budget outlays for subsidies, however, the high level of support (or protective) prices imposed on buyers was the driving force behind agricultural protection in 1994. Support prices are what attract producers, not the premium, or the even harder-to-get credit rebate. The price wedge between the domestic and border prices claims an overwhelming share of the PSEs for wheat (70%), milk (90%), sugarbeets (80%), and sunflower (almost 1.5 times the size of the negative PSE). Protective prices are based on cost-of-production estimates, which have a built-in upward bias on the government imposed pan-territorial and pan-seasonal protective

prices. High-cost producers have no incentive to become more efficient if they are assured of recovering their costs whatever they may be. The price of wheat, for example, even accounting for quality differences, is much higher in Macedonia than in neighboring countries.

5.1.4 Trade regime

The trade regime is designed to support this high level of support prices. Although the tariff regime complies with GATT requirements, the variable levies and quotas do not. Furthermore, the decision making process about variable levies remains unclear, adding much confusion to prospective Macedonian importers and their partners. High domestic price supports, subsidies, and trade regime measures mostly benefit producers at the expense of consumers and taxpayers.

5.1.5 Impact on taxpayers and consumers

Table 5.2 presents another dimension of the protection of agriculture in Macedonia. The support offered to producers (except for sunflower) is at the expense of taxpayers (through budget subsidies) and mostly consumers (through higher prices). Transfers from consumers to producers are the largest in absolute terms for wheat, but largest in relative terms for cowmilk. To protect cowmilk producers, consumers transferred six times more resources than taxpayers. Only sunflower producers ended up transferring resources to consumers because of the domestic price was well below the border price in 1994.

Table 5.2: Summary PSEs and Transfers from Taxpayers and Consumers to Producers, 1994								
	Wheat		Cowmilk		Sunflower		Sugarbeet	
Transfers (million)	Den	US\$	Den	US\$	Den	US\$	Den	US\$
From taxpayers	830	19.20	144	3.34	67	1.55	27	0.62
From consumers	1,964	29.40	896	20.70	(217)	(5.02)	52	1.20
To producers (total PSE)	2,794	48.59	1,040	24.04	(150)	(3.47)	79	1.82
PSE (%)	69%		44%		-87%		48%	

Note: \$1 = Denar 43.259 in 1994

Trade via Burgas or overland through Central and Eastern Europe.

5.1.6 Skewed farm structure

The current farm structure is an important issue in the development of Macedonia's agriculture. Private farms are small and highly fragmented, which compounds their lack of access to productive inputs as compared to social farms. Issues in land reform include the privatization of social farms, the consolidation of the private sector, and the need to increase productivity in both sectors. The land market, which should play an important role in increasing productivity, is currently underdeveloped and constrained by stringent regulations.

5.1.7 Critical role of economy-wide policies

As in most other countries, economy-wide policies may affect agriculture as severely as sectoral policies themselves. The recent strengthening of the Denar, though possibly a short-term situation, hurts agricultural exports on top of Macedonia's reduced access to world markets due to high transport costs. Macedonia's successful fight against inflation has also resulted in a credit squeeze, which has translated into one of the highest lending rates in the world. High borrowing rates hurt agricultural production and processing, as well as the development of the land market.

5.1.8 Monitoring and analytical capacity

Vast amounts of data are collected by the Statistical Office, which should be commended for its work. SOK, its branch at the central bank, adds to this potential through its centralized financial data gathering. Despite this excellent work, critical data gathering and analysis for agricultural policy making is still lacking. Neither MAFWE nor other institutions are clearly informed of the actual level of expenditures on subsidies at the level of detail required for effective policy monitoring and analysis. Farm socioeconomic data are not statistically representative of farm conditions, particularly in the private sector, to conduct unbiased empirical analysis.

5.2 Implications and Recommendations

These issues have considerable implications for agricultural policy and development, as Macedonia begins to examine the changes necessary to pursue its transition to a market economy and integrate its agricultural policy within Europe and the GATT.

5.2.1 Implications

Price supports. Macedonian policy makers and producers are quick to complain of unfair competition from heavily supported European competitors. The temptation among policy makers is to increase price supports to European levels. Such a strategy is ill-advised, not only because European price levels are declining and will continue to decline with CAP reform and GATT compliance. It is also ill-suited to the demands of modernization of Macedonia's

agriculture, since the CAP applied to Western European agriculture, which is more mechanized, better able to realize economies of scale, more capital-intensive and less labor-intensive than agriculture in Macedonia and other CEECs. In addition, if current requirements are in place when Macedonia gains accession to the GATT as a developing country, total subsidies, including the production premiums and input and credit rebates as measured by the AMS at levels over 10%, will have to decline 13.3% over ten years, though input subsidies for low-income farmers may remain in place. (Industrialized countries are required to reduce their AMS 36% over 6 years from the 1986-1988 base year.) Finally, Macedonia's budgetary resources may not afford these price supports.

Trade regime. Import quotas and tariffs, including the variable levies on key commodities, will require review. The quota system in Macedonia has been largely dismantled, but a few remain for key agricultural products. For these quantitative restrictions, even the public auctioning of import licenses is likely to run counter to the GATT regulations on quota restrictions. Macedonia may be allowed to convert these measures as bound import tariff rates, as long as they are administered in a non-discriminatory fashion to all member states, by converting the quotas in tariff equivalents and the special levies as import tariffs. Export incentives will also have to decline. The current rules also dictate that export subsidies will have to decline 24% in value terms and 14% in volume terms, on a product-by-product basis.

Productivity. The small size of private farms and low productivity in both the private and social sectors present formidable obstacles to increasing competitiveness. Macedonia will benefit from a tradition of private ownership within the sector, as Poland has during its transition. In order to compete effectively with Europe, Macedonia must concentrate on increasing total factor productivity (land, labor, and capital) in agriculture by redirecting agricultural support subsidies to that effect. At the same time, while economies of scale are desirable, they must not be equated with gigantic sizes on social farms and they are also desirable in the current private sector. Whereas 86% of EU farms are over 10 ha, the average size of a private farm in the FYRM is only 2.9 ha.

5.2.2 Recommendations

Although much more work is still required, the study suggests the following recommendations as important initial steps to strengthen agricultural policy and development in Macedonia.

- **Promote more competitiveness through price signals closer to world prices.** Producers, particularly in economies in transition, need price signals to help decide on which commodities to grow. In its 1995 macroeconomic policy statement, Macedonia has committed itself to price signals closer to world prices than in years past. To achieve this objective, Macedonia should do away with cost-of-production based support prices. Cost-of-production estimated have a built-in bias toward price increases because high-cost producers have no incentive to be efficient when they are assured of covering their costs.

Furthermore, current data on costs of production represent a limited number of social farms and retain more political than empirical value. Government-provided price signals are needed until an efficient market information system is established. A reasonable alternative to cost-of-production based price signals in Macedonia is a moving average of border prices. The moving averages may need to be weighted heavily toward recent world prices so that on average they would remain neutral in terms of taxing producers (when the average is systematically lower than the current world price) or subsidizing them (when the average is systematically higher than the current world price). A transparent method of calculating such moving averages could even allow producers to forecast the level of prices themselves for better decision making.

- **Design an agricultural strategy based on food self-reliance.** Understandably, a siege mentality pervades Macedonia's current agricultural policy because of the UN sanction against Serbia and the Greek blockade. However, food self-sufficiency in all key agricultural commodities, except meat, as targeted by the agricultural strategy (Murarcaliev, personal communication) could only be achieved at extremely high cost, which Macedonia could probably not afford. Macedonia lacks the resources to support both food self-sufficiency and export subsidies to get rid of eventual surpluses. A more realistic approach is for Macedonia to pursue a strategy of food self reliance, particularly for wheat. Such a policy would allow the country to concentrate wheat production at low unit cost in the most advantageous areas and shift resources to other activities, particularly agricultural exports, which would help pay for cheap imported wheat. Given the highly competitive nature of world wheat market, Macedonia would hardly feel hostage to any exporter, particular when sanctions against Serbia and the blockade imposed by Greece are removed.
- **Revise trade regime to comply with requirements of the World Trade Organization.** Macedonia's regime of quotas, variable levies, and export subsidies run counter to GATT requirements. This trade regime should be revised accordingly. These quotas, variable levies, and export subsidies can be converted to tariffs. It would be better to phase them out and shift resources to more productive agricultural activities. This would promote more competitiveness in Macedonia's agriculture.
- **Increase the capacity to monitor and analyze agricultural policies.** MAFWE needs to strengthen its monitoring and analytical capacity in critical areas of agricultural policy. A clear outcome of this study has been the difficulty in gathering coherent and comprehensive information on the implementation of agricultural subsidies. It would be extremely difficult for Macedonia to design and implement a coherent agricultural strategy without empirical information on how much it actually spends on the key agricultural commodities that are at the core of this strategy. The narrow focus of MAFWE on primary production is a disservice when data and analysis are needed beyond the farmgate to understand the impact of policies on agriculture. Estimates of NPCs and PSEs, as calculated in this study, should be routinely performed by MAFWE

to inform the ministry and the Government, and also to better advise farmers on their constraints and opportunities as Macedonia moves toward a market economy.

- **Establish an agricultural statistical system focusing more on the private farm sector.** Better advice to private farmers can only be built on a solid knowledge of the private farm sector. At all levels, of policymaking, academia, and statistical surveys, more emphasis should be given to the private sector. Currently, critical information about the social sector is provided routinely, while information on the private sector is scant and several years apart, as for farm structure. In most cases, information on private farms is held by experts, but remains at best fragmented and is often anecdotal. Given its small size and its educated labor force, Macedonia can quickly established an efficient agricultural statistical system that would allow the collection of good representative data of farm conditions. Multiple purpose surveys (combining agricultural, natural resources, and socio-economic statistics) using multiple sampling frames (area sampling plus list frames) are recommended. Albania- with a similar size and possibly less skilled labor- already implements a similar system.
- **Conduct analyses to determine long-term agricultural comparative advantage.** Macedonia's competitive edge appears to lie in livestock and early season fruits and vegetables. However, no comprehensive studies of comparative advantage have been conducted. MAFWE should lead the effort to refocus the national agricultural policy debate to those products that have a long-term future in European and global markets. Whereas Macedonia's wheat is of high quality, it is doubtful that it will compete effectively with European wheat in the long term. In contrast, lamb, tomatoes, cucumbers, and grapes appear to be commodities that Macedonia can produce at higher quality and lower cost than competitors in Europe and elsewhere. MAFWE should be at the forefront of designing policies that will reorient public and private investment away from the production of high-cost commodities toward those with the potential to generate income and jobs for Macedonians. To do so, it must lead the effort to quantify the comparative advantage in these and other products using such analytical tools as the domestic resource cost (DRC) or policy analysis matrix (PAM).

BIBLIOGRAPHY

- Anon., "Fischler hints at pre-enlargement changes to CAP," *East Europe Agriculture and Food Monthly*, No.151, April 1995.
- Associates for International Resources and Development, *Economic Comparative Advantage and Incentives in Livestock Production and Trade in West Africa's Central Corridor*, Cambridge, MA, January 1993.
- Blejer, Mario I., Guillermo A. Calvo, Fabrizio Coricelli and Alan H. Gelb, eds., *Eastern Europe in Transition: From Recession to Growth?*, World Bank Discussion Paper 196, Washington, May 1993.
- Brauning, Roberto, and Christine Hellemaa, "Labor Support Needed for Reform in Central and Eastern Europe," *IMF Survey*, Washington: May 22, 1995.
- Buckwell, Allan E., "Can the CAP survive Polish Accession?" 2nd Annual AGRA EUROPE Conference on Agribusiness and the Food Industry in Central and Eastern Europe, April 6th-7th 1995.
- Cochrane, Nancy J., *The Liberization in Yugoslavia and Poland*, Agriculture and Trade Analysis Division, Economic Research Service-USDA, Staff report no. AGES 9058, Washington, August 1990.
- Cornick, Jorge, Thomas L. Cox, and Brian W. Gould, "Fluid Milk Purchases: A Multivariate Tobit Analysis," *American Journal of Agricultural Economics*, February 1994: 74-82.
- Economist Intelligence Unit, *Bulgaria, Albania 1st quarter 1995*, London, 1995.
- Economist Intelligence Unit Limited, *Greece 1st quarter 1995*, London, 1995.
- Claeyé, Etienne, *Phare Progress and strategy paper: Agriculture*, European Commission, Directorate General for External Economic Relations, Phare Information Office, June 1994.
- FAO, *Food outlook*, global information and early warning system on food and agriculture Rome, No. 3/4 (March/April) 1995.
- FAO, *Former Yugoslav Republic of Macedonia Private Farmer Support Services Project, Preparation Report*, Report No. 76/94 CP-MCD 4, 21 June 1994.
- FAO, *Transition and price stabilization policies in East European agriculture*, FAO Economic and Social Development Paper 125, Rome, 1994.
- GATT, Information and Media Relations Division, GATT *FOCUS* newsletter and news releases (various issues), Geneva.

- Hoekman, Bernard M., *Trade Laws and Institutions-Good Practices and the World Trade Organization*, World Bank, Washington, April 1995.
- International Agricultural Trade Research Consortium, *Bringing Agriculture into GATT-Potential Use of an Aggregate Measure of Support*, (undated).
- IMF, *Albania*, IMF Economic Review, Washington, July 1994.
- Kaminski, Bartolomiej, *The Foreign Trade Dimension of the Market Transition in Poland-The Surprising Export Performance and its Sustainability*, International Trade Division, International Economics Department, World Bank, Washington, June 1993.
- Kaminski, Bartolomiej, *The Significance of the "Europe Agreements" for Central European Industrial Exports*, International Trade Division, International Economics Department, World Bank, Washington, June 1994.
- Kaminski, Bartolomiej, and Alexander Yeats, *OECD Trade Barriers Faced by Successor States of the Soviet Union*, International Trade Division, International Economics Department, World Bank, Washington, September 1993.
- Macedonian Information Centre, *MIC News*, daily issues June-August 1995.
- Macedonian Information Centre, *Republic of Macedonia-basic data*, Skopje, June 1995.
- Moore, Curtis, *Green Paper*, United States Information Agency, December 1994.
- Murarcalieva, Aleksandar, *Production, preparation and putting on the market the agricultural products in Macedonia*, Info Soft Ing, Skopje, 1995.
- Nallet, H., and A. Van Stolk, "Relations between the European Union and the Central and Eastern European countries in matters concerning agriculture and food production," Report to the European Commission, Brussels, June 1994.
- OECD-Directorate for Food, Agriculture and Fisheries-Committee for Agriculture, "Some Quantitative Implications of Aligning Agricultural Policies in Central Europe with the Common Agricultural Policy of the EU," AGR/EW/EG (95) 8, Paris, 31 January 1995.
- Orlowski, Witold M., "Price Support at any Price?-Costs and Benefits of Alternative Agricultural Policies for Poland," draft, World Bank, May 1995.
- Peeters, Jean-Pierre, and Maya Draganova, *Phare Progress and strategy paper: Food aid*, European Commission, Directorate General for External Economic Relations, Phare Information Office, June 1994.

- Petkovski, Mihail, Goce Petreski, and Trajko Slaveski, *Stabilization Efforts in the Republic of Macedonia*, RF/RL Research Report, Vol. 2, no. 3, January 1993.
- Recovery Group (The) and The Sparks Companies, *The Context for the Crisis Management at Agroindustrial Kombinats in Macedonia*, Skopje, October 1994.
- Recovery Group (The) and The Sparks Companies, A.D. A.K. "Lozar" Titov Veles, Draft Report, Skopje, October 1994.
- Republic of Macedonia, *Official Gazette of the Republic of Macedonia*, Skopje, issues from 1990-95.
- Republic of Macedonia Ministry for Agriculture, Forestry and Water Economy, *Implementation of the Program for Encouraging the Development of Agriculture in 1994*, Skopje, February 1995.
- Rollo, J.M.C., "Reform of the AAP: the beginning of the end or the end of the beginning?," *EG Agriculture*, January 1992.
- Sachs, Jeffrey D., "Russia's Struggle with Stabilization: Conceptual Issues and Evidence," *Proceedings of the World Bank Annual Conference on Development Economics 1994*, World Bank, Washington, 1995.
- Slaveski, Trajko, "The need and the way for implementing rapid and mass privatization program in the Republic of Macedonia," draft Skopje, November 1994.
- Statistical Office of Macedonia, *Macedonia basic economic data*, No. 10, Skopje, 1995.
- Statistical Office of Macedonia, *Monthly Statistical Bulletin of the Republic of Macedonia*, issues 1994 1-12 and 1-2 1995, Skopje.
- Statistical Office of Macedonia, *Realized Production from early cultivations of fruits in the Republic of Macedonia in 1994*, Skopje, December 1995.
- Statistical Office of the Republic of Macedonia, *Realized production from late cultivations of fruits and grapes in the Republic of Macedonia in 1994*, Skopje, March 1995.
- Statistical Office of Macedonia, *Statistical Yearbook of the Republic of Macedonia*, 1993 and 1994, Skopje.
- Tsakok, Isabelle, *Agricultural price Policy: A Practitioner's Guide to Partial Equilibrium Analysis*, Ithaca: Cornell University Press.

- Tangermann, Stefan, and Timothy E. Josling, "Pre-accession agricultural policies for central Europe and the European Union," Final Report, University of Göttingen and Stanford University, 12 December, 1994.
- Tweeten, Luther, *Agricultural Trade: Principles and Policies*, Boulder: Westview Press, 1992.
- USDA/ERS, *EUROPE-International Agriculture and Trade Reports-Situation and Outlook Series*, WRS-94-5, Washington, September 1994.
- USDA/ERS, *Sugar and Sweetener-Situation and Outlook Report*, SSSV20N1, Washington, March 1995.
- USDA/FAS, "Bulgarian Oilseed Update September 1994," Agworld consular information series (via internet), May 1995.
- USDA/FAS, "Bulgarian Grain and Feed Update September 1994," Agworld consular information series (via internet), May 1995.
- USDA/FAS, *Dairy: World Markets and Trade*, Circular Series FD 1-95, Washington, April 1995.
- USDA/FAS, *Grain: World Markets and Trade*, Circular Series FG 4-95, Washington, April 1995.
[add oilseeds source].
- USDA/FAS, "Greece Agricultural Situation Report September 1994," Agworld consular information series (via internet), May 1995.
- USDA/FAS, *Oilseeds: World Markets and Trade*, Circular Series FD 4-95, Washington, April 1995.
- Vogel, Stephen J., Mark Lundell, and Sherman Robinson, *Adjustment in Hungarian Agriculture: Policy Reform and Trade Shocks*, USDA/ERS (with the International Food Policy Research Institute and the World Bank), Washington, July 1994.
- Winters, Alan L., and Zhen Kun Wang, *Eastern Europe's International Trade*, Manchester University Press, Manchester, 1994.
- World Bank, *An Agricultural Strategy for Albania*, Washington, October 1992.
- World Bank, *Farm Restructuring and Land Tenure in Reforming Socialist Economies-A Comparative Analysis of Eastern and Central Europe*, World Bank Discussion Paper 268, Washington, February 1995.

World Bank, "Former Yugoslav Republic of Macedonia Private Farmer Support Project," draft, Agriculture and Environment Division, Country Department I, Europe and Central Asia region, March 1995.

World Bank, *Improving the Supply of Fertilizers to Developing Countries, A Summary of the World Bank's Experience*, Asia Technical Department, World Bank Technical Paper Number 97, Industry and Energy Series, Washington, 1989.

World Bank, *Poland: Policies for Growth with Equity*, A World Bank Country Study, Washington, December 1994.

World Bank, *World and Regional Supply and Demand Balances for Nitrogen, Phosphate, and Potash, 1991/92-1997/98*, World Bank Technical Paper Number 206, Washington, July 1993.

Zanga, Louis, "Albanian Foreign Trade," *RFE/RL Research Report*, Vol. 3, No. 24, 17 June 1994.

Zanga, Louis, "The Albanian Economy: Progress Despite Massive Problems," *RFE/RL Research Report*, Vol. 2, No. 46, 19 November 1993.

APPENDIX A:

THE NPC METHODOLOGY

To what extent membership in the EU and the WTO will mean increased sales of Macedonian products, and increased income for the producers of those products, will depend on how Macedonian products compare in terms of quality and cost to other products from within Europe and around the world. Therefore, as Macedonia anticipates accession to these international organizations, the relative productivity and competitiveness of Macedonian farmers and other producers will become increasingly important.

The Ministry of Agriculture has the opportunity to play a pivotal role in helping to measure productivity and competitiveness among farmers and marketers, both in the public and private sectors. One tool with which other countries measure protection and incentives is the NPC, or nominal protection coefficient.¹ The NPC essentially compares domestic prices with world parity prices, that is, world prices for a given good plus the transport cost of bringing them to the Macedonian border so as to be available for local producers or consumers.

Domestic prices of agricultural goods differ from world prices at the border because of trade taxes or subsidies, trade restrictions, and officially imposed or administered prices. Such policies are often used for one or several of the following reasons:

- 1) to protect domestic producers from import competition;
- 2) to ensure that farmers can recover their domestic costs of production even when world prices fall;
- 3) to ensure a minimal level of income and employment;
- 4) to provide a buffer for domestic producers against the volatility of world markets in general; or
- 5) to generate revenue for government.

The nominal protection coefficient (NPC) is calculated as follows:

$$NPC_j = \frac{P_j}{P_j^*} \quad (1)$$

¹ Other tools include the effective protection coefficient (EPC), which measures the level of protection afforded producers as a result of all trade policies and incentives (comparing value added at domestic prices with value added in world prices), and the domestic resource cost (DRC), which measures the extent to which certain activities realize a country's comparative advantage, through measuring the opportunity cost of using domestic resources in a particular activity.

where:

P_j = the domestic price of commodity j, and
 P_j^* = the cif border price of a comparable imported commodity j.

This means that for:

- $NPC > 1$ domestic goods are priced higher than comparable international goods, meaning that producers are protected against competition at the expense of consumers who are being taxed (especially when import taxes are imposed to increase import prices to parity with domestic prices);
- $NPC = 1$ domestic markets are in tune with world markets: producers and consumers are being neither taxed nor subsidized compared with their international counterparts;
- $NPC < 1$ producers are "negatively protected," i.e. they are operating at a comparative disadvantage compared with producers elsewhere, but consumers are comparatively subsidized.

The protection indicators are calculated for activities defined according to specific combinations of product, productive technique, region of production and location of major market. This level of precision is necessary because of variations in yields, wage rates, transportation costs and other key parameters. For instance, milk produced in Skopje might not be economically profitable if sold in Vienna in competition with cheaper European imports, but might be very profitable for sale in Sofia because of the influence of lower transport costs.

The NPC protection calculations require the following cost data:

- (1) market prices of outputs or inputs at the farmgate, rural market, processing mill and either the border (fob or cif), depending on the major point of consumption;
- (2) world prices and shipping rates to the border for comparable imported commodities.
- (3) marketing costs from farmgate to border

The NPC requires data on subsidies that affect the price of the output or input for which the NPC is calculated. For example, the NPC for a crop includes the price premium but not the seed and credit rebates.

As a measure of protection and incentives, the NPC can quantify the disparity in prices. If tracked over time, the NPC can also measure how well or poorly domestic market fluctuations shadow world market fluctuations and therefore how well a country is aligning its own market with world market conditions, allowing international price signals to reach domestic farmers.

Since the NPC assumes perfect substitutability of a domestic good for an imported one, it cannot account for quality differences that are not reflected in prices. For example, if certain bakers always choose a given variety of wheat over others, for reasons of gluten levels for instance, other things like the price being equal between the two, the NPC will not reflect that preference. The NPC also does not indicate *ipso facto* the source of the disparity between world prices and domestic prices, whether protection comes from producer subsidies, consumer subsidies, or other forms of assistance. This must be supplied in the analysis that accompanies the calculation. Finally, the NPC does not describe to what extent production of a given commodity realizes a country's comparative advantage.

APPENDIX B:

PSE: METHODOLOGICAL NOTES

Government intervention in agriculture receives much attention in both domestic and international forums. It can provide wrong signals to producers and lead to misallocation of the country's scarce resources. It can also create imbalances in world supply and demand. Government intervention in agriculture may take the form of budget outlays to affect prices and production of outputs and inputs, which represent direct transfers from taxpayers to producers. Government intervention may also use other policy instruments that allow producers to receive prices higher than prevailing world market prices with or without traces in the government budget. For example, import taxes and levies affect government receipts, but quotas and some forms of concessional credit offered to producers at below-market rates of interest do not appear in the government budget. Whatever the form of government intervention, consumers directly bear the cost of policies that cause them to pay prices that exceed world market prices.

Aggregate Measure of Support in Agriculture

There is a need for an aggregate measure, an index to capture the broad range of government interventions in agriculture. An aggregate measure of support (AMS) allows a comparison of major sources of support to agriculture across commodities and countries, and provides an indication of how the cost of producer support is distributed between consumers and taxpayers.

An AMS may perform four functions: (1) monitor levels of support, for example, to keep track of countries' progress during a policy reform process; (2) assess credit for past policy actions; (3) trigger corrective actions or review procedures, whereby parties agree to take corrective or consultative action signaled by a predesignated change in the AMS; (4) take on the role of a bindable instrument of negotiation, for example, play the role of a tariff schedule for agriculture.

The nominal protection coefficient (NPC), effective protection coefficient (EPC), and domestic resource cost (DRC) may be considered as aggregate measures of support (Schwartz, and Parker, 1988). The exacting data requirements of the DRC clearly make it difficult to suggest as a practical tool. The NPC is the least demanding in data, but is a poor candidate for an AMS because it is limited to prices of outputs or inputs. The EPC covers most policy instruments affecting producers, except direct farm payments decoupled from production, but does not cover consumer policies. Furthermore, it requires good input/output relationships data.

Producer subsidy equivalent PSE

Timothy Josling developed the producer subsidy equivalent (PSE) and consumer subsidy equivalent (CSE) approach as part of an FAO study on international agricultural trade. He used

it to examine the support implied by government intervention in agriculture. The PSE approach is now routinely used by the Organization for Economic Cooperation (OECD) and the United States Department of Agriculture (USDA), and will be used by the World Trade Organization (WTO).

The PSE (CSE) represents the payment required to compensate producers (consumers) of a particular commodity for the loss of income resulting from the removal of a given package of policy measures. In other words, it is an estimate of how large a cash subsidy would be equivalent to the effect of current policies on producers' (consumers') income. It accounts for the usual government budget outlays that finance such intervention, but also includes the effects of policies that do not result in specific budget outlays such as tariffs, import quotas and permits, and variable levies. The result provides a much sought- after index of government intervention and common basis for cross-country and cross-commodity comparisons. In particular, the sum of PSEs across commodities within a country is used to rank this country's support to agriculture. These estimates are used to compare the major sources of support to agriculture across commodities and countries, and how the cost of producer support is distributed between the consumer and the taxpayer.

Equally important, the PSE measures the opportunity cost of government intervention. The question to be asked is: could the resources committed be used in alternative ways to improve productivity and producers' and consumers' incomes?

Table 1 shows the potential policy coverage of the NPC, EPC, and PSE/CSE. There is still debate on the extent of policy coverage by PSEs/CSEs, and accepted conventions for calculating the PSE/CSE are still being worked out. The PSE can change because of change in policy or change in market conditions. To separate the two, one needs to look at how it is derived and not merely at the index. For trade negotiations, however, the need is great for an approved AMS that will more accurately measure trade distortion from other policy interventions. By mutual agreement among analysts and GATT negotiators, most PSEs exclude efficient policies (research, extension, education, and infrastructure development), which help raise productivity. The PSE by OECD and USDA usually includes intermediate input subsidies, but not local taxes.

PSE approach in the study

This study estimated PSE for four commodities (wheat, cowmilk, sunflowerseed, and sugarbeet), but no CSE because of time and data limitations. This PSE estimate used in this study is defined as follows:

$$PSE = (P_d - P_w) * Q_p + S + C_r + A_r,$$

and since

$$P_d - P_w = (NPC - 1)/NPC$$

$$PSE = [(NPC - 1)/NPC] * Q_p + S + C_r + A_r.$$

$$PSE\% = 100 * PSE / (P_d * Q_p), \text{ expressed at domestic price}$$

$$PSE\% = PSE / P_w, \text{ expressed at world price, with}$$

P_d = domestic farmgate price

P_w = world price adjusted for transport and margins

Q_p = Total farm production

S = seed rebate

C_r = credit rebate

A_r = agricultural credit rediscount, and

$(P_d - P_w) * Q_p$ = price wedge.

Policy Coverage of Candidate Aggregate Measures of Support (AMS)							
Measure	Border policies	Output price policies	Other output policies	Intermediate input policies	Primary input policies	Consumer policies	Research, structural policies
NPC p	X	X					
NPC c	X					X	
EPC	X	X		X			
PSE	X	X	X	X	X		X
CSE	X					X	

Source: Schwartz, Nancy and Stephen Parker, 1988.

Notes: Border policies include tariffs, variable levies, quotas, and licenses.

Output price policies include guaranteed prices and premiums. Other output policies include for example direct income payment to farmers, for example, in the EU and US for set aside acreage. Intermediate inputs are seasonal inputs, such as seed, fertilizer, and other agrichemicals. Primary inputs include land, labor, capital (credit). Long term infrastructure includes rural infrastructure (irrigation, etc.), village rehabilitation, education.

The PSE calculated here does not include implicit tax/subsidy on fertilizer to producers for reasons explained in the text. Following most practices, it does not include research and extension support provided by the government. Finally, it does not include possible subsidies in primary inputs such as water, land (reclamation), and labor. Note, however, that gross farm income would have to include any direct income payment to farmers if it existed in Macedonia.

Transfers from taxpayers to producers are made up of all budget subsidies (premium, seed rebate, and credit rebate). The balance of the PSE represents the transfers from consumers to producers, which include the value of the price wedge, less the premium (transfer from taxpayers), plus the agricultural credit rediscount. The later is considered a transfer from consumers because it generates inflation supported by the global economy, that is, consumers.

Data requirements

The PSE relies on budget data and reference prices, which are both extensively covered in the report (sections on subsidies and NPC).

APPENDIX C:

THE AGRICULTURAL SECTOR IN MACEDONIA

Agriculture¹ plays a vital role in the Macedonian economy through its contributions to Gross Domestic (or Social) Product, employment, and trade. Its contribution to GDP was the brightest spot in the on-going difficult economic situation in Macedonia. The agricultural sector also faces difficult structural adjustment, as will be discussed later in this report.

C.1 Contributions of the Agricultural Sector

In 1994, primary agriculture and forests contributed about 19% to Gross Social Product (GSP) and about 15% to employment in Macedonia. In comparison, industry contributed 43% to GSP and 48% to employment, and Services 38% to GSP and 37% to employment (World Bank, 1995). These contributions are similar to those of other middle-income countries (to the extent that GSP compares with GDP). These contributions have changed only marginally since 1991. Table 2.1 compares agriculture in Macedonia then with that of the former republics of Yugoslavia. Appendix B compares Macedonia with other Central and Eastern European Countries and the poorest countries of the European Union (EU), Portugal, Greece, and Ireland.

Table C.1: Contributions of Agriculture in Former Republics of Yugoslavia (1991)		
Countries	Contribution to GSP	Contribution to employment
Macedonia	16.0%	17.0%
Croatia	12.9%	9.1%
FRY	10.0%	22.0%
Slovenia	4.9%	7.9%

Source: USDA/ERS internal document ²

FRY = Federal Republic of Yugoslavia

¹ Agricultural land represents 50% of Macedonia's 2.57 million ha; arable land is estimated at 662,000 ha and pasture at 640,000 ha; forests cover about 37% (950,000 ha). Diverse soils and climatic conditions, along with an important irrigation system, allow the production of a wide variety of cereals, forage, and industrial crops; off-season fruits and vegetables; and sheep production.

² Macedonia Office of Statistics (1993); Croatia Country Profile: Second Quarter, 1993. London: Economic Intelligence Unit, 1993 (p.3); "EU Gives Green Light for Slovenia Europe Agreement Talks. East-Europe Agriculture and Food. 1995, p.2; Attache Reports on the FRY.

The effective contributions of agriculture to Macedonian economy are considered much larger, than is reflected in its shares of output and employment. A sizable proportion of the population (45%) lives in rural areas, and thus derives its livelihood directly or indirectly from agricultural activities. Observers note that Macedonia's high unemployment, 18.7% in 1993 and 19.5% in 1994 (Statistical Office and Ministry of Development), is enticing many of the unemployed to return from urban life to farming. This is a reversal of socialism, which sought to push people off the farms. The large disguised urban unemployment also turns many into part-time farmers, which means that the contribution of primary agriculture actually goes beyond the size of the resident rural population.

It is also important to understand that the traditional accounts misrepresent the true contribution of agriculture to the economy because they separate primary agricultural production from its forward (agroprocessing) and backward (input and equipment supply) linkages (Ouedraogo et al, 1993). For example, although Macedonian agroindustries were operating at 55% capacity for lack of raw materials and high transport costs caused by the sanctions and the blockade, they contributed about 8.5% to GSP in 1994 (FAO, 1995).

Underscoring its importance in Macedonia, agriculture was the only growth sector in 1994 (7.9%). Both the industrial sector and total GSP had continued to experience lost output, -10.5% and -5.7% respectively (World Bank estimates).³

Though easily overlooked, another key contribution of agriculture to Macedonia's transition toward market economy is the vibrant green (rural and urban vegetable) markets. They provide working examples of a free market economy. Despite problems in transportation, packaging, and storage, these markets are well stocked and supply and demand conditions drive prices.

C.2 Farm Structure

Private farmers hold over 80% of the land, making Macedonia one of the few post-socialist countries (including other republics of former Yugoslavia and Poland) with a dominant private farm structure. Land distribution between these two sectors is severely skewed, however. The public sector (social and cooperatives) has large farms (over 2,800 ha on average in 1993) in big, single blocks of land. On the other hand, the private sector has small farms (2.8 ha on average in 1993) further fragmented into about 8 or 9 plots⁴. Anecdotal evidence from farm visits supports this high degree of land fragmentation. Land of 5 ha may be subdivided into 7

³ All economies in transition have experienced severe and sustained output drops, but most seem now to be recovering. The continued loss of output in Macedonia reflects the ill effects of the war in its trading partner and the blockade imposed by Greece.

⁴ The average plot size is reportedly 0.3 ha. Although the Macedonian consultants on the study team use this estimate, they could not find an official reference for it.

to 15 subplots and 2 ha into 3 subplots. The most distant plots may be 2 to 3 km apart, which adds substantial time in moving from one plot to another.

Past government policies have contributed to small sizes and land fragmentation in the private farm sector. The land reform of 1945 expropriated "capitalist" landlords (most perceived as fascist collaborators) whose usually large and fertile lands were converted into social farms. The law also restricted single private agricultural landholding to 45 ha of total land. The 1953 reform that introduced forced collectivization further lowered the limit on private land ownership to 10 ha of working land. This stringent limitation was eased somewhat in 1965, with a law allowing private farmers to own 15 ha in the hills or mountains and 10 ha in the plains. This law aimed at revitalizing livestock production in fertile, but deserted mountainous regions. In 1988, with the amendment to the constitution of FSRJ, the maximum area of private land was increased to 30 ha. The law of August, 1991 finally lifted the maximum farm size in the private farm sector.

The damage has been done, however. Equity in inheritance traditions has exacerbated land fragmentation. From 1939 to 1981, the number of farms less than 2 ha increased by 66% while the number of farms of more than 10 ha decreased by 88% (table 3.8). There is indication that some consolidation took place after 1981, but the number of farms of more than 10 ha is still very small.⁵ On the other hand, the social sector has continued to grow. In 1993, social farms numbered (214) about the same as in 1990 (211) but their average size has increased over three times.

Table C.2: Structure of Private Farms (Percent of Number), 1939-1981				
Land Size (ha)	1939	1960	1969	1981
0 - 2	41%	43%	58%	68%
> 2 - 5	34%	34%	29%	24%
> 5 - 10	17.%	18%	11%	7%
> 10	8%	5%	2%	1%
Total	100%	100%	100%	100%
Average size (ha)	4.49	3.14	2.56	2.07

Source: (Murarcialev et al. 1993).

⁵ This consolidation was referred to by Prof Galev, but we could not obtain data for the 1989 agricultural census that would have shown this trend.

Table C.3: Structure of Social Farms (Percent of Number), 1990-1993,				
Land Size (ha)	1990	1991	1992	1993
< 50 ha	60%	36%	34%	31%
> 50 - 100	7%	7%	7%	9%
> 100 - 500	15%	17%	18%	19%
> 500 -1000	6%	10%	9%	10%
> 1,000- 2,500	4%	11%	11%	13%
> 2,500 - 5,000	3%	7%	7%	6%
> 5,000	5%	13%	14%	12%
Total	100%	100%	100%	100%
Average size (ha)	825	2,599	2,821	2,848

Source: Statistical Yearbook of Macedonia, 1993 and 1994

The issues of land reform, including privatization and land market go beyond the purview of this study. One readily notes, however, that land market as regulated by the 1988 "Law for the Protection and Use of agricultural land (Official Gazettes Nos. 7 and 15), amended in July 1991 (Official Gazette No. 28), faces restrictions inconsistent with market economy, even if its intent would appear to limit land fragmentation. Land owners who intend to sell land must offer their property at the prevailing market price. Also, that this is little empirical information about conditions in the private farm sector as opposed to the social sector. Macedonia's farm structure is often compared to Poland's. In Poland, however, researchers have not shied away from private farms so that knowledge about the private sector is adequate enough to allow decision makers and analysts to distinguish between a dynamic and stagnant private sectors with contrasting performances.⁶ Macedonia lacks a similar knowledge about the private sector to initiate sound policy reforms in this sector.

⁶ There is a dynamic sector (about 45% of farms), which shows increases in productivity and output, produces 60% of value added, and a stagnating sector where productivity and output are falling (Orlowski, Witold M. 1995, forthcoming).

APPENDIX D

STUDY COMMODITY SUBSECTORS

This section describes the domestic commodity subsectors and world market conditions as background to the empirical estimates of the nominal protection coefficient (NPC) and producer subsidy equivalents (PSE). An analysis of the constraints and problems in commodity production and consumption goes beyond the scope of the study and is not addressed in the study (See FAO, 1994).

D.1 Wheat

Macedonia produces 16 varieties of high-quality wheats. Most varieties cultivated in Macedonia are soft wheats developed in the former SFRY or in Macedonia itself. Major strains include orovchanka (accounting for about 30% of total cultivation), pelisterka (15-20%), skopjanka (15-20%), and movosatzkarana (10-15%). Seed is bred both in the region of Voivodino in northeastern Serbia and in Macedonia at several agricultural research institutes; some base seed of a popular high-yield variety, pelisterka, is imported from Voivodino and multiplied and distributed by Agrounija, a major wheat breeder and distributor based in Skopje.

D.1.1 The Wheat Subsector in Macedonia

Total production from 1980 to 1993 varied between a low of 231,000 tons (1990) to a high of 341,000 tons (1991). Production in 1994 broke records at 336,000 tons, and forecasts for 1995 are even higher at 360,000 tons, with the private sector providing 200,000 tons. Major wheat-producing regions include Bitola (61,600 tons in 1993), Prilep (26,600 tons), Skopje (19,400 tons), Tetovo (21,800 tons), Kumanovo (17,400), Strumica (14,500), Sveti Nikole (14,000 tons), and Titov Veles (10,400).¹

Production is characterized by average to low yields (given the dry soil) and even distribution in most years between public sector farms (including agrokombinats and agricultural cooperatives) and small private farms (Appendix D1: wheat production statistics). Average yields are higher on public sector farms, at 2.9 tons/ha, compared with private farms where yields averaged 2.2 tons/ha². Although genetic potential is high—trials of pelisterka have exhibited yields as high as 8-12 tons/ha—Macedonian average yields are low by European standards. Wheat yields in Europe averaged 4.5 tons/ha in 1993, and over 6 tons in France,

¹ Statistical Office of Macedonia, *Statistical Yearbook of the Republic of Macedonia, 1994*, Skopje.

² Average higher yields do not necessarily translate into higher productivity given varying agroclimatic conditions and higher levels of input use on social farms.

Germany, and the UK, three of the largest European producers.³ Yields in some other Eastern European countries were also higher than in Macedonia. Yields in the Czech Republic averaged 4.2 tons/ha in 1993; in Bulgaria 3.7 tons; in Poland, 3.3. Yields were comparable in Hungary, at 3 tons; in Albania (2.9) and in Romania and Greece (2.3). However, Macedonian wheat yields are comparable to yields in many other regions of the world. American wheat yields average approximately 2.6 tons/ha. In 1993, yields averaged 2.6 tons/ha in North and Central America 2.5 tons/ha, and in Latin America 1.9 tons/ha. Global yields averaged 2.5 tons between 1991 and 1993.

Despite their lower yields, private farmers have proven to be the sources of growth in Macedonian wheat production. Private wheat production has grown at an average annual rate of 2.2% between 1980 and 1995 (projected), whereas public sector wheat production shows no growth over the period.⁴

Only part of the wheat produced in Macedonia is marketed. For example, wheat producers in 1993 sold about 135,000 tons of their estimated 250,000 tons production, leaving some 115,00 tons on farms. They used the balance used as seed, animal feed on individual farms, and private reserves on both private and public farms, but may have bartered considerable quantities for various goods and services. Wheat exports are rare in Macedonia. Export quotas have been in effect since independence and quotas for 1994 and 1995 are zero. Unrecorded trade across borders is likely to be slight given the high prices required to recover the cost of production in Macedonia compared with regional competitors, especially Bulgaria.

Marketed wheat is purchased by mills and bakers in Macedonia at prices functionally set by the government: the announced guarantee price drives the market. Regional milling/baking operations are scattered throughout the country, but Zhito-lux in Skopje is the largest miller/baker and retailer of baked goods in Macedonia. The company mills an average of 150 tons of wheat daily, relying on private farmers for 30-50% of its domestic wheat supply. Zhito-lux controls 20-22% of total milling capacity in the country, providing various grades of flour for its own use and for retail sale. The company produces 35% of Macedonia's bread supply and markets the bread and other goods through 220 of its own retail stores and 1800 other retail sites. For its own mills, Zhito-lux mixes domestic and foreign wheat on an average 50/50 basis, importing wheat from France (about 40% of imports in 1994), United States, Canada, and Germany in the last several years. Although the company imported a small amount of Bulgarian

³ FAO, *FAO Production Yearbook 1993*, Vol. 47, Rome, 1994.

⁴ Production in each sector was regressed in a log function against a time variable. The results include a robust coefficient for growth in private sector production ($\beta=0.022$, $SE=0.005$, $df=14$, $R^2=0.57$), and no significant findings for public sector production ($\beta=0.006$, $SE=0.008$, $df=14$, $R^2=0.04$).

wheat in 1993, the director reported that even at very low prices by world standards—\$50 to \$65/ton in 1994—Bulgarian wheat is too expensive for the poor quality.⁵

D.1.2 The World Wheat Market

World wheat stocks in the summer of 1995 are at a 16-year low of 112.7 million tons, down from a high of 179 million tons in 1990/91.⁶ As a proportion of annual world consumption (including feed), stocks are at a 28-year low of a little more than 20%. The low stocks are a function of declining supply, rather than increasing demand; consumption is expected to outstrip production this year for the second consecutive year.

The 1994-95 world crop is expected to be 525 million tons, the lowest level since 1988-89. The largest declines in production since 1990-91 among major world producers (those countries producing more than 30 million tons annually) occurred in the Russian Federation (-35%), Canada (-27%), and the United States (-15%).⁷ Production has increased markedly since 1990-91 only in India, and remained stable in China (the world's largest producer), the European Union, and Eastern Europe, where wheat harvests have recovered to 1990-91 levels after bottoming out in 1992-93.

While world consumption levels have not changed overall, wheat imports have increased in North America, the EU, Latin America, and Asia, and fallen markedly only in the former USSR. Leading exporters include the US (expected to export 34 million tons of 63 million tons produced in marketing year [MY] 1994-95), the EU (exports of 31 million tons of 82 million produced), and Canada (21 million of 23 million produced).

Eastern Europe is trying to cope with the first regional wheat surplus in years. With the recovery of wheat in 1994-95, the region is forecast to export 1.7 million tons (equal to 2% of world trade) of a total production of 34 million tons (6.5% of world production). Major regional exporters in 1994-95 are expected to be Hungary (600,000 tons), Romania and the Czech Republic (500,000 tons each), and Poland (100,000 tons of low-quality wheat). The market is primarily other countries in the region including Poland (which will need to import 500,000 tons of high-quality wheat), Albania (400,000 tons) and countries of the former Yugoslavia (300,000 tons). Bulgaria has set an export quota for this year of 350,000 tons

⁵ Bulgarian wheat in 1994, although a large crop of 3.8 million tons, suffered from a delayed harvest, heavy showers, sprouting in the field, and mold and mildew in harvested and unharvested grain. Average yields decreased by one ton/ha from expectations (Agworld Bulgarian Grain and Feed Update, 9/94). Low dollar prices in 1994 resulting from poor quality and the depreciating lev did not boost trade since Bulgaria banned wheat exports. The 1995 crop is expected to be poor again.

⁶ USDA/FAS, *Grain: World Markets and Trade*, Circular Series FG 4-95 April 1995.

⁷ Production statistics for the 1994-95 year are as of April 11, 1995 and pertain to expected totals for the marketing year.

effective between January 1 and June 30, 1995, but the wheat is of low quality. An export quota is effective as well in Romania for 500,000 tons. Hungary provides an export subsidy of 15% of fob market price, targeting Germany, Uzbekistan, and Italy as major buyers. Hungary also benefits this year from a preferential export quota in the EU of 236,000 tons, valid through June 30, 1995, reducing the EU variable levy by 60%.

World market prices for wheat are heavily influenced by the domestic policies of wheat producing countries. However, as the leading world exporters of wheat, the US, the EU, and Canada drive the market. Prices for Canadian and US wheat have fluctuated within a wide band since 1977, between \$110 and \$200/ton (Appendix D2: Wheat prices). Since 1990, when the price of US hard winter #2 hit a low of \$114, US prices rebounded and have remained in the \$140-150 fob range since 1991. Canadian prices of western spring red #1 have fluctuated more widely. Although the Canadian price moved in rough parallel to the American price until 1988, in 1989 prices for the Canadian variety jumped to \$201, falling 34% by 1991 to \$133, and rising again to \$199 by 1994. European target prices for hard and soft wheat are even lower, and are provided from 1990-91 through 1994-95 to for reasons of comparison, although they are not fob.⁸ The level of protection of European wheat producers has declined since the advent of CAP reform (see Appendix E: The Cap: A Moving Target).

D.2 Milk and Cheese

Macedonia produces cow milk and various products made from both cow and sheep milk, including two major cheeses. *Belo* is a hard white cheese cut in blocks and stored in water, with a consistency and taste like the Greek feta cheese popular in the United States. *Kaškaval* is a milder and softer yellow cheese produced with a rind, akin to Jarlsberg or Swiss cheese. Other dairy products include yoghurt (in a liquid form), *kiselo mleko* (a rich sheep milk-based yoghurt), and a variety of special cheeses produced in far smaller quantities than the *belo* and *kaškaval*.

D.2.1 The Dairy Subsector in Macedonia

Private farms produce the larger share of cow milk. Total production in 1994 was 116 million liters, of which 83 million came from private producers. Although cow milk production increased steadily throughout the 1980s, since 1990 production in both sectors has declined, and the decline is marked among public sector farms (Appendix D1: Agricultural production statistics). Measuring production growth between 1980 and 1994 reveals that private sector growth has been robust at an average annual rate of 2.8%, while no growth overall is apparent

⁸ Market prices and fob prices for EU wheat comparable to the US and Canadian data were not available. French soft wheat at the border price was used for comparison in the quantitative analysis because this was the most popular choice among importers in 1993 and 1994.

in the public sector.⁹ As with wheat, cow milk production increases are a result of yield increases per cow, rather than increases in herd size.¹⁰

In contrast to production growth, average yields in the private sector pale in comparison to public sector yields. Average annual yields among private producers were 982 liters/cow between 1980 and 1992 while public sector yields averaged 4242 liters/cow. Average European yields reportedly vary between 5000 and 6000 liters/cow (Mark Levenson, Macedonia VOCA Representative, personal communication). Differences in feed quality, access to clean water, and breeding stock are the likely reasons for these disparities. However, the analysis indicates that yields increased in both the private and public sectors by an average of 1.3 to 1.5% annually from 1980 to 1992 (data distinguishing yields between the sectors was not available for 1993).

Cheese production in Macedonia has increased steadily since 1992. The quantity of hard cheeses produced, including *belo*, more than tripled in the three-year period, from 276 tons in 1992 to 839 tons in 1994, with the largest increase occurring between 1993 and 1994. Soft cheese production, including *kaškaval*, more than doubled from 317 tons in 1992 to 700 tons in 1994. These production increases are not matched by increases in the marketed quantity of sheep milk, on which the *belo* cheese and other dairy products are based. Marketed sheep milk production fell from 2.8 million liters in 1992 to 1.9 million in 1993, recovering to 3 million liters in 1994. These figures suggest that more cheese is reaching the market from small private producers who had previously marketed neither milk nor cheese.

This hypothesis is born out by the proportion of cow and sheep milk that is kept off the market. In 1994, of 116 million liters of cow milk produced, only 40 million liters was purchased by Macedonian dairies. Of 61 million liters of sheep milk produced, 3 million liters were officially sold in the dairy sector. Since most milk is produced on private farms, and most large dairies purchase their milk from local private farmers, these figures indicate that large amounts of cheese are being produced privately and marketed to local stores.

The marketing chain for dairy products is hampered by both supply and credit constraints, problems which are well illustrated by the public Skopje Dairy Plant, the largest dairy in the country. Skopje has a milk production capacity of 120 tons per day. Built in 1959 with financing from UNICEF, the plant currently operates at 30-35% capacity, producing milk for local consumption (about 60% of the plant's total dairy production), yoghurt and *kiselo mleko*

⁹ Production in each sector was regressed in a log function against a time variable. Results include a robust coefficient for growth in private sector production ($\beta=0.028$, $ST=0.003$, $df=13$, $R^2=0.84$) and no significant findings in public sector production ($\beta=0.004$, $ST=0.004$, $df=13$, $R^2=0.06$).

¹⁰ In contrast to wheat, however, yields have increased significantly in both the private and public sectors (suggesting that flat production in the public sector is a result of *decreasing* herd size). Results for the regression test on growth include robust coefficients for both private and public sector yield growth (private sector $\beta=0.015$, $ST=0.004$, $df=11$, $R^2=0.63$; public sector $\beta=0.013$, $ST=0.005$, $df=11$, $R^2=0.37$).

(23% of total production), cheese (7%), and ice cream (10%). Cheese is produced mainly in order to absorb excess milk supply. Frozen desserts, according to the plant manager, are the plant's focus for future growth. The plant had relied on a Serbian milk supplier (a former corporate affiliate) for 50% of its milk supply until the UN sanctions were imposed, which cut production and capacity utilization. In order to increase the quantity and quality of supply in Macedonia, the Skopje Dairy Plant instituted its own parallel premium system. In addition to the Den 3/liter that farmers obtain from the government for milk at 3.2% milkfat, farmers who sell to the Skopje Dairy receive an extra bonus for every 0.1% of milkfat in their product between 3.6% and 4.2%. The percentage premium increases over the range, so that for milkfat levels of 4.2% and higher, producers receive a full 10% of the producer price in extra premium.¹¹

The plant used to maintain some 200 retail outlets, but currently manages only three, selling dairy products instead to 18 retailers who market the products through approximately 2000 stores across Macedonia. The degree to which the plant has been forced into a barter economy is notable as well, although far from unusual in Macedonia. As the dairy is having increasing problems with delayed payments from retailers, it has begun to accept in-kind payment when goods are considered useful for Skopje Dairy Plant employees or suppliers. Zhito-lux, for example, a longstanding client, has been paying for milk in grain which can be passed along to milk suppliers as cattlefeed. Another client arranged to pay for milk in the form of coupons with which dairy plant employees can purchase shoes. The plant estimates that 50% of its business today is conducted in the form of barter.

Macedonia relies for approximately 24% of its total fluid milk consumption on imports. In 1994, the country imported 12,410 metric tons of milk, equal to 12.8 million liters, compared with 40 million liters of marketed cow milk. Imports arrive pre-packaged for consumers from Slovenia (50% of 1994 imports), Slovakia (23%), Serbia (16%), and a wide range of other nations in Europe and abroad.¹² The vast majority of milk imports come in the form of UHT (ultra-high temperature pasteurization) milk in tetrapak cartons with a long shelf life for both stores and households. Milk, considered a basic survival good, is one of only four products in

¹¹ Farmers receive the dairy's standard price, plus the government equivalent premium, and the plant's own bonus premium. For example, a farmer selling 100 liters of milk at 4.0% milkfat would receive the dairy's standard price of Den 1,840 [(Den 4.6 per percent of fat * 4 percent) * 100 liters]. The government equivalent premium 3 Den/liter of 3.2% is Den 375 (100 l * [Den 3 * 4.0%/3.2%]). The plant's gives a maximum bonus premium of 10% of the base price for 6 points over 3.6% milkfat, that is, $10/6 = 0.0167$ per point, with 0.1% milkfat = 1 point. The plant's bonus premium for 4 points (4.0% - 3.6%) is Den 123 (100 l * [4 points * 0.0167 * Den 1,840]). Thus, the total producer price is 23.38 Den/liter (18.4 + 3.75 + 1.23). Both production premiums in this case total 27% of the base price.

¹² Milk was imported in 1994 from the Czech Republic, Germany, Singapore, Greece, Bulgaria, Norway, Italy, Poland, Ukraine and Croatia, as well as the three leading suppliers.

the economy exempt from a standard 5% sales tax imposed in 1994 (the others are bread, cooking oil, and butter).

D.2.2 The World Dairy Market

World cow milk production declined from 1990 to 1994 by more than 17 million tons, from 395 million tons to 377.6 million.¹³ The declines are most evident in the European Union and the former Soviet Union. The EU is the world's largest milk-producing region and production dropped over the five-year period from 118 million tons to 110.5, with marginal declines in most member countries. Production also declined markedly in Russia and Ukraine by 20 million tons together to 61 million in 1994-95. Increases in production, insufficient to offset the declines, occurred in Asia, Oceania, and the Americas. U.S. production increased slightly over the period from 84 million tons to 88 million, due primarily to improvements in feed and increased use of bovine somatotropin (bST), (a yield-enhancing hormone that has been banned in Europe since 1989).

EU milk declines come in part from the producers' response to increased quality standards and in part from declining numbers of cows. Greece is a notable exception to the decline in production in EU member states. The smallest milk producer in the Union, Greece is the only country to have increased production over the five-year period, albeit marginally, although further increases will be hampered by the EU decision not to raise the Greek production quota.¹⁴ Elsewhere in Europe, production has declined markedly in Poland and Romania, together by almost 5 million tons over the period to 16 million tons (data for other Eastern European countries is not published). Production in Romania is expected to increase as the economy recovers from the transition period.

World cheese production has increased over the last five years, from 10.6 million tons to 11.4 million, matching increasing demand. The European Union is also the world's largest producer of cheese, making 5 million tons in 1994, of which 10% was exported. The United States is second, with 1994 production of 3 million tons and exports of about 8% of production. Eastern Europe (again including only Poland and Romania) produced 213,000 tons of cheese in 1994, about as much as was produced in 1990, and exported 16,000 tons.

¹³ USDA/FAS *Dairy: World Markets and Trade*, Circular Series FD I-95, April 1995.

¹⁴ Greece is unusual among EU members in the constraint it has faced in meeting domestic milk demand. The EU quota for Greece—641 million tons not including sheep and goatmilk—allows the country to meet only 60% of Greek demand and imports of fluid milk are problematic given the distances from other EU member states. In the fall of 1994, Greece requested a 1 million mt increase in its production quota but the EU Commission eventually granted only a permanent extension of a temporary 100,000-ton quota increase.

The world dairy market is also characterized by thin markets, i.e. the small percent of trade relative to production and the consequent predominant influence of EU subsidies on the world price, largely that for butter and skim milk product.

D.3 Sugarbeets

Sugarbeets are a relatively new crop to Macedonia, having been cultivated on a broad scale only since the early 1960s. In 1958, the former SFRY built a sugar factory in Bitola as part of the Pelagonija agro-kombinat, which was to supply the beets for processing. The plant was one of several in the SFRY and its capacity was 150,000 tons of beet processing for total production of 20,000 tons of refined sugar per year. Split from Pelagonija in 1990 as part of a restructuring effort, the plant retains a monopoly on sugarbeet purchasing as the only sugarbeet processing facility in Macedonia. It has rarely operated at full capacity, and in 1994-95 produced only 35% of the refined sugar consumed in the FYRM. Since 1991, the factory has operated at a loss.

D.3.1 The Sugar Subsector in Macedonia

Both private and public sector farms supply sugarbeets to the Bitola factory. Until the early 1990s, public sources provided a larger share of the total production, and approximately 80% of the public share came from Pelagonija. Since 1991 the split has been roughly even between public and private sources, and Pelagonija's role in the public supply has diminished.

Beet production has varied widely from year to year as a function of soil moisture and climate. The Bitola factory reports that prior to 1990 it had provided farmers with many incentives to grow sugarbeets, including free seed, free use of seeding equipment, and subsidized fertilizers and pesticides. Once it split from the kombinat it discontinued this support and it has been unable to offer farmers even credit since then. Beet production has declined steadily since 1990, although the fall is steeper among public farms than private ones: since 1989, a banner year for sugarbeets in Macedonia, private production has declined by a total of 54%, while public production has declined 69% (Appendix D1: Agricultural production statistics). As a result, beet processing at the factory reached an all-time low 55,000 tons in 1994.

As in wheat, sugarbeet yield is higher among public sector producers, who benefit from irrigation, considerable economies of scale, extension support, and higher input use. However, the differences between private and public beet yields are far lower than differences in the wheat sector, and far less dramatic than swings in yield within each subsector. For example, from 1980 to 1993, yields on private farms averaged 24.5 tons/ha, while yields on public sector farms averaged 29.5 tons/ha. This compares with average yields of 50 tons in Europe in 1993, 29 tons in Asia, 49 tons in Africa, 42 tons in North and Central America, and 59 tons in South America.¹⁵

¹⁵ FAO, *FAO Production Yearbook 1993 Vol. 47*, Rome, 1994.

Virtually all of the beets produced in Macedonia are sold to the Bitola factory at prices announced by the Government prior to planting.¹⁶ In recent years, however, the Government has failed to announce the purchase price prior to planting in March, a failure that factory officials argue is the main source of the decline in production. In 1994, no price was announced at all, and the factory itself set the price for producers. At the beginning of March, the factory announced in lieu of an official price that it would pay either in terms of wheat equivalent (at 4:1, beets to wheat) or in terms of refined sugar (18:1, beets to sugar). Pelagonija was the only supplier to opt for the sugar-based price, and as a result of prices announced later by the Government received only 2/3 the price for its beets that other producers received.¹⁷ (Notably, the Ministry of Agriculture agreed to pay the full producer premium to all beet suppliers on the basis of the wheat price). Total harvest was 54,103 tons, of which Pelagonija produced 32,000 tons.¹⁸

The sugar factory currently operates at a loss of 7 to 9 denars per kilo of refined sugar produced, equal to 25-32% of gross revenue per unit of production. Processing costs are high primarily because of the price of the beet: at a production coefficient of 7.8:1, beets represent 52% of the unit cost of production of refined sugar, and 70% of the retail price.¹⁹ Four times in its history, the factory has purchased raw sugar on the world market for internal processing into refined sugar for the domestic market. The last time was in 1989, when some Central American raw sugar was imported and processed. Factory management expressed strong interest in purchasing raw sugar regularly on the open market for domestic processing, and argued that the factory could meet 80-90% of Macedonian sugar demand if it had the financing to operate at full capacity in both beets and refining of raw imports (the reprocessing would take place during the off-season between mid-February and October). However, under the scenario proposed, the Government would continue to guarantee prices, provide farmers with production premiums and rebates on seed and interest, and maintain protection against imports.²⁰

¹⁶ Although the FAO study cited the government's intention to eliminate guarantee prices by 1994 for all but four commodities (wheat, tobacco, lamb, and beef), guarantee prices for sugarbeet and sunflower were both announced in 1995 (Official Gazette, 20-95, 11 April 1994).

¹⁷ At the 18:1 sugar based price, agreed on by Pelagonija, the price turned out to be Den 1.67/kg (with sugar wholesaled at Den 30/kg), whereas at the 25% wheat based price the price was Den 2.5/kg. Pelagonija justifiably decried the factory's two-tiered system later.

¹⁸ This is in contrast to reports on Pelagonija's declining share of public sector production. Pelagonija plans to produce even more in 1995, a total of 45,000 tons, more even than its planned wheat harvest of 40,000 tons.

¹⁹ At the effective 1994 price of 2.5 Den/kg, 7.8 kilos of beet would cost 19.5 denars, and the factory reports total unit production costs of Den 37.5/kg, while retail prices are Den 28/kg.

²⁰ The factory management complained of the decision in 1995 to set the beet price at Den 2/kg, rather than 2.5, arguing that it was "unreal." They argued that the beet price ought to be a constant 25% of the wheat price (a method of price-setting dating to the SFRY and ultimately to practice within the European CAP).

Despite current taxation of imported refined sugar on the order of 42% net of transport costs - at a 30¢/kilo border price, refined sugar incurs an additional 17% import tariff, a 7.5% "import balancing tax" on all finished goods, a 1% customs processing fee, and a Den 5/kg special levy - imported sugar at retail remains 25% cheaper than domestic sugar at the factory.²¹ It should be noted that some sugar importers avoid the import tariff as well as the "balancing" tax by declaring that their sugar is an input intended for re-export in a finished good.

D.3.2 The World Sugar Market

Global sugar production is expected to fall below consumption for the third straight year in 1994-95.²² Low stocks and reduced exportable surpluses from Cuba and the EU account for much of the shortfall of 500,000 tons. This, coupled with increased demand from some large importers, most notably China, has driven sugar prices to 5-year highs.²³

Total sugar production in 1994-95 is forecast at 113.6 million tons, the highest level in five years, but still short of the 114.1 million-ton expected demand. Global stocks are up slightly from 1993-94 to 17.6 million tons, but down almost 6 million tons from 1991-92. Production declines are deepest in Cuba, where the languishing economy and the continuing recession in Russia, historically Cuba's best customer, has cut Cuban sugar exports by 63% since 1990-91, when Cuba was the world's leading exporter at 6.8 million tons (raw value). The EU has been the world's largest exporter since 1992-93, when exports totaled 5.7 million tons. After peaking in 1993-94 at 6.3 million tons, EU exports have declined in 1994-95 to a projected 5.4 million tons. Other major exporters in 1994-95 include Australia (4.1 million tons), Brazil (3.6 million tons), Thailand (3.5 million tons), and the Ukraine (1.7 million tons).²⁴ The Russian Federation is the world's largest importer at 2.9 million tons projected

²¹ Retail prices for all refined sugars in Macedonia are Den 28-30/kg. This represents a compromise among consumers, producers, the processor, and retailers, who themselves take a Den 2/kg loss on every unit purchased of domestic sugar. The factory argued that the Den 5/kg special levy had been instigated by them, and should be turned back to them for improvements and meeting producer payments. They proposed that the levy finance the factory's effort to ratchet up to full capacity so that it could meet 80-90% of domestic demand, forgetting that success in this venture would mean virtual elimination of the revenue flow from imports.

²² USDA/ERS *Sugar and Sweetener Situation and Outlook Report*, March 1995.

²³ Note that in this and most other commodities, the world market is distorted by domestic policies. Tradeable sugar is influenced by export subsidies (e.g., from the EU), while domestic prices in consuming countries are generally considerably higher and protected (e.g., in the US).

²⁴ The United States expects to produce about 10 million metric tons of sugar in 1995, up 7.3% from 1994. Beet sugar production accounts for 56% of the total, and promises to break records in 1995 surpassing 1994 production by 14%. Cane sugar is expected to increase marginally over 1994, with gains in Florida and Louisiana offsetting losses in Hawaii. Of total production, the US expects to export only 510,000 tons in 1995 (up 12% over 1994), rendering it still a small supplier in world markets.

for 1994-95, followed by the EU and China (2 million tons each), the US (1.7 million), Japan (1.6 million), and Korea (1.2 million).

In Europe, sugar production declined in 1994-95 from a 5-year high the year before of 17.3 million tons to 15.5 million.

As a result of declining supply in the world's leading exporting countries, the price of raw sugar on the world market has risen for the fourth consecutive year to 14.58¢/lb (March, 1995).²⁵ The price of raw sugar (fob stored in Caribbean ports) is approaching its decade high of 15.39¢/lb reached in March 1990; prior to that period, prices had not been as high since mid-1981 (Appendix D2: Commodity prices). Refined sugar prices have closely paralleled raw sugar prices; however, the recent high of 18.75¢/lb is still substantially below the 20.33¢ price reached in May, 1990.

D.4 Sunflowerseed

Sunflowerseed production in Macedonia has been highly variable throughout the 1980s and declining steadily since 1991. One public factory, Blagojdorev in Titov Veles, produces sunflower oil, and one seed distributor, Agrounija based in Skopje, provides seed to public and private farms. Agrounija reports that whereas five years ago sales totaled 110 tons of hybrid seed and 30 to 40 tons of a domestic non-hybrid variety, in 1995 the business sold 40 tons of hybrid seed and 15 tons of the domestic seed. No private farmers bought planting seed for sunflower in 1995.

D.4.1 The Sunflowerseed Subsector in Macedonia

Private farm yields, averaging 0.95 tons/ha between 1980 and 1993, are notably lower than public sector farm yields, which averaged 1.2 tons/ha. These yields compare favorably with 1993 average yields of 0.95 tons in Asia, 1.2 tons in Europe, 1.1 tons in North and Central America, 1.5 tons in South America.²⁶ In most years, total production in Macedonia from private farms has been lower than public sector production, averaging 44% of the total since 1980. Appendix D1 shows the variation in Macedonian sunflower production.

Farms market virtually 100% of sunflowerseed production to Blagojdorev, which processes the seed in two stages. The crushing stage yields byproducts used in cattlefeed and soapmaking, and the resulting raw oil is refined and bottled at the factory with bottling materials manufactured on site (except caps and labels). Factory capacity is 50,000 tons of seed crushing and 25,000 tons refined oil annually, equal to Macedonian demand. The factory is idle at times due to import competition in refined oil, primarily from Serbia. The factory has imported raw oil periodically to make up the deficit in seeds, but management argues that raw sunflowerseed

²⁵ New York Coffee, Sugar & Cocoa Exchange, Inc.

²⁶ FAO, *FAO Production Yearbook 1993 Vol. 47*, Rome, 1994.

is too expensive to import. (Official statistics indicate that in 1994 imports of sunflowerseed were minute: 7 tons from Turkey and 1.4 tons from Bulgaria). In 1994, 60% of the factory's volume of activity was production of refined oil, and 35% in seed crushing, a low year due to poor production. As a result of the growing domestic sunflowerseed deficit, Blagojdorev has been importing increasing amounts of raw oil to process (Table 5.9)

**Table D.9: Inputs at Blagojdorev sunflower oil factory,
1992-1995 (tons)**

Year	Purchase of seed	Purchase of raw oil
1992*	28,000	3,700
1993*	13,500	4,000
1994	10,000	10,000
1995 (planned)	10 to 15,000	8 to 9,000

Source: Blagojdorev, Titov Veles

* some storage residuals

Production coefficients: raw seed to raw oil: 0.4; raw oil to refined oil: 0.92; seed to refined oil: 5 kg to 1 liter

In the 1980s and early 1990s, the factory provided credit to farmers in the form of planting seed and debited payments for the purchase of the sunflower crop upon delivery. The factory's effort to increase production incentives began in earnest in 1992, when it provided high-quality seed to farmers at reduced or zero cost.

Raw oil is imported by traders, who supply the oil to the factory and purchase the refined product for redistribution within Macedonia. The factory's share of the wholesale price (Den 43/liter) is a standard 44%. The lack of credit has induced the factory to increase its sales of crushing services, providing private farmers and public farms with oil in payment for sunflowerseed.²⁷ When the factory provides this service, it receives a standard Den 18.9/liter price (equal to 44% of the market price of raw oil).

Retail prices for both Macedonian and imported sunflower oils ranged between Den 52 and Den 56/liter in 1994. A spot check of oil prices in Skopje revealed three varieties, the Macedonian oil and two Serbian varieties, all selling for Den 52. Cooking oil is one of four products considered basic survival goods that do not incur a standard 5% sales tax.

²⁷ Pelagonija provides its employees with refined oil at wholesale price, obtained from the factory in exchange for sunflowerseed. Pelagonija does the same for its sugarbeet.

D.4.2 The World Sunflower Market

The world oilseed market moves as a complex, many oils and meals being interchangeable, albeit to varying degrees. World sunflowerseed production and stocks have been steady since 1990-91. Total production in 1993-94 was 21 million tons, with stocks at the close of the marketing year at 460,000 tons (**cite oilseeds source**). Major producers of seed include the countries of the former Soviet Union (the FSU-12 produced 5.3 million tons in 1993-94), Argentina (the fastest growing producer, 3.8 million tons), the EU including the former GDR (3.4 million tons), and Eastern Europe (2.3 million tons). The United States ranked last on the 1993-94 list of the six largest global producers, at 1.2 million tons. Yields are highest in Argentina, with 1.8 tons/ha, and in Eastern Europe, with 1.4 tons/ha.

World sunflower oil production in 1993-94 stood at a four-year low, at 7.13 million tons, down from 7.89 million tons in 1990-91. As a result, oil stocks ended at a four-year low as well at 550,000 tons, down from 770,000 tons in 1990-91. Production in the European Union accounted for a large part of the decline, falling from 4.3 million tons at the beginning of the period to 3.4 million tons in 1993-94. Consumption of sunflower oil has remained steady in Europe, however, and imports from outside the region almost tripled over the four years from 350,000 tons to 950,000 tons, and are forecast to reach 1.1 million tons in 1994-95. Origins of imports are not available but it is likely that much of the supply came from Eastern Europe. Global production and stocks are expected to moderate in 1994-95.

As a result of declining oil supplies, the average price in 1993-94 of raw oil (all origins, cif Rotterdam) had increased 27% over the previous year to \$627, with the average price over the last four months of 1994 reaching \$678 (Appendix D2). US oil (fob Minneapolis) was higher, averaging \$688 for the marketing year. Average sunflowerseed prices (all origins cif Rotterdam) increased 17% to \$317 in 1993-94 compared to the previous year, with the price in the last four months of 1994 averaging \$311.

D.5 Fertilizer

Macedonian farmers use fertilizer across a wide range of crops and in highly variable amounts. In 1991-92, public sector farms applied 30,809 tons of fertilizer to arable land totaling 198,600 ha (about 30% of the total), for an average application rate of 1551 hundred grams/ha (SOM 1995). Private farm usage is reported to be much lower, averaging 300 hundred grams in 1994-95 down from 700 hundred grams "a few years ago" (World Bank, 1995).

D.5.1 The Fertilizer Subsector in Macedonia

Macedonia abandoned its rebate subsidy program for fertilizers in 1992, after reviewing evidence that yields were dropping in heavily fertilized areas. Fertilizer supply comes from a single factory in Titov Veles, which imports all but one of its inputs, and from imports of ready-to-use fertilizer. Public sector consumption rates are presented in Figure X. Private sector consumption rates are tracked neither by the Statistical Office of Macedonia nor by the Ministry

of Agriculture. The agricultural extension service division of the Ministry reportedly gathers scattered data on private farm consumption, but no comprehensive data were available for this report.

It is not clear what impact the removal of subsidies has had on fertilizer consumption. The few experts and users surveyed separately by the team seemed to agree that under the subsidy regime, while prices were low, the use of fertilizer was indiscriminate. Since the increase in the price of fertilizers, many users, they argue, have tried both to economize on fertilizer use and learn what mix of chemicals is best suited to local climates and crops. Table D.13 provides details on imports, exports, production, and consumption of fertilizers in Macedonia for 1993 and 1994. Use of fertilizer is volatile from year to year, especially since independence in 1991 (see Appendix D3: Use of fertilizer).

MHK Zletovo Hemiska Industria is the fertilizer factory in Veles. Until 1993, it was a separate public sector enterprise, but in that year it merged with a metallurgical company that produces sulfuric acid as a by-product. The companies joined largely because the fertilizer factory could use the acid in the manufacture of monoammonium phosphate (MAP, which is 10% sulfuric acid). The factory has a capacity of 150,000 tons of fertilizer production including NPK mixes (aka kalium), MAP, and phosphoric oxide, which is 50% P_2O_5 .

Table D.13: Production, consumption and trade in fertilizers			
	1993	1994	1995*
Production			
Phosphoric oxide (50% P ₂ O ₅)	42,000	42,000	40,000
MAP	35-36,000	35-36,000	40,000
NPK (all varieties)	65,000	75,000	80,000
Imports			
Urea	25,420	18,237	n/a
NPK	89,509	60,969	n/a
DAP	108	144	n/a
Other N, P, K mixes	30	18	n/a
Exports			
Urea in tablets	32	0	n/a
MAP	412	104	n/a
NPK	11,946	280	n/a
Total consumption (derived)			
Urea	25,420	18,237	n/a
MAP	34,500-35,500	35-36,000	n/a
NPK (all varieties)	142,563	74,738	n/a

* 1995 data is planned

Sources: MHK Zletovo Hemiska Industria, production data; SOM, import/export data. (Note: SOM provided conflicting data for fertilizer imports; these data should therefore be read as indicative.

The factory relies for all but the sulfuric acid on imported inputs, including urea (for nitrogen), phosphates, potassium chloride, ammonium, and ammonium sulfate. The factory's actual imports for 1994 are provided in Table 5.14. Total expenditure in 1994 on imported inputs (cif) was approximately \$15 million, with land transport costs having doubled since the closing of the Greek border. The factory manager used to import her inputs via rail from Thessaloniki at \$18/ton to Veles using one train of several 2000-ton cars to go from port to

factory in a few days. Now she must pay \$36-38 per ton to have the chemicals hauled in 18-ton trucks from Burgas and wait up to one month for delivery of an entire shipment. Trading companies hired by the factory manage the imports, and factory management expressed a high degree of satisfaction over the traders' ability to locate certain inputs at lower-than-average world prices.

Table D.14: Imports of fertilizer factory inputs, 1994 tons)				
Product	Quantity (tons)	Price (per ton)	Source	Comments (cif Veles)
Phosphates	30,000	\$90	Jordan, Algeria, Morocco	33-40% P ₂ O ₅
Urea	15,000	\$200	Bulgaria	highly variable February to July: \$150-220
Potassium chloride	10,545	\$160-170	Russia	highly variable January to July: \$126-170
Ammonium	7813	\$215	Bulgaria	little price variability
Ammonium sulfate	8000	\$65	Bulgaria	

Source: MHK Zletovo Hemiska Industria

The factory produces many NPK mixes but 15:15:15 constitutes 80% of NPK sales, with the next most popular mixes being 10:20:30 and 10:30:20. The factory works with the School of Agriculture and other research institutions on trials with all of Macedonia's crops²⁸. Fertilizer is marketed both through the factory to anyone, as well as through traders at other distribution points. Fertilizer purchasers are approximately 40% public sector farms and 60% private farms, although exact records are not kept by the factory on the nature of the domestic market. The factory has no say and little idea about what prices farmers pay for the fertilizer beyond the factory gate.

²⁸ An institute trial in Gevgelija asked for a one-time only mix of 8:16:20 and 5:15:20 for use in plastic tents, raising paprika and tomatoes.

D.5.2 The World Fertilizer Market

Private farm rates of fertilizer application in Macedonia are comparable to rates in other low-income countries, where farmers used an average 544 hundred grams/ha in 1991-92, compared with 585 in middle-income countries, and 730 across Europe and Central Asia.²⁹ The public sector average application rate of 1551 hundred grams/ha mask very heavy application in certain low-lying areas and on certain vegetable and wheat varieties, where use can be up to 2 tons/ha, or 20,000 hundred grams/ha. This rate is more in the league of high-income developed countries, where application rates averaged 1160 hundred grams in 1991-92 (World Bank, 1995). However, even these rates pale in comparison to the rates of fertilizer use among some European countries, with which Macedonia will be competing in the medium- and long-term future. In Germany, average rates are 2473 hundred grams/ha, in France 2892, in Belgium 4425, and in the Netherlands 5807. By comparison, average rates are 998 hundred grams per hectare in the United States.

Trade in fertilizers is a growing world industry. In 1989, the World Bank published a broad study of global fertilizer demand and supply, predicting that growth in demand would be greatest in Asia at 4.4% per year through the year 2000, compared with 1.1% and 1.3% per year in North America and the EU (then EEC) respectively, and 2.1% in Eastern Europe.³⁰ The authors could not have foreseen the political changes that have occurred in Eastern Europe since 1989, which shrank fertilizer demand in the short term (1989-1992) as countries weathered the transition and the lack of foreign exchange to purchase imported inputs. However, demand will probably exceed predictions for the period from 1992 to 2000. There is now a massive overcapacity in the industry world wide, especially for nitrogen fertilizers, so that prices have been consistently below replacement costs (or total costs) in recent years.

The world's major producer of nitrogen has historically been the Soviet Union and the CEECs. In contrast, phosphate processing is centered in the United States. Canada and Eastern Europe have historically been the world's major suppliers of potash.

Export prices for key elements in fertilizer production, including urea, triple superphosphate (TSP), and diammonium phosphate (DAP), have been highly variable in the short term since the late 1960s. Because the manufacture of chemical fertilizers is relatively energy-intensive, export prices that have been smoothed for seasonal and short-term fluctuations broadly reflect petroleum prices, spiking in 1974 and gradually increasing until 1979-80. Since the last major oil shock in 1979, fertilizer prices have been generally stable, remaining within a 180 to 220% band of a 1965 base.

²⁹ Average fertilizer use rates from World Bank, *World Development Report 1994*, Washington, DC 1994: pp. 168-169.

³⁰ World Bank, *Improving the Supply of Fertilizers to Developing Countries, A Summary of the World Bank's Experience*, World Bank Technical Paper No. 97, Industry and Energy Series, 1989.

D.6 Grapes

Under the former SFRY, Macedonia provided 80% of Yugoslavian wine exports. Grapes and wine are a part of Macedonian culture and history. Currently, the FYRM has 35,000 ha planted to grapes, of which 75% is private land. Of an average annual production of 220,000 tons, 60% is white grapes, and 40%, red. 60,000 to 70,000 tons are table grapes; the rest is destined for wine. Grapes, both for table and wine, stand out as one of a few agricultural exports on which Macedonia is hanging its economic future. Along with lamb, tomatoes, and cucumbers, Macedonians recognize grapes as a domestic product with international appeal, a commodity in which the country may well have a distinct comparative advantage. On average, approximately 90% of the production of table grapes and wine is exported.

D.6.1 The Grape Subsector in Macedonia

As with most other products, the production of grapes is fairly evenly split between the public sector and private farms (Appendix D1). Yields differ and are primarily a function of irrigation (all public sector vineyards are irrigated). Non-irrigated land, which characterizes most of the private land, yields an average of 9 tons/ha, whereas irrigated vineyards produce an average of 15 tons/ha.³¹ Curiously, given the emphasis on grapes as an export crop, Macedonian production has declined markedly since 1980, from well over 300,000 tons to 200,000 tons (dipping as low as 140,000 tons in 1993). One reason is the age of the vineyards: 60% of the vines are more than 20 years old, and vineyards are exhibiting productivity declines. Grapes are also especially prone to drought, however, and prolonged dryness can permanently damage productivity as well. Droughts in the years between 1989 and 1994 reduced the harvest, but 1995 promises to be far better.

Table grape varieties include sultana (seedless grapes) and Afusali (more than 50% of the total table grape production), both used for export, as well as a type that is consumed domestically due to poor durability in transport, Kralitza. Wine grapes include purely local varieties (Vranec, Krastočija, Smederevka, Zilavka, and Tamyanika) as well as international varieties (Chardonnay, Dramize, and Semillon). Eighty percent of the wine produced is exported in bulk and mixed for re-export in Germany and Slovenia. (Macedonian winemakers bristle at the lack of international credit received for wine that is labeled as coming from another country). The balance is bottled in Macedonia for local consumption or for export to specific markets.

Nationally, investment in the sector has been slight in the last five years due to budget constraints and the fact that grapes are not considered strategic among the crops cultivated in Macedonia. German aid—about 4 million deutsche marks—helped to finance an irrigation

³¹ Lupcho Uskovski, advisor to the Minister of Agriculture on grapes and wine, personal communication, July 1995.

system in Veles and Kavadarci in 1994. Further investment will be needed to rebuild portions of the Tikves kombinat in Kavadarci lost in the floods of July 1995.

D.6.2 The World Market for Macedonian Table Grapes

Despite strong Latin American competition in table grapes and high protection for wine production in the EU, Macedonia has begun to carve an important niche in the regional market for both products. In 1994, exports of fresh grapes totaled 12,688 tons with a total value of US\$3.5 million. Exports increased more than tenfold over 1993, when they totaled 1073 tons worth \$ 279,000.

Serbia topped the list of 17 destinations for Macedonian table grapes in 1994, importing 50% of the product. Albania imported 23%, and was followed by a long list of importers of far smaller amounts: Bulgaria (9%), Czech Republic (4%), Croatia and Slovakia (3% each), and Slovenia and Austria (2% each); Poland, Russia, Sweden, and Bosnia Herzegovina each bought about 1% and five additional countries received considerably less than 1%: Hungary, Cameroon, Greece, Germany and Grenada. In 1994, the best price was obtained in Grenada, which paid 57¢/kg. However, the average price in 1994 was 32.4¢, and the trade-weighted price for all grape exports was 28¢/kg.

In 1993, importers included Albania (31% of exported grapes), Czech Republic (28%), Croatia (13%), Serbia (11%), Bulgaria (7%), Slovenia (5%), Poland (3%) and Sweden and Hungary, each purchasing 1% (with additional countries buying very small quantities). The average 1993 price was 31¢/kg and the trade-weighted price was 28¢, as in 1994.

The greatest constraint to increased exports and new markets in Europe for refrigerated table grapes is transport. Exports of table grapes now take place in 15- to 18-ton cooler trucks. Prior to the imposition of sanctions, Lozar was able to export at a transport cost Veles to Frankfurt of DM 1500 to 2000 per truck. Since the sanctions, the cost has more than tripled to DM 6-8000/truck. Environmental requirements regarding packaging for the German and EU markets have increased marketing costs even more than the transport constraints. With costs of up to 90 pfennigs for a container with the necessary recycled content, designed to hold 5 kg of grapes at roughly 40 pfennigs/kg, Lozar has used 45% of sales revenue just to package the product. Transport consumes another 23% (at 45 pfennigs/kg), and companies like Lozar must cover production and profit with only 30 to 32% of the gross sales revenues from table grapes. While the export subsidy, if it were applied to table grapes as well as wine, would help to offset some of these constraints, it is unlikely that the subsidy would be sufficient to offset the transportation problems associated with grapes. That is why companies like Lozar are focusing increasingly on wine exports, which are not as sensitive to travel. In addition, the market for bulk wines, although competitive, is less variable than the consumer market for fresh fruit.

APPENDIX E

THE CAP: A MOVING TARGET

Not only is the CAP in the midst of significant internal reform, but Europe's accession to the World Trade Organization has contracted European policy makers to implement additional reforms that overlap, extend, and, in some cases, conflict with CAP reform.

The CAP is governed by three principles: open internal markets, common financing, and preference for EU members. Notwithstanding the reforms, these principles are likely to drive the formation and implementation of European agricultural policy, both during and after expansion of the European Union.

In general, the reform of the CAP involves replacing price support with income support. The intention of this reform is to shift the cost burden of agricultural support from consumers, who are penalized by higher food prices, to taxpayers. The goal is to increase the transparency of the cost of support programs through redirecting the pathway of support away from the multiple levels of forward and backward linkages from producer to consumer, toward direct allocations to farmers through government budgets. Additionally, this strategy increases the control of governments over equity of the cost burden. Since food makes up a larger portion of expenditures of lower-income than higher-income consumers, policy makers have little control in a price-based system over the extent to which poorer households disproportionately bear the cost of farmer support. Shifting away from price support to income support allocated through state budgets, and financing that support with tax revenues, increases the control of policy makers over actual spending levels and the relative burdens on households at different income levels.

The CAP reform is based on proposals put forward by the former EC Commissioner for Agriculture, Ray MacSharry. The MacSharry approach centered on a 35% cut in cereal prices over three years, anticipating flow-through price reductions on human and animal food products and cuts in livestock prices. The proposals also stipulated payments to farmers for "set-asides," areas of traditional cultivation in cereals and oilseeds with the goal of reducing area cultivated by 2 million hectares, and the elimination of grain export subsidies. The overall fall in grain production was to be 160 million tons. Other reductions in the prices of milk (10%) and beef (15%), were to be accompanied by increases in direct income payments to producers, with an overall impact of increased budget expenditures from state governments. The actual ongoing CAP reform, scheduled for completion in 1996, implies a roughly 30% cut in cereals and beef prices (reform of milk production support had been planned in the form of large cuts in production quotas, but has since been abandoned in the face of grave opposition). Some elements of the CAP will remain unaffected by both internal and GATT reform by virtue of the "green box," a set of criteria exempting policies that are perceived to have positive environmental effects and to be non-trade distorting.

Already, the CAP reform has meant an overall decrease in farmer support and a shift towards taxpayers and away from consumers in bearing the cost. According to the OECD, in 1992 (prior to the onset of CAP reform) transfers from European consumers to agricultural support totaled an estimated \$84 billion, while transfers from taxpayers were \$63 billion. In 1995, transfers from taxpayers and consumers will each total roughly \$50-55 million.¹ (According to USDA, transfers in 1992 from US consumers totaled an estimated \$27 billion, while transfers from taxpayers were \$60 billion. Overall US support of agriculture today is about 40% of European support.)

¹ Current EC Commissioner for Agriculture Franz Fischler commented in April 1995 that the shift away from price support to income support was the right decision, and must be accompanied by reduced state intervention in agricultural markets. He stressed, however, that additional changes in the CAP in preparation for accession of CEECs were less important than coping with the structural differences between the EU and CEECs' agricultural sectors, including farm size, land tenure etc..

APPENDIX F:

NPC FOR WHEAT: SENSITIVITY ANALYSIS

The nominal protection coefficients reported in the preceding section are the result of calculations of Macedonian domestic prices compared with world prices. Many choices regarding the base values of key variables in these calculations were made on the basis of conditions prevailing in 1994. Some of these conditions, however, are short-term in nature, necessitating an analysis of the sensitivity of the NPC results to changes in those conditions.

A sensitivity analysis was conducted using the base case of French soft wheat imports compared with Macedonian farmgate prices, for which the NPC result was 2.18 (see above). Base assumptions underlying this figure include the border price of French wheat (\$120/ton), the domestic price of Macedonian wheat (Den 12/kg), the prevailing exchange rate (an average 1994 rate of 43.2583 denars/US\$), and the transport cost of the French wheat from the port of entry (Burgas in this and most cases) to the Macedonian border (\$33).

A sensitivity analysis involves varying the base assumptions by a given percentage to determine how sensitive the result is to these variations. In this analysis, each of the four base variables was varied by $\pm 10\%$, $\pm 25\%$, $\pm 50\%$, and $+100\%$, with every other variable held to its base level (see Table X). Therefore, for example, the result of decreasing the exchange rate by 25% in denar/dollar terms (more accurately reflecting its value in 1995) is an increase in the NPC from 2.18 to 2.43.

The sensitivity analysis reveals that the NPC is marginally more sensitive to changes in the domestic price than to changes in the import parity price. Predictably (since the NPC is a fraction with the domestic price in the numerator), halving one price has exactly the same effect as doubling the other.

Also predictable is the fact that changes in the value of the denar, as represented by the foreign exchange rate in denars/US\$, have exactly the same impact on the NPC as changes in the border price, since the border price is converted to denars in order to calculate the NPC. Notably, however, the 14% appreciation of the denar during the first half of 1995 (from a 1994 average of 43.2583 to 37.00), has the effect of increasing protection by about 24%, increasing the NPC from 2.18 to roughly 2.7. This increases the risk of inefficiency in production and contributes to the "Dutch disease" currently afflicting exporters of agricultural produce (see above), rendering exports relatively more expensive in foreign currency terms.

Finally, it is notable that the effect of increased regional transportation costs as a result of border constraints is not as great as the effects of other price changes. This is because transportation from Burgas to the Macedonian border is still a relatively small proportion of total import costs, even in the example of inexpensive French wheat.