Competitiveness in the Agricultural Sector of Bosnia and Herzegovina

FOREWORD

The Swedish International Development Cooperation Agency, Sida, has provided support in Bosnia and Herzegovina since the mid-nineties, with agricultural activities introduced as a means to create income and employment amongst the returnees who were left with very few alternatives. The agricultural sector is considered to be able to accommodate new employment in the short and medium term perspective.

The Swedish Institute for Food and Agricultural Economics, SLI, has been commissioned by Sida to analyse competitiveness of the agricultural sector in general and of three key products, as well as potential and constraints to efficient performance. The results of the analysis are presented in this report.

The report could never have been finalized without advice and assistance of colleagues in Bosnia and Herzegovina. Those include Katica Hajrulahovic at Sida/Swedish Embassy in Sarajevo, Armin Kloeckner and Dennis Zeedyk at USAID/LAMP, Alida Sofic at EPPU, Mirjana Karahasanovic at the World Bank Country Office Bosnia and Herzegovina, Rigmor Sylvén and Ian Christoplos, both involved within Swedish development aid projects in Bosnia and Herzegovina and finally all participants at the workshop.

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1 Introduction

1.1 Background

The 1992-1995 war left Bosnia and Herzegovina completely devastated. The economy and infrastructures were destroyed. According to estimates, war-related damages in the agricultural sector amounts to approximately USD 4.54 billion (GTZ, 2001). Hundreds of thousands people died, and more than half of the population was displaced, either abroad, or within the country. The Dayton Peace Agreement (DPA) that was signed in 1995 finally put an end to the war.

Sida has been supporting activities of return and reintegration since the end of the war in Bosnia and Herzegovina (B&H) in the mid-nineties. Agricultural activities were introduced as a means to create income and employment amongst the returnees who were left with very few alternatives. During 2005, a new country strategy for B&H has been drafted. The strategy focuses on a number of areas, out of which support to local economic development is one. Support to employment-creation and income-generation from the agriculture sector falls under this heading.

Various analyses of B&H by donors and by the B&H government show that agriculture is the only sector which can accommodate new employment in the short and medium term perspective. Interventions at project level have showed that investments in knowledge and support in market linkages have resulted in increased income and employment amongst the small-scale farmers.

The Swedish Institute for Food and Agricultural Economics, SLI, has on behalf of Sida analysed competitiveness of agriculture in B&H as well as potential and constraints to efficient performance. The aim is to analyse the level of competitiveness of the Bosnian agriculture in a 5-10 year perspective taking into account of the EU-accession process and the regional integration. The assumption is that an increase in agricultural production will have positive impact on the welfare of a large portion of the population, that it will create income and employment, and that the agri-business is one of the sectors with best potential in B&H.

1.2 Organisation of the work and methodology applied

The analysis of competitiveness of agriculture in B&H consists on one hand of a general assessment of competitiveness at the sector level, on the other hand an in depth study of three key commodities. The first part is a qualitative study based mainly on available analytical and statistical material and reports on Bosnian agriculture and trade patterns. The second part is an in depth analysis of three key commodities based on own survey data.

The first part consists of an overview and description of Bosnian agriculture. In addition, various measures of competitiveness are introduced and applied on the B&H situation. Those measures include comparisons of prices, yields and calculation of indices of revealed comparative advantages based on trade data. In order to test conclusions and get guidance for further work, a workshop was arranged in Sarajevo in December 2005. The workshop focused on the reasons behind the low competitiveness of agriculture in B&H, and future expectations regarding the agriculture in B&H. Possible potential for certain products or sectors were also discussed.

Based on the conclusions from the workshop and discussions with Sida, three commodities were identified for further analysis within the project. Those were: raspberries, peppers and milk. Taking into account possible future integration of B&H with European Union, it was recognised that a potential rather than past (revealed) competitiveness should be assessed. Potential competitiveness can be analysed using the concept of Domestic Resource Costs (DRC). DRC compares the opportunity costs of primary resources employed in agriculture (capital, land and labour) with the remunerations those resources would receive on an unregulated market.

In order to have cost data necessary to measure potential competitiveness, a small cost of production survey has been carried out within the project. 30 milk producers, seven raspberry growers and seven pepper growers were surveyed. Recognising that natural conditions of B&H provide for highly diversified production circumstances for agriculture, it was decided that the regional diversification of the country should be taken into account by collecting data from major regions in B&H. The results from the survey are presented in each commodity section.

Local experts from Agricultural faculty, University of Sarajevo, Dr Sabahudin Bajramovic, and Dragana Ognjenovic, were involved in the work to collect and analyse local data and to strengthen local capacity as well as provide local knowledge. SLI has also engaged Dr Sophia Davidova, Imperial Collage London, and Dr Matthew Gorton, University of Newcastle upon Tyne, as external consultants (experts in DRC, with experience from similar studies).[1]

Preliminary results from the second part of the project as well as general factors affecting competitiveness of agriculture in B&H were discussed with the Economic and Policy Planning Unit of B&H (EPPU[2]), World Bank and USAID, and also representatives from relevant projects, like Cow How etc. This report has benefited greatly from many valuable comments which have resulted from the above-mentioned discussions.

1.3 Outline of the report

The focus in this report is at the findings from the second part of the analysis. However, because the first part, which was completed at the beginning of 2006, was not published this report includes also elements of the general analysis of competitiveness conducted for the first part of the study. Thereby, a more comprehensive picture of the Bosnian agriculture can be presented. In addition, some of the material included in the previous analysis has been revised and updated.

The report is structured as follows. Chapter two discusses concepts and determinants of competitiveness according to the economic theory. The objective is to provide theoretical background to the subsequent empirical analysis of competitiveness of agriculture in B&H and, in particular, to identify factors that affect performance and competitiveness. Chapter three presents various measures and indicators of competitiveness. Chapters four through seven provide an empirical assessment of previously identified factors that affect competitiveness and performance in Bosnian agriculture, namely macroeconomic conditions, ag-

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1 The FAO has been planning an investigation of competitiveness of Bosnian agriculture using the same methodology as SLI. According to an informal agreement, SLI and the FAO team intended to co-ordinate their efforts to avoid duplications and to gain from exchange of experiences. However, SLI's work was finalised before FAO's work has started.

2 Council of Ministers Unit for Economic Planning and Implementation of the BH Medium Term Development Strategy.

ricultural and trade policies, natural conditions and production factor availability in agriculture as well as situation in upstream and downstream sectors and on domestic market.

Chapter eight presents indicators of competitiveness for agriculture in B&H at an aggregate level according to concepts defined in chapter three. Next three chapters are devoted to the three commodities analysed more extensively: milk, raspberries and peppers. The presentation includes calculations of DRC. The final chapter of the report summarizes the results and presents conclusions and policy recommendations.

2 Competitiveness

2.1 The concept of competitiveness

Competitiveness is a complex economic phenomenon and a controversial issue. The concept lacks a universally accepted definition as well as a broad consensus on appropriate empirical measures. The concept of competitiveness can be applied at different levels of aggregation. At the national level competitiveness generally refers to the ability of a country to produce goods and services that meet the test of foreign competition while simultaneously maintaining and expanding domestic real income. One measure of competitiveness on national level is economic growth. However, competitiveness on the national level is not very interesting in longer terms (Lundberg 1999, Krugman, 1996). Even if the economic growth might be interesting from a welfare point of view, it is doubtful what it says about competition. According to both Lundberg (1999) and Porter (1990) the competitiveness on sectoral level is more interesting to investigate. Then the competitiveness of the companies is connected to the competitiveness of the nation.

At the sector or sub-sector level, which is relevant to this study, competitiveness is often defined as the ability of a country to profitably gain and maintain market share in domestic and/or export market.

Theoretical explanations of competitiveness

Economic theory offers two approaches to explain differences in countries' trade and specialisation patterns. The first one focuses on the notion of comparative advantage, that is, relative cost advantages over trading partners. The European Commission has adopted such a definition, and expresses that:

a country has a comparative advantage in a product when it can produce at a lower opportunity cost than other countries (European Commission, 1993, p. 164).

Comparative advantages can originate from various sources such as differences in factor endowments, production technologies or productivity. This approach is linked to cost competitiveness and is able to explain why countries trade in different products, that is, inter-industry trade. According to factor endowment

theory (Heckscher-Ohlin model) a country tends to specialise in products that use intensively those production factors, such as labour, capital, land or natural resources, in which the country is richly endowed. Land-abundant countries tend to export land-intensive products, for instance cereals. Poor countries, richly endowed with cheap labour usually export labour-intensive products, for instance textiles.

The second approach focuses on trade in similar products (or different varieties of the same product), that is, intra-industry trade. Such trade is explained by economies of scale (specialisation advantages) and preference diversity, which creates a potential for product differentiation. Products which are consumer-specific or are of high quality may be competitive even if they are not cheaper than rival goods.

2.2 Dynamic assessments of competitive advantage

Above, a distinction was made between cost competitiveness and competitiveness that relates to the ability to innovate. While the former is applicable to generic products, the latter applies to trade in differentiated products. At the farm level, cost competitiveness is the key concept. However, almost all agricultural products require some handling or/and processing to enter international trade. Hence, competitiveness of agriculture cannot be seen in separation from competitiveness of processing industry. In this section competitiveness of processing industry is discussed. The industry, contrary to primary agriculture, competes to a large extent in differentiated products. Intensity of competition in such products, especially high-branded products, is less severe but the success largely depends on the ability to invent new products and on skilful marketing. Understanding of this practice requires a dynamic view on comparative advantage with focus placed on the competitive process. The most widely used framework for an assessment of dynamic competitive advantages is based on the work of Porter, who argues that competitive advantage can be created and that certain conditions, which are embodied in his national diamond model, influence its creation (Porter, 1990). In this dynamic approach, four sets of variables, - factor conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry – contribute to the creation of competitive advantages. Government policies, programs and instruments affect the elements of the diamond. In addition, Porter also recognizes the role of chance.

2.3 Determinants of competitiveness - a summary

Porterian assessment of competitiveness can to some extent be seen as a complement to static view of the neo-classical trade theory providing an understanding of the dynamics of competitiveness. Moreover, Porter's approach incorporate some of the elements from trade theory by including factor conditions (quality and quantity of production factors) as one of the elements of the diamond. The major shortcoming of this qualitative approach is that results do not allow conclusions to be drawn in a straightforward manner. Economists criticize Porter's research because the results are not based on testable hypotheses[3]. The approach does not give guidance as to the relative importance of the various explanatory factors. However, Porterian approach allows for a mapping of strengths and weaknesses of a sector in a more structured way than, for instance SWOT approaches which tend to be highly circumstantial. Moreover, in a transition country such as Bosnia, market imperfections and institutional weaknesses, which are highly prevalent, may strongly affect actual competitive performance of agriculture (as well as other sectors). As the transition process evolves, the conditions are, furthermore, changing continuously. Hence, a systematic account of the underlying determinants of competitiveness may provide useful insights and a ground for an analysis of future competitiveness. Based on both trade theory and elements of Porter's approach which are more relevant to agriculture, following factors can be identified as important for competitive performance of the sector:

- Production *factor availability* and the *quality* of production factors as well as *state of technology* in particular in comparison with major competitors are decisive for what products a country may be expected to have comparative advantage in. In the case of B&H major competitors include other countries in the Balkan, and the EU in view of future integration of B&H with the EU.

- *Government policies: agricultural policy and trade policy including the trade agreements:* Stable, predictable and transparent regulatory framework is essential for performance of the agriculture. Government support to education and extension, research and development is im-

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[3] See for example, van Duren et al. 1994.

portant for the development of productivity both in the short and in the long run. Trade performance of the sector is dependent on trade policy of the country and trade policy of potential trading partners as well as on the existence of preferential trade agreements.

- *Macroeconomic conditions:* Development of agriculture is strongly influenced by macroeconomic parameters such as interest and exchange rates. In the longer perspective, structural change in agriculture, which is a precondition for increasing labour productivity and efficiency, crucially depends on the demand for labour from outside (pull factor) which in turn is related to the level of unemployment.

- *Upstream- and downstream sectors and conditions in the domestic markets*: Internationally competitive input suppliers are important for competitiveness because they create advantages to downstream industries by providing good quality and cost-effective inputs. Equally important are competitive and efficient processors of agricultural products as few products reach the consumers unprocessed. Performance of the sector may also depend on the conditions on the local market such as size, growth and perception of the quality by the consumers.

In the following chapters, the abovementioned determinants of competitiveness will be used to analyse conditions in agriculture in B&H.

3

How to measure competitiveness

The choice of methodology for competitiveness analysis is quite problematic, because the notion of competitiveness has no single definition and no clearly established link to the economic theory. An important attempt to improve theoretical consistency is the use of some measure of comparative advantage. Recent studies conclude that comparative advantage is probably the major force driving competitiveness in the agri-food sector (see for example, Berkum and van Meijl (1998)).

Except from the different levels of product aggregation and spatial extensions, the concept of competitiveness can be applied on past or rather revealed performance (ex post) or potential performance (ex ante). The presence of distortion on the domestic market, for instance during a process of transition to market economy or on foreign markets (such as trade restrictions or export subsidies) makes it more appropriate to concentrate on potential rather than on revealed comparative advantage.

3.1 Measures of revealed performance

Several measures of competitiveness applied to revealed performance can be found in the literature. Those can be summarized in four categories, see Ekman (2006) for a more detailed presentation. The categories are listed below.

- *Measures that are based on comparisons of productivity and technology:* Those measures include various indices of productivity, often single factor productivity, i.e. output in relation to one key production factor usually land or labour. This report provides comparisons of yields of major agricultural commodities, see section 9.1.

- *Measures that are based on profitability:* Comparisons often include production costs, gross margins or producer prices. This report compares producer prices, see section 9.2

- *Measures that are based on market shares and self-sufficiency ratios:* Low level of market shares or low self-sufficiency in a particular commodity indicates low competitiveness. This report analyses trade

balances for agricultural commodities as well as figures over development of production (shown in each commodity section).

- *Measures that are based on trade statistics:* The most common measure in this category and most widely used in general, is the index of revealed comparative advantages; see below for the definition and explanation.

Revealed comparative advantages

Since competitiveness interpreted as comparative advantage is a relative concept, the measure used also has to be relative. One of the most common measures of comparative advantage is Revealed Comparative Advantages (RCA). Countries that trade with each other will use their comparative advantages to export, and the trade patterns will therefore show in what products or sectors a county has comparative advantage. The most often used indicator is the Relative Export Advantages (RXA) (Balassa, 1989):

$$RXA = (x_{ij} / X_i) / (x_j / X_w)$$

where x_{ij} is the export of commodity j for country i ; X_i is the total export from country i ; x_j is all the other countries export in commodity j and X_w is the rest of the countries total export. W can be the whole world, or an other reference region. If one country's share of exports of a certain commodity is larger than its total share of total exports, the country has a revealed comparative advantage in the export of that commodity. If the relative export share is larger than one the country is regarded competitive.

Trade performance is, of course, affected by trade policies of both the exporting country and those of the trading partners. Distortions on the domestic markets affect RXAs as well. Hence, such calculations should be interpreted with care. (This is also the reason why DRC might be a better approach in many cases). However, a calculation of such coefficients for different products and comparisons between countries may be a useful starting point of the analysis.

RXAs have been calculated for Bosnia and Herzegovina, with the EU as reference region. B&H export is compared to the trade within the EU. The results are shown in section 8.3.

3.2 Measures of potential performance: Policy Analysis Matrix and Domestic Resource Cost

To analyse the potential competitiveness rather than revealed, it is instead necessary to use some kind of accounting method. Evaluation of potential competitiveness usually requires considerable man-power and data. The most common measure is Domestic Resource Cost. The DRC for a particular commodity compares the opportunity cost of domestic resources used in production of that commodity to the value added at international prices the production is generating. Shadow prices for domestic resources and international prices for tradable outputs and inputs are referred to as social prices because they represent opportunity costs and opportunity benefits for the nation engaging the scarce resources in alternative production activities. They differ from the private prices (financial prices) faced by the producers due to the effects of policy distortions and market failures (for instance monopoly pricing and high transaction costs).

DRC as well as several other important indicators of protection, comparative advantages and social profitability can be illustrated using the framework of Policy Analysis Matrix (PAM), originally developed by Monke and Pearson (1989). The PAM is a product of two accounting identities: profits are defined as a difference between revenues and costs measured in either private or social terms, see table 1. The second identity measures the effect of distortions as differences between observed values and social values.

Table 1. Policy analysis matrix

	Revenue	Tradable Input Costs	Domestic Factor Costs	Profits
Private Prices	A	B	C	D
Social Prices	E	F	G	H
Transfers	I=A-E	J=F-B	K=G-C	L

Indicators that are used to compare the extent of policy transfers or policy incentives and indicators that are used to compare relative efficiency or comparative advantage between agricultural commodities are summarised in table 2 below.

Table 2. Economic indicators derived from the PAM

NPC:	Nominal protection coefficient	[A/E]-1
EPC:	Effective protection coefficient	[(A-B)/(E-F)]-1
DRC:	Domestic resource cost	G/(E-F)
SCB:	Social cost benefit ratio	(F+G)/E
PPR:	Private Profitability Ratio	A-B-C/A
PCR:	Private Resource Cost	C/A-B

DRC

The DRC compares the opportunity costs of domestic production to the value added it generates at international prices. The numerator is the sum of the costs of using domestic primary resources (non-internationally traded inputs, as land, labour and capital) in terms of shadow prices. The denominator is the value-added (value of output minus tradable input costs) in border prices. The DRC for commodity i is defined as:

$$DRC_i = \frac{\sum_{j=k+1}^{n} a_{ij} V_j}{P_i - \sum_{j=1}^{k} a_{ij} P_j}$$

where a_{ij}, $j = k+1$ to n, are the technical coefficients for domestic resources and non-tradable inputs and V_i are the shadow prices of domestic resources and non-tradable inputs. P_i is the border price of traded output, a_{ij}, j=1 to k, are the technical coefficients for traded inputs and P_j the border price of traded inputs.

When the DRC is smaller than 1, domestic production is internationally competitive, since the opportunity cost of domestic resources is smaller than the net foreign exchange it gains in export or saves by substituting for imports (Gorton et al., 2000).

Because of its versatility and intuitive interpretation, DRC quickly became and remains the dominant indicator in use. It was dominant toll used to guide World bank-funded structural adjustment programmes (Masters, 1998). DRCs have also been widely used in the analysis of transition economies and for identifying potential opportunities for enhanced export marketing and areas in which pro-

ductivity should be improved (Gorton & Davidova, 2001). For a review of DRC for Central and Eastern European Countries, see SLI, 2002.

Explanation of the popularity of the DRC methodology for analysis of competitiveness of transition economies, such as Bosnia and Herzegovina, can be explained by the fact that those economies are often considered to be distorted by underdeveloped institutions, lacking competition, poor macroeconomic stability and interventionist prices. Consequently, the actual competitive performance in such economies may be a poor indicator of the underlying, potential competitiveness. DRC methodology enables the disentanglement of pure comparative advantage from the distorting effects of institutional and structural conditions - it grasps potential rather than revealed competitiveness. The DRC measure is important for informing policy decisions. Given the level of technology and management, resources should be moved out of commodities with high DRCs and transferred to those commodities with low DRCs. The measure can also indicate which commodity systems are likely to expand in the future and which are likely to contract.

3.3   Calculating DRC for an economy in transition

The application of the DRC methodology requires a number of assumptions. The assumptions made can be divided into four key areas: choice of social prices for output and tradable inputs, estimation of social cost of labour and land, choice of production structure (technical coefficients) and conduct of sensitivity analysis.

Most studies measure *social prices for outputs and tradable inputs* as border prices (export / import parity prices) and most adjust these prices to the farm level. For products for which the country in question was a net exporter during the analysed period, an average f.o.b. export parity price is usually taken as the unadjusted reference price. For products for which the country was a net importer, average c.i.f. import parity prices are applied. The adjustment of prices from border to farm should account for, where appropriate, port and handling charges, transports, storage and maintenance costs. An alternative approach, in the absence of reliable border prices, is to adjust farm prices for the cost of transportation to the border.

The *social cost of labour* should be measured in terms of its opportunity cost. Banse *et al.* (1999) use the average wage paid in manufacturing as a proxy for this. Gorton *et al.* (2000) and Gorton and Deaconescu (1998) modify this by separating labour input into skilled and unskilled and derive different social values for each. However, persistent and high unemployment clearly indicate that labour market is distorted and not in equilibrium. Such distortions may, for instance, arise from the application of a minimum wage. In such a case, the observed wage rate will represent an overestimation of the opportunity costs. The *social price of land* is typically measured as its rental value in the most profitable alternative agricultural use.

Technical coefficients that are necessary for calculation of the DRCs may systematically differ among farms of different sizes. Where data are available, studies made attempts to consider variations between farm types. However, data are often not available and have to be collected by farm level surveys. In the absence of reliable farm register, it is very difficult to select a representative sample. Depending on the design of the survey, the data may reflect particular type of farms. In some cases, the figures may, on purpose, be skewed toward particular kind of farms for instance large or commercial ones.

Sensitivity analysis provides a way of assessing the impact of changes in the main parameters on both private and social profitability. The closer the DRC to 1, the more marginal is a country's comparative advantage or disadvantage in the production of that particular commodity, (Gorton, Davidova, 2001). Producers in this range are susceptible to changes in world market prices and exchange rates. It is useful, therefore, to conduct sensitivity analysis, considering the impact of changes in exchange rates and international prices.

3.4   Assumptions for DRC Calculations for Bosnia

Data availability is a major problem in Bosnia and Herzegovina. Data needed for the DRC calculations within this study that was not possible to find among existing sources or to extract from the surveys, was replaced with the corresponding data for Kosovo and what has been reported for other Central and Eastern European Countries (CEECs).

The DRC calculations for the chosen products, presented in each commodity chapter, are based on the following assumptions:

a) Prices refer to the year 2005 and are valued in KM.

b) Tradable and non-tradable input use, private prices and yields are taken from the cost of production surveys.

c) Border prices for outputs are taken from Chamber of Foreign Trade of B&H data.

d) For dairy products Bosnia is a net importer and so for milk the import parity (c.i.f) price has been taken with domestic producers assessed to see if they can compete against imports. For peppers and raspberries Bosnia is a net exporter so the export parity (f.o.b) price has been taken with domestic producers assessed to see if they can be profitable at average f.o.b prices. An adjustment for transport and storage costs has been made. Given the lack of this data for Bosnia, the adjustment in this case is based on data for Kosovo and what has been reported for other CEECs.

e) Given the lack of data on border prices for tradable costs, it has been assumed that where import tariffs are zero (for example on organic fertilisers, urea and ammonium nitrate) that private and social prices are equal. Where Bosnia is a net importer of a tradable input (for example superphosphate) and the tariff level is positive, the actual tariff level (e.g. 5 per cent in the case of superphosphate) has been deducted from the average private domestic price to obtain the social price. It should be noted that the vast majority of inputs in Bosnia have low or zero import tariffs, so that this adjustment has little effect on total costs.

f) Taking into account conditions on the labour market in B&H, see next chapter, it is clear that opportunity costs of labour is probably lower or even much lower than the observed wage. However, making precise quantitative estimates of the social opportunity costs of labour is very difficult. Accordingly, sensitivity analyses were used to examine the stability of the results and conclusions with respect to valuation of the labour.

4

Determinants of Competitiveness: Macroeconomic Conditions

4.1 Introduction

According to the Dayton Peace Agreement the country is divided into two so-called „entities", the Federation of Bosnia and Herzegovina (consisting of 10 cantons, inhabited mainly by Bosniaks and Croats) and the Republika Srpska (mainly Serbs), and the independent District of Brcko. These entities report to a joint parliamentary assembly and are governed under a single presidency. Reflecting the sensitivities which shaped the peace compromise, the Dayton Peace Agreement originally confined the State mandate to foreign relations and selected domestic policies (IMF, 2005). Even though the agreement was successful in ending the war, it has been strongly criticised for how it was constructed. The state was left weak, with two quite strong entities. The constitution demands fourteen governments, which is both costly and creates confusion regarding where decisions are supposed to be taken. The political and administrative structure which emerged from the DPA makes the task of catching up with more advanced economies more complex (WB, 2005). The level of complexity underlying administrative arrangements brings both direct fiscal costs as well as less tangible economic costs.

However, the state has grown. Several functions have shifted to the state recently. The number of state agencies increased from 17 institutions in 2000 to 40 in 2004. In 2004, the administrative expenses of the state were 1.7 per cent of GDP, up from less one per cent in 2000. (IMF 2005 a). This development has resulted from the influence of international community who seeks a single counterpart for negotiations with the outside world and a government structure which bears a closer resemblance to those of the rest of the world (IMF 2005a). In particular, the strengthening of State institutions represents a major precondition for joining the European Union (Com, 2005).

4.2 Development of the GDP

The war left GDP in B&H at a fraction of the pre-war level. The economic recovery of B&H began in 1995, facilitated by a macroeconomic stabilization programme initiated in 1994, and substantial international assistance. Initial re-

covery was very strong. In the post-war period; GDP grew at an annual average of 25 per cent, the country's critical infrastructure was rebuilt, and modern political and economic institutions and processes were born. GDP in 1998 was more than two and half times GDP in 1995. The growth rates were more modest since 2000. However, the economy was growing at 4 to 5 per cent and the medium term economic outlook remains favourable (IMF, 2005). Strong economic development continued in 2005. Real GDP grew at 5 to 6 per cent (EPPU, 2006). Export performance has been strong and the underlying inflation, despite higher oil prices and introduction of VAT, has remained relatively low. See figure 1 below.

Figure 1. Development of GDP, B&H
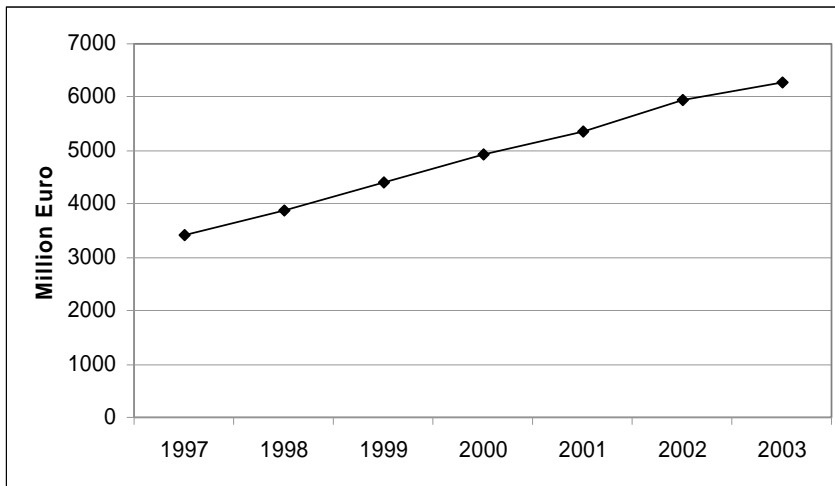
Development has been uneven across the two entities. The economic recovery was much stronger for the Federation than for Republika Srpska. In the recent years, Republika Srpska appears to be catching up, though.

Figure 2. Economic growth in B&H and entities
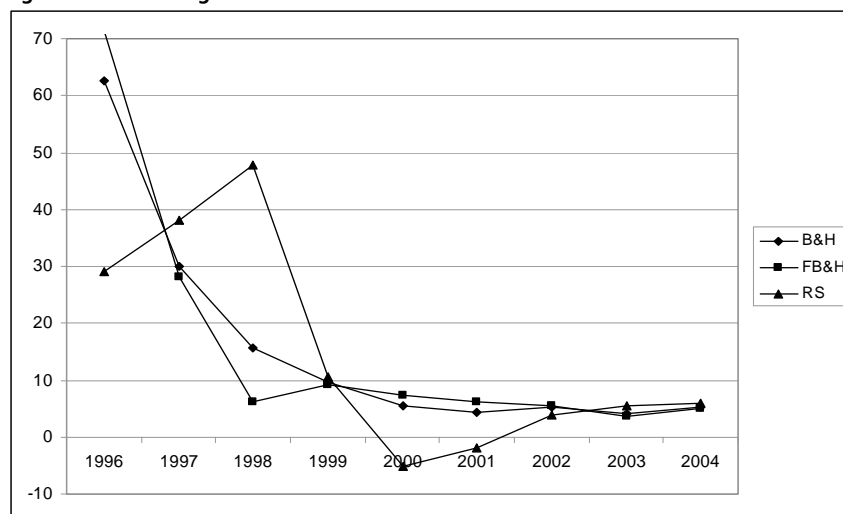
Source: IMF, 2005

In 2004 the GDP of Bosnia and Herzegovina was 6,636 millions Euros and real growth rate 5 per cent. GDP per capita was 1,732 Euros[4], which is the lowest in Europe. Greater economic integration of the two entities is a prerequisite for association with the European Union. More effective integration will also enable the RS to keep pace with the FB&H and the countries of South East Europe.

Current account deficit

Loss of export markets and a high reliance on imports, due to the post-war collapse of domestic production, have resulted in a very high trade deficit for B&H. This deficit has continued, despite a strong recovery of exports. The current account deficit in B&H is excessively high compared to other countries in the region and Bulgaria and Romania. According to the International Monetary Fund's (IMF) assessment, the high level of deficit presents the largest threat to macroeconomic stability. In recent years, the current account deficit amounted to 17 - 18 per cent of the GDP according to assessment of IMF. EPPU[5] has es-

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[4] About 1,468 Euro for Republika Srpska and 1,957 Euro for Federation of B&H.
[5] Council of Ministers Unit for Economic Planning and Implementation of the BH Medium Term Development Strategy.

timated current account deficit in 2005 to 23 per cent, see chapter 6 for a further discussion. External imbalances at such a high level are not sustainable in the long run, (WB, 2005).

Inflow of foreign direct investment (FDI) has doubled since 2000 to 6 per cent of GDP in 2004. Total FDI since the end of the war is estimated to have surpassed US 1.6 billion. FDI, though improving, is insufficient to compensate for large current account imbalances, (Com, 2004). Inflow of FDI in 2005 declined from the high level in 2004 reflecting a smaller share of privatisation. Investments in food processing amounted to 12 projects; ten per cent of direct investment projects in the industry.

4.3 Monetary policy

The Central Bank of Bosnia and Herzegovina (CBBH) was established in April 1997 to effect monetary policy. The currency of Bosnia and Herzegovina is the convertible marka (KM), introduced in June 1998. On September 5, 2002, the State parliament approved an amendment to the CBBH law that changes the peg of the KM from the DM to the Euro, under a currency board arrangement. The KM is pegged to the euro at KM 1 = 0.5113 euro. In the western Balkans, B&H is the only country that relies on a currency board. However, both Croatia and FYRM have also opted for an exchange rate system with the euro as the anchor currency, namely managed float +/-2 per cent around the euro.

Due to Bosnia and Herzegovina's strict currency board regime inflation has remained low. Inflation in 2005 has reached its highest level in four years in 2005 (EPPU, 2006) but is still quite low. Retail prices grew by 3.6 per cent and cost of living by 2.9.

The currency board arrangement ensures stability of the local currency, as pointed out above. The main reason for the adoption was that it provides a firm nominal anchor in the form of a fixed exchange rate. This was considered critical for the very uncertain post-war economic situation in B&H. Furthermore, it is rule-based approach to monetary policy that took account of the difficulty there would be in establishing institutions and making decisions in a complex political system that emerged in the B&H after the war (Belke & Zenkic,

2006).[6] However, a system with a fixed exchange rate depraves the government of a potentially vital policy instrument and may imply underperformance in terms of employment and economic growth. In the absence of exchange rate flexibility greater burden of adjustment is placed on structural reforms, in particular flexibility and mobility in the labour market.

The banking sector has improved dramatically, particularly in FB&H. Private banks, especially those owned by international strategic investors, now dominate the market in both entities. They account for almost 90 per cent of the banking sector's assets. As a result, the banking system's performance improved, liquidity in the economy increased, and public finance management was strengthened.

Interest rates are relatively high in B&H. In 2005, the average interest rate on long-term loans for enterprises was 8.2 per cent, a decline from previous year. Interest rates differ according to the company and purpose of the loan. According to EPPU creditworthy companies can obtain interest rate around 6.5 per cent for investment loans.

4.4 Fiscal policy

General Government spending relative to GDP has declined substantially to 50 per cent last year from 64 per cent in 2000. However, the average for the transition economies is about 43 per cent. Experience from other middle-income countries shows that it is difficult to sustain public expenditure levels of more than 30-40 per cent of GDP, (FAO, 1999). Public expenditure still concentrates on current rather than investment spending, (Com, 2004). Reforms must reduce government consumption and spending and shift to development / social sector spending. The budget deficit, which was around 1 per cent of the GDP 2004, has changed into a surplus of 0.1 per cent 2005.

In 2005, B&H has continued the process of reforming its indirect taxation system. The authority for collection of indirect taxes was transferred from the entity to the state level. The VAT system came into force on first of January 2006. As of February 2006, new legislation concerning the personal tax in the parliamen-

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[6] During discussions in Sarajevo it was strongly emphasized by several persons that giving the toll of monetary policy to politicians in B&H would risk bringing a dangerous inflation-devaluation spiral

tary procedure concerning personal income tax is under introduction. The new legislation will replace the various cantonal taxes by a single comprehensive tax that treats all incomes in the same way. Corporate tax is also under reform. The tax rate is expected to decline from 30 to 15 per cent in B&H and increase from 10 to 15 in RS.

4.5 Labour market

Unemployment is high and rising, particularly for women and young. Despite strong growth performance in 2005, the number of registered unemployment continued to grow by 7.3 per cent compared to 2004, (EPPU, 2006). New jobs are created mainly in the informal sector and are too few, (WB, 2005). About 75 per cent of the labour force younger than 30 years is unemployed. The official unemployment rate was 43,2 per cent in 2004, an incredibly high figure, but the grey economy absorbs a great part of the officially unemployed labour force (Bojnec, 2005). Agriculture plays an important role in the hidden economy in B&H.

The size of the grey economy in B&H is considerable. The share has been estimated by Central bank of B&H at 38 per cent. Estimates of unemployment, including the grey economy, points to unemployment rate around 20 per cent (Belke & Zenkic, 2006), which is a considerably lower figure. The unemployment is, however, still very high indicating that labour markets are functioning poorly.

A possible explanation of the high unemployment is the fact that wage level is high. Wages in B&H are in general higher than in the neighbouring Balkan countries, e.g. the average gross monthly wage is 394 Euro/month in the Federation of B&H compared to 145 in Bulgaria, 179 in Romania, 255 in Serbia and 327 in FYROM. Only in Croatia labour is paid more. The relatively high wages combined with the low labour productivity may have an adverse effect on agricultural competitiveness in B&H.

In addition, labour-related taxes and social contributions are very high in B&H. Those amount to 69 per cent in FB&H and 52 per cent in RS as a per cent of net wages. This creates a strong incentive for tax avoidance and lowers the demand for labour by increasing the cost of hiring. Furthermore, spending on social transfers in the public sectors in B&H is much higher than in similar economies

and has risen rapidly in the two last years. This most probably contributes to increasing the wage level by increasing reservation wages.

It is expected that introduction of VAT will lead to reduction of officially registered unemployment and may even generate new employment. Firstly, as registered firms can reclaim VAT on their inputs, the reform creates an incentive to move from informal to formal sector. Moreover, the introduction of the VAT implies a broadening of the tax base. It has been argued that if the new system generates higher revenue, the proceeds should be used to lower taxation on labour.

In the presence of high unemployment, agriculture, which according to statistical data employs around 15 per cent of the labour force, play a considerable social buffer role providing food security for farm household members in rural and urban areas.

4.6   Restructuring of the economy

According to IMF, B&H ranks last in central and South-eastern Europe in term of structural reforms and needs to catch up. According to the latest assessment of progress in transition performed by European Bank for Development and Reconstruction, (EBRD, 2006) for 28 transition countries, performance of B&H is mixed. In some areas such as price liberalisation as well as trade and foreign exchange system, B&H has reached or almost reached a status of market economy. In the fields of governance and enterprise restructuring and infrastructure reform the progress has been limited. Worst are achievements in case of competition policy where, according to the EBRD, no progress has been made.

4.7   Implications for agriculture

Generally, stable macroeconomic conditions, with low levels of inflation, fiscal moderation and a stable exchange rate have accompanied and sustained the recovery of the Bosnian economy. Such stable conditions are conducive for development of private sector, including agriculture. However, economic outlook depends crucially on acceleration of the economic, regulatory and legal reforms and faster privatisation (IMF, 2005) and risks to macroeconomic stability remain especially against the background of declining foreign assistance and high current account deficits (Com, 2004). In the absence of exchange rate flexibility, the strengthening of competitiveness, which is necessary to reduce current ac-

count deficit, must be achieved through improvement of productivity and efficiency. The fixed exchange rate puts the burden of adjustment stronger on tradable sectors such as agriculture. Moreover, the stability of the nominal exchange rate might hide some important exchange rate misalignment that might create indirect distortions to agriculture.

Wages are high in B&H compared with neighbouring countries. The unemployment, even adjusted for the informal economy is very high indicating that the labour markets are not functioning well. The relatively high wages combined with the low labour productivity may have an adverse effect on agricultural competitiveness in B&H. High level of unemployment, which is rising rather than declining, implies, furthermore, that demand for agricultural labour outside the agriculture is low. Low demand for farm labour outside agriculture due to high unemployment implies that outflow of labour from agriculture will be limited, structural change slow and the sector will continue to play a considerable role as a social buffer providing food security for farm household members.

Ongoing and planned fiscal reforms of both direct and indirect taxation are expected to strengthen the budgetary revenues of the government. However, government's capacity to provide significantly higher levels of direct public support for agriculture may still be limited due to the fact that the share of the government spending in the GDP is still quite high and several other demands, such as a need to reduce labour taxation, abound.

5

Determinants of Competitiveness: Trade Policy

5.1 Trade policy

In Bosnia and Herzegovina, agricultural trade policy is still under the responsibility of the Ministry of Foreign Trade and Economic Relation, and the economic ministries in other entities. In general, markets and prices are fully liberalised, but market structures and the processing industry, which are key elements for the development of the whole agro-food chain, are not well developed.

Bosnia and Herzegovina is one of the very few countries located in Europe that is not yet a member of the World Trade Organisation (WTO). The accession process has been initiated. Bosnia and Herzegovina applied for membership in May 1999 and the Working Party was established soon after the submission of the application. So far, B&H has tabled an offer for market access in goods. Because of the low level of GDP per capita, some commentators argue that B&H is expected to enter WTO under a developing country status, which allows for longer adjustment periods (Ivankovic & Bojnec, 2005). However, one could doubt whether WTO members would agree to treat B&H as a developing country. First, the previous experience indicates that transition countries, which acceded to WTO post-Uruguay round, did not manage to negotiate a developing country status. Second, GDP per capita in B&H is not much lower than in some of the neighbouring countries, particularly when the purchasing power parity (PPP) is considered (see table 3).

Table 3. GDP per capita in nominal terms and PPP in South Eastern European countries, 2002

Country	GDP per capita (Euro)	GDP per capita (USD PPP)
Albania	1,583	4,000
Bosnia and Herzegovina	1,467	6,400
Bulgaria	2,136	8,250
Croatia	5,414	10,030
FYR of Macedonia	1,958	6,520
Romania	2,160	6,590
Serbia and Montenegro	1,687	4,500

Source: Based on Deleva (2006).

GDP per capita in B&H is increasing and according to WTO it reached 7,100 USD in purchasing power parity in 2004 (WTO, 2006).

The lack of competitiveness in the agricultural sector of B&H makes it difficult not only to enter export markets, but also to compete with imported products in the domestic market. Such a weak trade position creates political constituency against agricultural trade liberalisation. Consumers and traders are likely to benefit from more liberalised trade. However, groups with protectionist and productionist mind set, including the agriculturalists advocate a lower degree of trade liberalisation. Despite the divergent interests concerning trade liberalisation, the accession to WTO is the most important step for the full integration of B&H in the world trade and one of the pre-conditions for negotiations for EU membership. It is therefore a political priority for B&H to complete the negotiations with the WTO (Ivankovic & Bojnec, 2005).

Currently, Bosnia and Herzegovina enjoy the autonomous trade measures granted unilaterally by the EU. Initially, they were granted in 2000 for a five-year period. In 2005, these measures were extended until 2010 which ensures free access to the EU market for almost all products. The only exceptions are the tariff rate quotas for wine, some fisheries products and sugar. For baby beef only the specific element of the import duty has been eliminated, whilst the ad valorem element set at 20per cent continues to apply.

Although B&H has duty free access to the EU market, the agri-food exports to the EU are not performing well. The main reasons for this are:

- The non-application of European conformity assessment and the lack of food processors accredited for exports to the European Union. The largest barrier for B&H animal products export to the EU is the inability of potential exporters to meet the requirements for obtaining the veterinary certifications by the EU and complying with the sanitary and phytosanitary measures (WB, 2005).

- The significant reduction of marketed agricultural production in B&H.

- The limited existence of stable trade links between exporters from the region and importers in the EU.

- The problem of gathering critical mass of produce of homogeneous quality for exports.

An important point for the future trade relations with the EU is the Stabilisation and Association Agreement (SAA) which currently is been negotiated. From this point of view, B&H is lagging behind the countries accepted as candidates by the EU, namely the Former Yugoslav Republic of Macedonia and Croatia. EU opened negotiations with Bosnia and Herzegovina for SAA in January 2006. This agreement will treat the trade issues in a more comprehensive manner than the autonomous trade measures, namely it will include provisions not only about trade liberalisation in goods but also about other trade related issues as services, state procurement, intellectual property rights and competition. SAA is crucial for Bosnia and Herzegovina for several reasons. First, it is a necessary step to achieve a status of a candidate country in the future. There is not a road map for this but the European Stability Initiative (ESI) (2005) suggests that the best comparator available for the countries in Western Balkans, including B&H, is Bulgaria. Bulgaria signed an Association Agreement with the EU (the predecessor of EAA) in 1993. It achieved candidate status four years later in 1997, and will potentially become an EU member ten years after achieving the candidate status. Second, EAA will trigger funding from the Instrument for Pre-accession Assistance (IPA). According to some preliminary estimates, during the period 2007-2013 B&H could receive as much as 622 million Euro from IPA, or 23 per cent of all support to the Western Balkans potential EU candidate countries (see table 4). If for the other countries the amount of funding offered by IPA compares unfavourably to the funding the countries currently receive, B&H will receive at least as much as they receive now under the Community Assistance for Reconstruction, Development and Stabilisation (CARDS) programme (ESI, 2005).

Table 4. Estimates of EU assistance to potential candidate countries (million Euro)

	2007	2008	2009	2010	2011	2012	2013	Total
Serbia	113	138	117	159	234	233	220	1,214
UNMIK/Kosovo	25	31	26	35	52	52	49	270
Montenegro	10	12	10	14	21	21	20	108
Albania	45	55	47	63	94	93	88	485
Bosnia- Herzegovina	59	71	60	82	119	118	113	622
Total	252	307	260	353	520	517	490	2,699
Per capita (Euro)	14.16	17.25	14.61	19.83	29.21	29.04	27.53	

Source: ESI (2005).

One of the disadvantages of Bosnia and Herzegovina in relation to the EU candidate countries (FYR of Macedonia, Croatia and Turkey) is that IPA will differentiate between potential candidates, the group where B&H falls, and the candidate countries. Only some of the measures generally covered by IPA will be funded in potential candidates, namely Transitional Assistance and Institution Building, and Cross-border Co-operation. B&H has to put as a priority on their agenda the enhancement of the administrative and management capacity to absorb the assistance. In addition, in December 2005 a European Fund for Southeast Europe (EFSE) was launched building on the European funds in Bosnia and Herzegovina, Serbia, Montenegro and Kosovo. One of the functions of this fund is to promote the funding of small and micro enterprises. Bosnia and Herzegovina should make a full utilisation of this fund to foster private investments crucial for the increase in cost competitiveness and quality of agri-food products.

In the light of positive signals and incentives from EU, trade liberalisation and facilitation is seen as an important task in B&H, as in all Western Balkan countries, which enables the development of regional integration. Consequently, free trade agreement negotiations have become a major policy issue and were increasingly put on the top of the policy agenda. The objective was and is to achieve better trade relations trough the reduction and elimination of trade and non-trade barriers in a regional context. B&H signed various free trade agreements with South Eastern European counries countries (see table 5). A consequence is that in 2004, 37 per cent of the total merchandise exports and 31 per cent of imports were to and from Croatia, and Serbia and Montenegro, which became the second and third trading partner after the EU.

Table 5. Free trade agreements amongst the South Eastern European countries and starting date of application As per February 2006)

	Albania	Bosnia-Herzegovina	Bulgaria	Croatia	FYR of Macedonia	Moldova*	Romania	Serbia & Montenegro	UNMIK/Kosovo
Albania		Applied 01/12/2004	Applied 01/09/03	Applied 01/06/03	Applied 15/07/02	Applied 01/11/04	Applied 01/01/04	Applied 01/08/04	Applied 01/10/03
Bosnia-Herzegovina	Applied 01/12/04 WTO		Applied 01/12/04	Applied 01/01/05	Applied 01/07/02	Applied 01/05/04	Applied 01/12/04	Applied 01/06/02	Initialled 15/02/06
Bulgaria	Applied 01/09/03	Applied 01/12/04		CEFTA 01/03/03	Applied 01/01/00	Applied 01/11/04	CEFTA 01/07/97	Applied 1/06/2004	Under examination
Croatia	Applied 01/06/03	Applied 01/01/05	CEFTA 1/03/2003		Applied 11/06/97 Revised 02 Applied 11/07/02	Applied 01/10/04	CEFTA 01/03/03	Applied 01/07/04	Under consideration
FYR of Macedonia	Applied 15/07/02	Applied 01/07/02	Applied 01/01/00	Applied 11/06/97 Revised 02 Applied 11/07/02		Applied 01/01/05	Applied 01/01/04	Ratified 02/12/05	Applied 02/02/06
Moldova*	Applied 01/11/04	Applied 01/05/04	Applied 01/11/04	Applied 01/10/04	Applied 01/01/05		Applied 17/11/94	Applied 01/09/04	
Romania	Applied 01/01/04	Applied 01/12/04	CEFTA 01/07/97	CEFTA 01/03/2003	Applied 01/01/04	Applied 17/11/1994		Applied 01/07/04	
Serbia & Montenegro	Applied 01/08/04	Applied 01/06/02	Applied 01/06/2004	Applied 01/07/04	Ratified 02/12/05	Applied 01/09/04	Applied 01/07/04		
UNMIK/Kosovo	Applied 01/10/03	Initialled 15/02/06		Under consideration	Applied 02/02/06				

Source: Stability Pact for South Eastern Europe, http://www.stabilitypact.org/trade.   *
Moldova unilaterally decided to participate in the FTAs within South Eastern Europe.

Looking at the future, in June 2005 at their meeting in Sofia the Ministers of trade of the countries in South Eastern Europe started the process of integrating the network of bilateral free trade agreements into one regional FTA. This is an important step for the future trade relations of B&H in the region which may create an opportunity to benefit from a wider multilateral trade liberalisation in the region. The negotiations started in April 2006. The idea is to achieve a regional FTA by enlarging the Central European Free Trade Agreement (CEFTA) and making some amendments to this agreement. Apart from the countries of the Former Yugoslavia, the regional FTA is expected to include the two EU acceding countries Bulgaria and Romania, and Moldova. This regional FTA might help Bosnia and Herzegovina to increase the share of the regional trade in its merchandise trade, but the country will need to face the competitive pressures. Some commentators even suggest that the interim future of Western Balkan countries lays in a Customs Union with the EU-27, including Bulgaria and Romania, and Turkey (CEPS, 2005). All these ideas indicate the crucial role of increasing the competitiveness of agriculture in B&H in order not only to benefit from the free trade but also to boost investors' interests which would be interested to operate in a larger regional market.

All such developments, including the current situation with the autonomous trade measures granted by the EU, raise one major issue, namely the rules of origin. The rules of origin are put in place to prevent trade deflection from countries not receiving special preferences through the country which receives such preferences and into the final market, namely the EU (USDA, FAS, 2003). The rules of origin require stringent monitoring if Bosnia and Herzegovina were to benefit from trade preferences. With the proposal to integrate the bilateral FTAs into one regional FTA, the EU does envisage the so-called 'diagonal cumulation of origin'. This means that the products could move within the regional FTA for further processing, but the original product, e.g. the primary agricultural product, should originate from a country member of the FTA. If this product does not originate from a country member of the FTA, the export to the EU could not be based on the preferential trade provisions. When goods are claimed to have a preferential trade origin, this should be certified. The above mentioned underlines once again the need to strengthen the administrative and managerial capacity of Bosnia and Herzegovina to deal with the rules of origin if it was to benefit from the preferential access to the EU.

The EU practise such diagonal cumulation of origin within the "Pan-Euro-Med-System of cumulation". South Eastern European FTA is seen as a preliminary step before the inclusion of the region in the Pan-Euro-Med-System.

5.2 Value of trade

B&H is a net importer of food products. Almost all food products are imported, above all wheat, meat products, milk products and fruit juices. This is not a new situation; B&H was not able to satisfy domestic demand before the conflict either. However, the trade deficit in agricultural and food products has grown.

Some main trade indicators and data about neighbouring countries are presented in table 6 in next page.

Table 6. Basic Trade Indicators for South Eastern European Countries (data for 2004 if not otherwise indicated)

| Country	Exports (FOB) (million USD)	Imports (CIF) (million USD)	Current account balance (million USD) 2003	Trade per capita (USD) 2002-2004	Trade to GDP ratio (2001-2003)	% of agriculture in total exports	% of agriculture in total imports	% exports to the EU in total exports*	% imports from the EU in total Imports*	Simple average of ad valorem duties in agriculture (%)**
Albania	603	2,300	-407	990	65.4	10.3	20.3	90.5	68.1	9.0
Bosnia-Herzegovina	1,908	6,072	-1,918	2,143	119.1	17.1	17.7	54	51.9	18.4
Bulgaria	9,931	14,467	-2,055	3,025	119.1	12.5	6.8	58.3	54	4.8
Croatia	8,024	16,589	-1,896	6,982	109.0	12.6	9.8	64.6	69.5	9.3
FYR of Macedonia	1,673	2,903	-415	2,134	95.7	16.4	15.5	57	50.1	12.7
Romania	23,485	32,664	-6,382	2,170	80.7	5.9	7.4	73.1	64.9	24.4
Serbia and Montenegro	3,979	11,752	n/a	n/a	n/a	23.1	13.9	53.4	51.8	15.9

*Source: WTO (2006). *EU-25. ** As agricultural are classified products that have been treated as agricultural in the Uruguay Round Agreement of Agriculture.*

Bosnia and Herzegovina is a small open economy. In South Eastern Europe is only B&H, and Bulgaria that have trade value higher than GDP. The tariff protection is low, lower than all neighbouring countries. The simple average of ad valorem duties applied in 2001 was 6.0 per cent for all goods, including 4.8 per cent for agriculture and 6.2 per cent for non-agricultural products (WTO, 2006). It is an exception from the usual trend when countries protect agriculture with higher tariffs than the non-agricultural sectors. This re-emphasises the need to increase the competitiveness of country's agriculture.

Both total imports and total exports have increased during the last 10 years (1995-2004). And although the merchandise exports have recorded a higher annual rate of growth than imports (32 and 21 per cent respectively) (WTO, 2006) the country has a substantive trade deficit and a negative current account balance. The current account deficit accounted for 23 per cent of GDP in current USD, which is hardly sustainable.

The trade deficit is larger (relatively) in the agricultural sector than for total trade. In 2004 about 21 per cent of total import consisted of agricultural and food products, whereas the share of exports was below 6 per cent. The coverage of exports/imports in per cent is 8,5 for agricultural and food products compared to 31,3 for total trade (Central Bank, Annual report 2004). Figure 23 shows the development of the trade with agricultural and food products.

Figure 3. Total trade in agricultural and food products in B&H
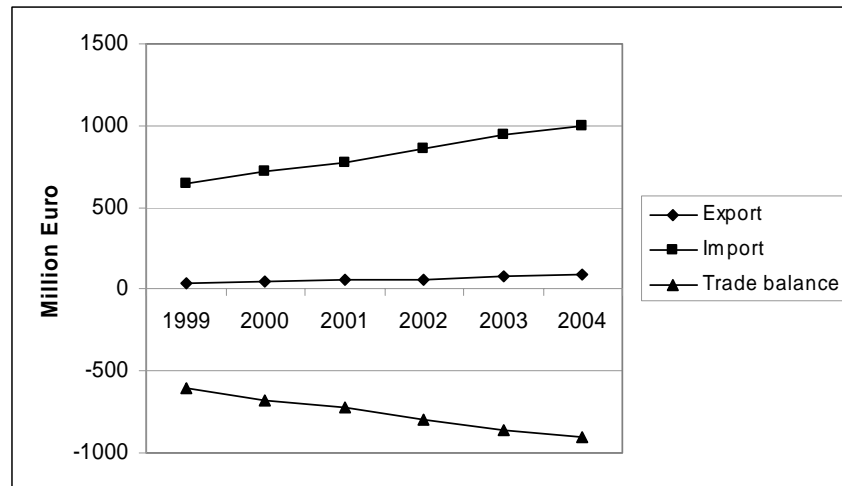
Source: Chamber of Commerce of Bosnia and Herzegovina

However, between 2004 and 2005 the export of agricultural products increased by 3.4 per cent while the imports only increased by 1.2 (EPPU, 2006). The improved trade balance in agricultural products may partly be explained by the FTA that was implemented in 2004.

5.3   Traded products

According to statistics from the Chamber of Commerce of B&H, the product groups accounting for the largest share of agricultural and food imports (in value) are beverages, cereals, tobacco, edible preparations, sugars and dairy products.

Out of B&H's total exports, eatable preparations, beverages, fruit and vegetables account for the largest value (Chamber of Commerce). The export to the EU consists mainly of sugars, vegetables and fruit (Eurostat). However, there is no sugar production in B&H. The predominant kind of vegetable exported to the EU is mushrooms (fresh, chilled, dried or frozen). The most exported fruits are fresh plums and frozen raspberries.

The trade with the EU accounts for a more than a half of the total trade, both regarding agricultural products and non-agricultural products. The most important

individual trading partners are, however, Croatia, Germany, Serbia-Montenegro, Italy and Slovenia. Figure 4 and 5 show imports and exports respectively, on country of origin for total trade (all commodities). Trade in the three products studied is described and discussed further in the commodity chapter.

Figure 4. Total imports of B&H by country of origin
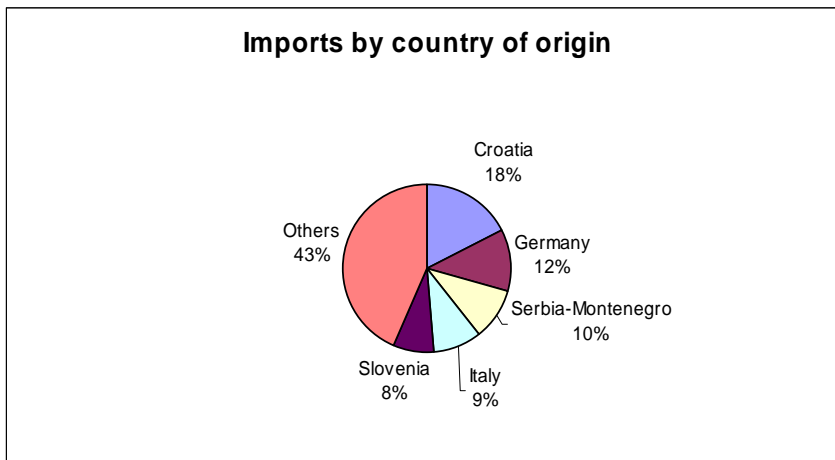
Source: Central Bank of B&H, Annual Report 2004.

Figure 5. Total exports of B&H by country of destination

Exports by country of destination

Source: Central Bank of B&H, Annual Report 2004.

5.4 Implications for Bosnia and Herzegovina

➢ Two events are crucial for the full integration of B&H in the European and world trading system; the conclusion of the SAA and the accession to WTO.

➢ More than a half of the trade flows of B&H are with the EU. EU has unilaterally granted autonomous trade measures according to which most of the products enter duty free in the EU. However, there are exceptions which affect the agri-food exports of B&H – wine, sugar, baby beef. This indicates the sensitivity of agricultural trade.

➢ So far, B&H could not reap fully the benefits of this unilateral trade liberalisation due to:

  o difficulties to monitor the rules of origin.

  o non-application of the European conformity assessment and the lack of certified establishments for export to the EU. From this point of view the efforts should be concentrated on agri-

food quality and implementation of standards compliant with the EU.

➢ The process of trade liberalisation in South Eastern Europe provides opportunities for B&H to achieve economies of scale producing for and exporting to a wider regional market. However, this necessitates an increase in productivity, efficiency and competitiveness.
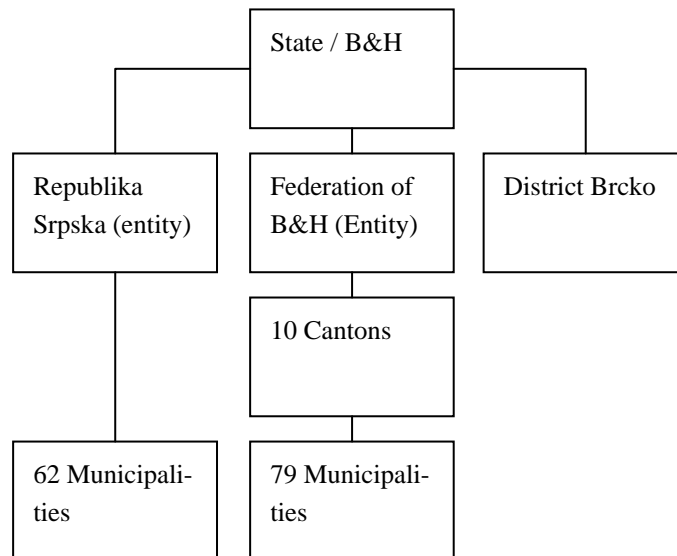
6 Determinants of Competitiveness: Agricultural Policy

Agricultural policy of B&H is difficult to analyse since a consistent uniform policy at the national level is lacking. There is a general lack of institutional capacity to develop and coordinate agricultural policy and legislation in B&H (European Commission, 2004). This chapter first provides a description of the institutional framework, continues with a presentation of the major policy instruments and describes budgetary resources.

6.1 Institutional framework

Agricultural administration takes place on all administrative levels in B&H:

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                        │   State / B&H    │
                        └──────────────────┘
        ┌───────────────────────┼───────────────────────┐
┌───────────────┐     ┌──────────────────┐     ┌──────────────────┐
│  Republika    │     │  Federation of   │     │  District Brcko  │
│ Srpska (entity)│    │  B&H (Entity)    │     │                  │
└───────────────┘     └──────────────────┘     └──────────────────┘
        │                      │
        │             ┌──────────────────┐
        │             │   10 Cantons     │
        │             └──────────────────┘
        │                      │
┌───────────────┐     ┌──────────────────┐
│ 62 Municipali-│     │ 79 Municipali-   │
│ ties          │     │ ties             │
└───────────────┘     └──────────────────┘
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According to the Dayton Peace Agreement, agricultural policy was fully under the entities competencies. There are agricultural policy institutions on several levels in B&H: entity, cantonal and municipality level, but not on state level. The "functional review" (European Commission, 2004) suggested establishing

of a state Ministry of Agriculture. In November 2004, a section for Agriculture, Food, Forestry and Rural Development was established within the Ministry of Foreign Trade and Economic Relations. This section is seen as the predecessor of a future State-level Ministry of Agriculture and Rural Development. However, Bosnia and Herzegovina still lacks a State-wide agricultural policy and strategy and the section lacks the necessary resources, (Com, 2005). At present, efforts are made, with an assistance of external aid, to create a ministry of agriculture. However, those efforts have yet not been successful.

There are several different programmes of agricultural support in B&H, because of different institutions responsible for agricultural and food production. Each Entity has its own support programme applying different measures for different products and those programmes are usually made as ad hoc decisions. This is the case even at cantonal level. This system causes differences and varying conditions depending on region. The lack of a common policy is particularly appreciable when it comes to international trade and also in the process of integrating into the European Union. This lack of co-ordination is accepted as a big problem in both entities.

There are no direct lines of command linking the different administrations together, and the assignment of responsibilities is not clear (European Commission, 2004). This unclear division of tasks and responsibilities in agricultural administration is delaying the process of efficient agricultural development. Design and implementation of consistent agricultural policies is hindered by involvement of many different institutions in policy making and the lacking co-ordination between the two entities. A benchmarking exercise conducted by the European Commission (2004) shows that the agricultural administration staff in B&H amounts to around half of the staff in Slovenia and five times less than in Austria and Latvia.

A clear picture of the economic situation of agriculture, related sub-sectors and farm groups is missing. Crucial information systems, like FADN (Farm Accountancy Data Network) and EAA (Economic Accounts for Agriculture) applied in the European Union Member States, are fully missing. In Bosnia and Herzegovina a farm registry still does not exist. Therefore, in most cases, Ministries of Agriculture lack the data and capacity to carry out sound policy analyses

and impact assessments of possible agricultural policies. Bosnia and Herzegovina also lacks well functioning non-governmental organisations, which play an important role in representing producers' interests in policy formulation.

6.2   Major elements of agricultural policy

Almost all countries in the world apply agricultural policy of some kind, using a variety of different measures. Measures are often divided in two broad categories. Policy approach in B&H follows this pattern.

- *Agricultural Market and Price Policies:* These are policies targeting at providing improved conditions for product marketing and the purchase of inputs. They include market price support through border protection and domestic market price interventions, product related subsidies, direct payments to farmers (either related to use of inputs like land or livestock or decoupled).

- *Structural and Rural Development Policies:* These policies are targeting on improving the structure of agriculture and increasing the economic viability of farming units and improving conditions in rural areas and measures to improve market infrastructure, quality of produce and inputs and providing better market access to farmers. They include support to investments, interest rate subsidies, support to marketing, rural development projects etc.

Choice of a particular mix of measures tends to reflect political preferences, since different measures address different objectives, but is also restrained by availability of budget means as well as administrative capacity as far implementation and enforcement of regulations is concerned. Current status of agricultural administrations and budgets in Bosnia and Herzegovina do not allow for any significant intervention. Therefore only a limited range of effective measures and instruments are available to the B&H decision makers (Com, 2004). Major measures applied in B&H are border protection, production subsidies and interest subsidies.

6.3 Market support

The level of *market price support* in B&H is low. Domestic intervention is limited and the import tariffs for agricultural and food products are low. In 2000, average import tariff for agricultural products was 5.2 per cents, which is very low if we compare it with average tariffs in the EU (21.5 per cent), Slovenia (12.2 per cent before EU membership) or Croatia (16.8 per cent) as the most interesting trade area of B&H. The low purchasing power of the population and the high share of poor population which do not allow for a significant increase in food prices is a probable explanation to the low level of tariffs. In 2000, B&H system of custom protection is provided by import tariffs that are determined on four classes as follows: 0, 5, 10 and 15 per cents (see Appendix). To determinate custom tariffs it was taken into account principle of origin and kind of commodity, level of processing and purpose of a product.

A domestic market intervention, consisting of a guaranteed floor price for wheat and supported by public purchases, was dismissed in the late 1990s. Crop producers had an indirect support through the application of official 'minimum prices' for a limited number of commodities (in 2001 and 2002 only for wheat, rye, maize and barley in addition to milk and tobacco). There are no input subsidies and no direct controls on consumer prices – although, in the past, the Food Reserve Agency had the power to intervene in markets to 'stabilize' prices, as it deemed necessary.

6.4 Budgetary resources for agriculture

Direct support to farmers (direct payments and production related subsidies) is low in B&H. In the Federation of B&H (FB&H) the 2002 budget has significantly modified the domestic agricultural policy. Up to then, the Entity supported directly mainly milk and tobacco producers through subsidies paid for deliveries to, respectively, dairies and tobacco processors. In 2002 direct support was extended to other commodities including per tonne subsidy for cereals and livestock as well as per unit subsidy for livestock breeding and orchard investments. The budget figures are given below in table 7 that compares the cost of

the public agricultural sector in Bosnia and Herzegovina with total public spending. [7]

Table 7. Agricultural spendings, fiscal year 2003 (1000 KM)

Administrative Level	Institution(s)	Total public budget	Agriculture Budgets	% 2002	% 2003	% 2004
State level	MFTER[8]	324,375[9]	1,395	0.2	0.4	0.8
The Republika Srpska	Ministry of agriculture of RS	999,748	31,725	2.6	3.2	4.6
Federation B&H	Ministry of agriculture of FBH	1,217,400	14,965	1.6	1.2	2.5
10 cantons incl. related institutions[10]						
	Bosnia-Podrinje	19,625	644		3.3	
	Posavina	23,185	1,094		4.7	
	Livno	37,560	696		1.9	
	Sarajevo	428,614	3,829		0.9	
	West Herzegov.	48,500	425		0.9	
	Zenica-Doboj	170,337	3,790		2.2	
	Una-Sana	117,337	1,201		1.0	
	Herzeg. – Neret.	113,300	1,466		1.3	
	Central Bosnia	83,372	1,247		1.5	
	Tuzla	190,000	2,402		1.3	
	Total cantons	1,231,864	16,793	1.3	1.4	2.4
Total Federation B&H		2,449,265	31,759	1.4	1.3	2.4
Brcko District		224,393	3,393	2.4	1.5	1.7
Total B&H		3,997,780	68,272	1.7	1.7	2.8

Source: European Commission, 2004.

In general, direct support for agriculture is low in Bosnia and Herzegovina. In 2002 and 2003 the share of governmental spending in agriculture was 1.7 per cent (compared to a contribution of above 10 per cent of GDP). The share has increased in recent years but remains low (EPPU, 2006). Even though the amount spent in the two entities are comparable, spending per capita are much

[7] Planned subsidies per commodity in 2005 are given in the table II in appendix

8 Ministry of Foreign Trade and Economic Relation of Bosnia and Herzegovina, (only agriculture) +Veterinary office

9 Budgets before rebalancing

10 Related institutions = lower-level agencies, administrations, institutes, etc. related to public administrations and (at least partly) financed by the cantons.

higher in Republika Srpska. In total only 18 KM (9 Euro) were used per capita for administration and support of the agricultural sector of B&H in 2003. Although this figure does not include spending on municipality level for the agricultural sector a comparison with per capita spending in other countries reveals that this amount is extremely low. The corresponding amount in Slovenia is 115 Euro, Austria 208 Euro and Latvia 43 Euro (European Commission, 2004).

Total agricultural subsidies in the RS for 2005 were budgeted at 32,969,611 KM. Of that 8,683000 KM were allocated to the dairy sector (subsidies for milk and dairy cattle breeding, with the largest share to the former type). For FB&H the total budget for agricultural subsidies 2005 was 15.74 million KM. The subsidies paid by the cantons are not included. The total amount spent in the dairy sector amounts to 6,887,900 KM (largest share to primary milk production here as well) (LAMP, 2005).

6.5   Overall structure and level of support in comparison to other countries

Support to structural and rural development policies (compare section 6.2) such as investment support is low in the Federation but relatively higher in RS compared to direct support to farmers. This can be seen from the table produced by ALDI (Agency for Local Development Initiatives) which show the structure of non-market support to agriculture. The structure of support to agricultural sector in 2004 by entities in Bosnia and Herzegovina was the following:

Table 8. Structure of non-market support to agriculture

Type of support	Federation B&H (%)	Republika Srpska (%)
Direct support to farmers	51	25
Investments and market	14	11
Subvention of interest	1	9
Research/New technologies	2	0
Rural development	0	15
Others	32	40

Source: ALDI

Since several different policy instruments are used to support agriculture, there is a need of an aggregate measure that summarises the overall impact of the policy. In the WTO, the concept of AMS is used. The AMS (Aggregate Measure of Support) is the basis for a legal commitment to reduce domestic support in the

WTO. The AMS covers only domestic policies deemed to have the greatest production and trade effects (amber box), and excludes trade policies that are covered under the WTO market access and export subsidy disciplines. The AMS also excludes production-limiting policies (blue box), those policies deemed non or least trade distorting (green box) and certain trade distorting policies (eg. input subsidies) when the level of domestic support is smaller than a specified *de minimis* level.

For the period 2000-2002 (calendar years) the following average level of Aggregate measure of support (AMS) as percentage of production value for each relevant product is shown below:

Table 9. Average level of AMS in B&H, 2000-2002

Product	Average AMS
Raw tobacco	34%
Milk	7%
Wheat	2%
Maize	1%
Rye	6%
Barley	3%
Soybean	7%
Beef	0%
Pigmeat	0%
Sheepmeat	0%

Source: Efendic, 2004.

As evident from the table above and from the presentation in this chapter the level of support measured by AMS is, with exception of tobacco, low and the degree of market intervention is limited. This picture is confirmed by Strategic Study – Support to the Agricultural Sector in the Western Balkans prepared by Arcotrass GmbH and by Boese et al (2005), which compare current agricultural policies in Bosnia and Herzegovina within Western Balkan. The comparisons are presented in table 10.

Table 10. Current Agricultural Policies in the Western Balkans

Market and Price Policy	B&H	Croatia	FYROM	Serbia	Kosovo
1. Trade protection	Low	High	Low-Medium	Low-Medium	Low
2. Export subsidies	-		Low		-
3. Minimum/ Administrative Prices	-	Low	Low	Medium	-
4. State monopolies	-	Medium	Low	Medium	-
5. Direct payments	Low	High	Low	Medium	-
6. Input subsidies	Low	Medium	Low	Low	Low

Note: *Level of policy intervention: Low to High*

6.6 Food safety, sanitary and phytosanitary issues

Veterinary and food safety standards and inspections are presently not applied and carried out in a uniform and harmonised manner throughout B&H. The inspection functions are spread out on a large number of authorities and are therefore very difficult to organize and harmonize. In 2004 a Law on Food was adopted in B&H. The law shall follow the principles of EU legislation regarding food and feed safety. The detailed rules and regulations are not yet drafted, and the law is not yet implemented (LAMP, 2005). The present system of regulation and control is from former Yugoslavia, but is under the responsibility of the entities and is not very consistent or clear.

Regulatory functions in the field of veterinary, food safety and plant health are of key importance for further association to the EU. During the coming years EU will especially assess progress of the functioning of the veterinary, plant health and food safety administration in B&H (European Commission, 2004). Also access to the EU market is closely connected to efficient, transparent and reliable organisational structures for veterinary, food safety and plant health guaranteeing the safety of B&H products.

The basic problem of the Veterinary and Food Safety administration in B&H is the number of administrative levels and public bodies involved. The issue of human, animal and plant health is under the competence of the entities, which issue their own laws (Efendic, 2004). A state level Food Safety Agency is lacking. The already established State Veterinary Office does not have the necessary competencies and administrative instruments to efficiently perform the tasks (especially the takeover of responsibility for veterinary border inspections as

well as issuing import certificates) as well as to generally ensure uniform standards and inspections throughout B&H (European Commission, 2004).

7 Production factor availability and technology in agriculture and processing industries

According to factor endowment theory (Heckscher-Ohlin model) a country tends to specialise in products that use intensively those production factors, such as labour, capital, land or natural resources, in which the country is richly endowed. The Ricardian approach to comparative advantage emphasises instead differences in production technology, which can be substantial between countries, even with similar factor endowments.

7.1 Availability and use of land

Natural conditions for agricultural production are good, though less favourable than in other countries in the Balkans. The climate is predominantly 'moderate continental'. Natural water resources are abundant and ground water is readily accessible in many places. Agricultural land is abundant in B&H. Land availability per inhabitant is high in B&H; more than 0.6 ha/person, compared to less than 0.4 in EU-15. However, only less than 20 per cent is suited to intensive agriculture. About half of the land area in B&H is agricultural land comprising: 1.2 million ha of arable land, 100,000 ha of orchards and vineyards, 485,000 ha of improved grazing land and 860,000 ha of mountain pastures. Altogether, there are about 2.4 million hectares of agricultural land in Bosnia and Herzegovina. Within the two entities, Republika Srpska has most arable land (57 per cent), including most of the high quality land, whilst the Federation has most meadow and pasture (56 per cent). There are four geographical regions in Bosnia and Herzegovina: Central Bosnian Mountains, upper mountain region in the west (with only 9 per cent agricultural land), Mediterranean area and northern Bosnia (RS) with flat, arable land along the river valleys.

Most of the field crops are produced in flat region located in the northern part of the country and river valleys. Intensive commercial cattle raising for fattening meat production as well as dairy production is mainly concentrated in flat and hilly regions where there is enough ploughed fields for fodder. The main dairy and bull fattening farms are located around Banja Luka, Bihac and Tuzla, while sheep and goats are raised in more mountainous regions with lots of grassland.

The most important fruit-growing regions are the hilly and hilly-mountainous regions Fruit and vegetable production is found around Tuzla, Mostar and along the rivers. Berries are also produced in more hilly areas. Mediterranean fruits and for example tobacco are produced in the Mediterranean region near Mostar. A large part of the vegetable production is also found in the Mediterranean region.

The low concentration of production in the B&H results in a relatively low level of pollution and natural resources are unpolluted. However, farmers have a low level of awareness of the impact of farming activity on environment.

Around 40 per cent of arable land is not used. The share of uncultivated land is a bit larger in the FB&H than in RS (Bojnec, 2005). The distribution between arable land, permanent crops and grassland is shown in figure 2. Permanent grassland dominates, covering more than 50 per cent of the area.

**Figure 6. Structure of agricultural land in B&H**
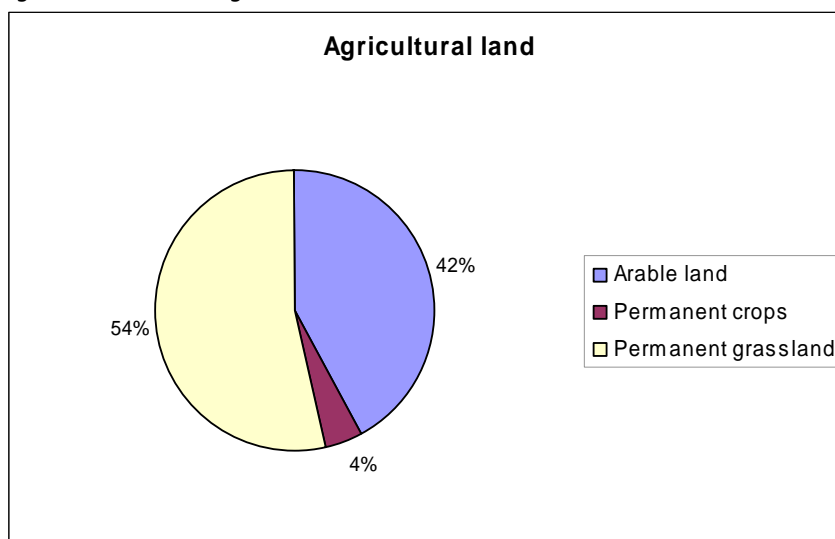
Source: Own compilation of domestic statistical data.

In figure 3 the distribution between different crops is shown. Arable land is mainly used for cereal production; more than half of the area sown is under ce-

reals. The second largest use is for feed crops, followed by vegetables. A very small share is used for industrial crops.

Figure 7. Distribution of different types of crops in B&H

Sown arable land

- Cereals
- Industrial crops
- Vegetables
- Feed crops

25%
59%
15%
1%
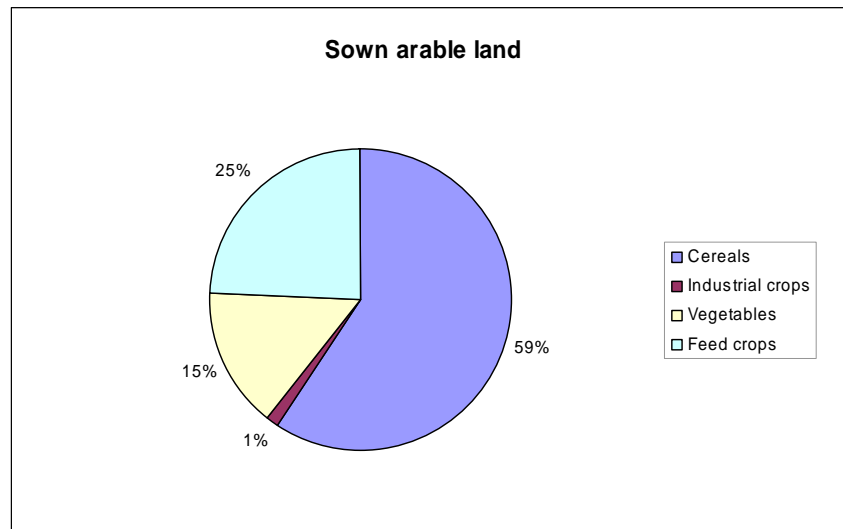
Source: Own compilation of domestic statistical data.

7.2   Land market

The relevance of arable land as a factor of production depends not only on the sheer size and physical availability but also on the possibilities to make productive use of this resource. It is remarkable that almost 50 per cent of the arable land is uncultivated. During the socialist period, around 10 per cent of agricultural land in B&H was within the state agricultural enterprises and agricultural cooperatives. Several of those are not active anymore, and a large share of this land is uncultivated due to unclear property rights or legal and institutional factors. In the absence of clear rules regarding such issues, cantons and even municipalities have been resolving the problems differently, which hinders an efficient land reform. Some agricultural land is not cultivated because it is still mined. However, the main reason seems to be problems with land ownership and unclear property rights. There are many people in B&H who have left the country, or moved from one part to another, and therefore left land in one place and now cultivate land somewhere else (Bojnec, 2005).

Land reforms have been central in the restructuring of agriculture in most transition countries. B&H has not followed the usual patterns. Because of internal policy constrains, the civil war and organisational and institutional problems, transition and restructuring of agriculture has been slowed down (Bojnec, 2005). Unclear property rights are also hindering investments in the sector. In countries with well functioning land markets, the land can be used for mortgage loans etc. If the property rights are not clear and secure, such financing is not possible.

7.3 Availability of labour and capital

Agriculture employs 15 per cent of the labour force. *Agricultural labour* is abundant especially compared to the EU. However, productivity of labour is low. This contributes to low productivity of primary production in general. In former Yugoslavia agricultural production was not prioritised in Bosnia and Herzegovina. This has implications both for the market orientation and general level of education and knowledge of farmers. Farmers are disproportionately poor and typically produce food mainly for family subsistence with just a small surplus for the market. The level of education among framers is low. Farmers generally lack marketing skills and market orientation is weak. Moreover, there is resistance to improved record-keeping which impairs economic efficiency at farm level.

Availability of *physical and financial capital* in B&H is scarce. Outdated technology and outdated technical equipment, low-intensity production systems and limited capital for farm inputs have contributed to low productivity and incomes in farming. Lack of green houses creates seasonal surpluses/shortages for fruit and vegetables. Poor sanitary conditions prevail on farms. Investment by private farmers has been limited. Commercial bank lending to farm and agricultural enterprises has been low as they consider such loans costly, risky and demanding of longer repayment terms than credits to trade and services in urban areas.

7.4 Farm structure

The structure of agriculture in Bosnia and Herzegovina is characterized by small sized family farms, which to a large extent produce for home consumption. Agriculture plays an important role in the hidden economy in B&H, and around 50 per cent of the population is estimated to be economically connected to agriculture, producing for home consumption (Bojnec, 2005).

In former Yugoslavia most of the agricultural land was privately owned, which is still the case. In 1991 15 per cent of the agricultural land was under state ownership, and private ownership has increased further in recent years (Bojnec, 2005). Private farms account for more than 90 per cent of agricultural production, and there are approximately 570,000 farm households in B&H (Statistical Bulletin 220, 1991). Almost half of the households in B&H are agricultural households, and almost half of the population is economically connected to agriculture (Bojnec, 2005). Such figures are just approximates, since there is no registry and there has not been a census since the beginning of the 1990's.

The structure of agriculture is unfavourable, with land in private hands broken up into small plots, which often are too small to make agriculture viable. Most farms are small scale family farms. Farms with an average of 3 hectares stand for 83,5 per cent of the agricultural land, and only 15 per cent of the private farms cultivate more than 5 ha (GTZ, 2001). Table 11 shows the distribution of agricultural land on farm size. The only figures available are old, but the structure has been stable.

Table 11. Agricultural land on farm size

	Number of holdings	Utilised agricultural area (ha)
Total	540.301	1,639,921
Up to 2 ha of UAA	291.593	254.584
Above 2 ha to 5 ha	159.263	547.109
Above 5 ha to 10 ha	73.776	527.142
Above 10 ha to 100 ha	15.669	311.086
Above 100 ha UAA	0	0

Source: Republic Institute of Statistics of Bosnia and Herzegovina, Statistic Bulletin 101, 1983

Still the average farm size in B&H is somewhat larger than in some other countries in Western Balkans. The most recent Agricultural Household Survey in Kosovo (2006) indicates that the mean farm size was only 1.5 ha. This is one of the main disadvantages of farming in the Western Balkans which impedes the development of commercial agriculture and perpetuates subsistence farming.

7.5   Upstream and downstream markets

Input industries

Internationally competitive input suppliers are important for competitiveness because they create advantages to downstream industries by providing good

quality and cost-effective inputs. The quality and cost of inputs in B&H are, however, not favourable. Relatively high prices of cereals contribute to high feed costs. The conversion of feed is low and there is a need to improve productivity of livestock by improved feeding. Well-developed veterinary system is lacking. There are poor connections between extension services and producers and between breeding centres and agricultural institutions. Nonexistent programs to improve cattle breeding and markets for selling cattle with improved genetics are also keeping the productivity low. Breeding work is insufficient, and there is a need for introducing new more productive breeds. Quality and animal health controls are poor. The packaging of domestic products is often unattractive.

Processing industries

Whilst the state-owned companies involved with the agro-processing industry are operating at less than 40 per cent of pre-war capacity, the small private agro-processing companies are operating at almost full capacity. Demand exceeds the supply of their products, and they are beginning to invest in new product-lines and technologies, and quality control and management to meet higher consumer standards. Investments in the processing sector have been limited. Only few companies have been able to invest, with assistance from international projects. Many companies experience financial problems. Due to insufficient loans they have to rely on surplus generated from business operations for reconstruction. Small farms can not satisfy needs of processors. The milk collection is poorly organised in some areas, and there is insufficient cold-chain capacity. There is a general lack of marketing skills, and the market orientation is weak. In many cases the packaging materials are poor. Regarding quality management, the awareness is gradually developing, but is hindered by lack of financial means etc. The quality of many B&H products is low, and marketing capacities are limited.

Producer organisations

In the EU producers are well organised and politically influential. A large share of the primary processing industry (dairies, slaughterhouses etc) is owned by producers. In B&H, cooperative farm initiatives are relatively underdeveloped as a countrywide concept and need both government and financial support if they are to succeed. Cooperation between sector participants is lacking. Farmer

unions exist in some sectors, but are not as developed and functioning as needed.

There are numerous associations working for the agricultural sector in B&H. Some of them work country wide, as for example *Farmers Association, Association of Cooperatives* and *Association of Food Processors within the Chamber of Foreign Trade*. Associations like these represent a large number of farmers, cooperatives and processors. However, these organisations are still in a developing phase, and the large number of different associations represents a co-ordination problem. In recent years this kind of lobby groups have become stronger, and their role as partners for discussion etc will probably increase further (European Commission, 2004).

7.6 Demand conditions on domestic market

Large size of the domestic market is an advantage because it allows to achieve economy of scale on home sales. Due to small size of the population B&H has limited domestic markets compared with most other countries in the region and in particular the EU. The EU's large market with limited restriction on the movement of goods gives a definite competitive advantage. In B&H, domestic demand is low due to weak purchasing power and decrease in population. However, the potential for market growth in B&H is high due to relatively low level of consumption at present and favourable economic growth in recent years. This is especially the case for products with higher quality. Replacement of the extensive imports also creates an expansion of domestic sales. The obstacle is, however, that consumers' perception of the quality of locally produced food is low in B&H. In spite of the image of lower quality, there is a general preference for domestic products. With introduction of more green houses, there is a potential for increased production and local consumption of fruit and vegetables. Growing international demand for organic products also adds to market potentials.

8

Performance of agricultural sector of B&H

An obvious indicator of competitiveness is trade performance and trade balance. Trade performance was illustrated in chapter 6. Development of agricultural sector compared to other sectors in the economy of B&H can also be seen an indicator of competitiveness. This chapter presents development of agricultural production.

8.1 Agricultural production

Agricultural production decreased enormously in Bosnia and Herzegovina during the war. Drops in production are reported from other countries in transition as well, because of the breakdown of state farms, high production costs, decrease in price subsidies and breakdown of market channels etc. In addition, Bosnia & Herzegovina suffered the consequences of the war. A large proportion of the means of production were destroyed, and more than 237,000 hectares were mined (GTZ, 2001). There are hardly any foreign direct investments in agriculture. Most farms are small scale family farms, farming for subsistence and delivering possible surpluses to neighbours or at local markets.

In general, the technologies used in the agriculture in B&H are outdated. During the last ten years, there have not been enough investments for modernisation in state enterprises, and private firms lack financial resources as well as know-how to modernise (GTZ, 2001). Product prices have been quite stable in B&H since the Convertible Mark (KM) was introduced in 1997 (GTZ, 2001).

Statistical data are hardly ever complete or totally reliable. This is not least valid in Bosnia & Herzegovina with its unstable recent history and complicated structure. Unfortunately there are no official time series data showing consumption. Data used in this section originates from FAOSTAT database, B&H Chamber of commerce and Agency for Statistics of B&H, B&H Central Bank, considered the best available sources at this stage.

Figure 8 shows agricultural production index for B&H after the war. The increase in production has been modest, and production levels are still below pre-war levels.

**Figure 8. Level of Agricultural Production in B&H, index**
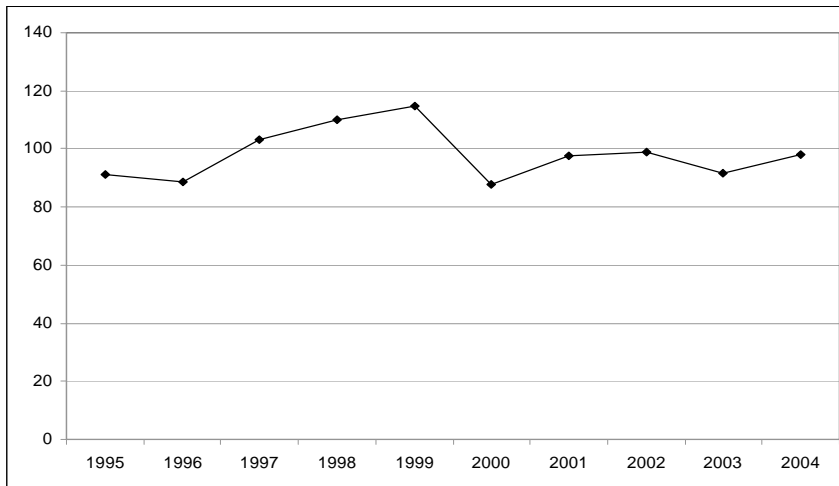
Source: FAOSTAT

8.2   Importance of agriculture

Agriculture is still one of the most important economic sectors in Bosnia and Herzegovina, providing food security for a significant part of rural population.

The total value of agriculture has increased considerably since the end of the war, but there seems to be a decrease from 2002. The development of the value of agricultural production is shown below. The exact value or share of agriculture deviates slightly between different sources of data. The structure is however consistent.

Figure 9. Value added in agriculture in B&H
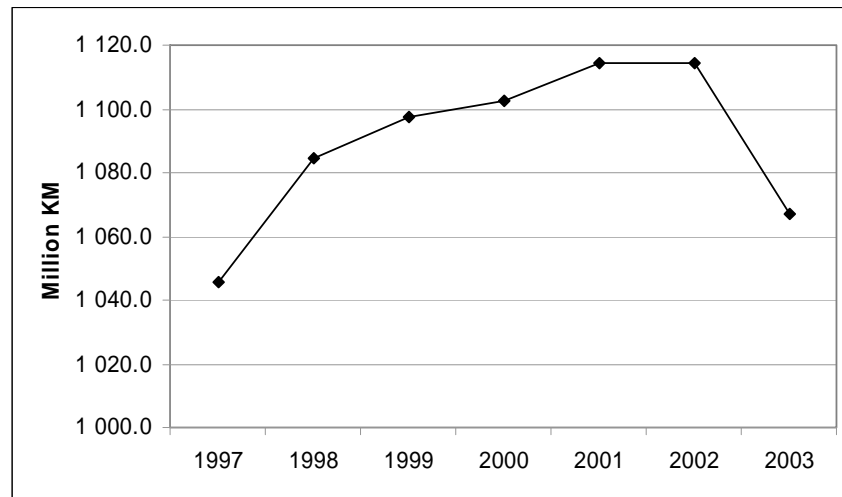
Source: Own compilation of domestic statistical data.

In official statistics, data for B&H are often presented by the two entities: the Federation of Bosnia & Herzegovina (FB&H) and Republika Srpska (RS). According to statistical data, agriculture, hunting and forestry contributes with around 7 per cent to the Gross Domestic Product (GDP) in FB&H and 17 per cent in RS. Agricultural households also play a considerable social buffer role providing food security for farm household members in rural and urban areas. The role of agriculture is therefore more important than recorded in official statistics. Agriculture plays an important role in the hidden economy in B&H, which adds about 40 per cent of the GDP (Bojnec, 2005). The role of the hidden economy is usually greater in less-developed transition economies than in functioning market economies (Lackó, 2000).

However, agricultural share in GDP in B&H, as shown in table 12, is decreasing. The agricultural share in GDP has decreased from 16 per cent in 1997 to 9 per cent in 2003.

Table 12. Agricultural share in Gross Domestic Product, B&H

	Share of agriculture in GDP (%)
1997	16
1998	15
1999	13
2000	11
2001	11
2002	10
2003	9

Source: Agency for statistics, B&H

The difference between the two entities is significant. In Republika Srpska, where the most productive agricultural land is found, agriculture contributes with a larger share than in the FB&H. Table 13 below shows the value-added and share in GDP for the two entities for the years 2000-2002. In RS the agricultural contribution to GDP is more than twice the share in FB&H.

Table 13. Agriculture share in value-added in Federation of Bosnia & Herzegovina and Republika Srpska

	2000	2001	2002
Federation of Bosnia and Herzegovina (FB&H)			
Agriculture, hunting and forestry (million KM)	486.6	522.0	545.1
% Gross Value Added (GVA)	9.1	9	8.7
% Gross Domestic Product GDP	7.2	7.2	6.9
Republika Srpska (RS)			
Agriculture, hunting and forestry (million KM)	551.5	568.2	568.6
% Gross Value Added (GVA)	24.5	23.3	21.1
% Gross Domestic Product GDP	20.2	19.0	16.6

Source: Statistical Office of FB&H and Statistical Office of RS.

According to the Agency for Statistics of B&H 15 per cent of the labour force of B&H is in agriculture and fishing. Again, there is a difference between the two entities. In RS a larger share of the labour force is in agriculture, compared to the situation in FB&H (see table 14). The participation in agriculture is the greatest for the age group greater than 50, and lowest for the age group between 25 and 49 years.

Table 14. Share of labour in agriculture (2001)

	Labour in agriculture (%)
Bosnia and Herzegovina (B&H)	15,02
Republika Srpska (RS)	19,73
Federation of Bosnia and Herzegovina (FB&H)	11,45

Source: Agency for Statistics of B&H

Since almost half of the households in B&H are agricultural households, the share of people involved in agriculture is most certainly underestimated in statistics. The important social buffer role that agriculture has in B&H is not evident from statistics, and the real importance of the sector is therefore difficult to assess.

8.3 Indicators of past competitiveness

This section presents various measures of revealed competitiveness for agriculture as a whole and for commodities that are not part of the in depth assessment in the following chapters. Following indicators are included: comparisons of yields and prices as well as revealed comparative advantage, calculated as relative export advantage for the agricultural sector.

Productivity comparisons

There is a strong link between productivity and export performance, which can be seen as a sign of competitiveness, according to several studies (SLI, 2005). Comparisons between single factor productivities i.e. output in relation to use of one key factor of production, usually labour, land or livestock can be misleading if production technology is different between compared countries because low input of one production factor, and hence high productivity of that factor, can be achieved at expense of a high use of other factors of production. However, if similar production systems are compared, higher productivity of key of production factors may indicate higher performance and higher competitiveness. Figures 10 - 13 show comparisons of yield levels for the main product groups. Data are taken from FAOSTAT.
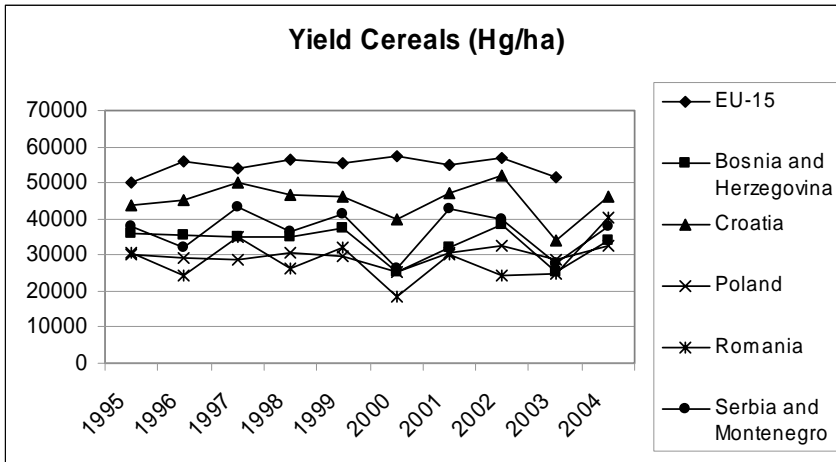
Figure 10. Comparison of yield levels

Yield Cereals (Hg/ha)

Legend:
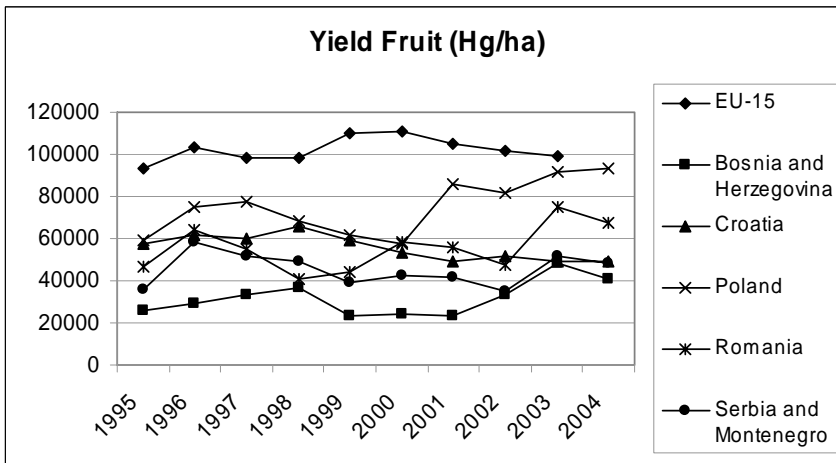- EU-15
- Bosnia and Herzegovina
- Croatia
- Poland
- Romania
- Serbia and Montenegro

Figure 11. Comparison of yield levels

Yield Fruit (Hg/ha)

Legend:
- EU-15
- Bosnia and Herzegovina
- Croatia
- Poland
- Romania
- Serbia and Montenegro

Figure 12. Comparison of yield levels
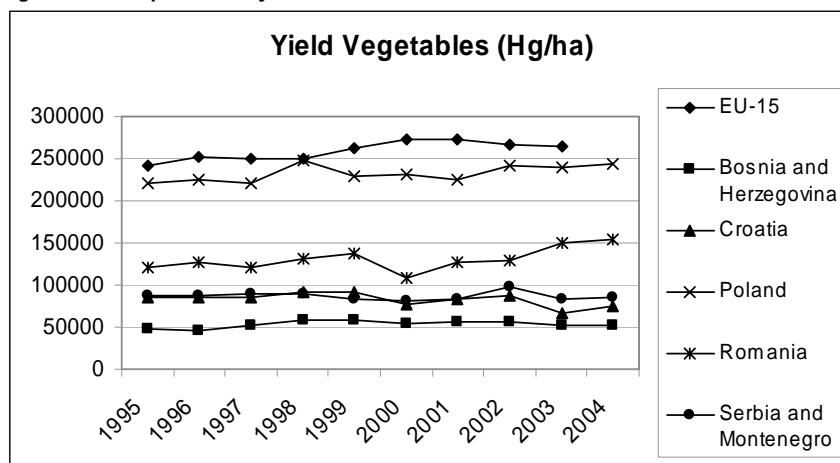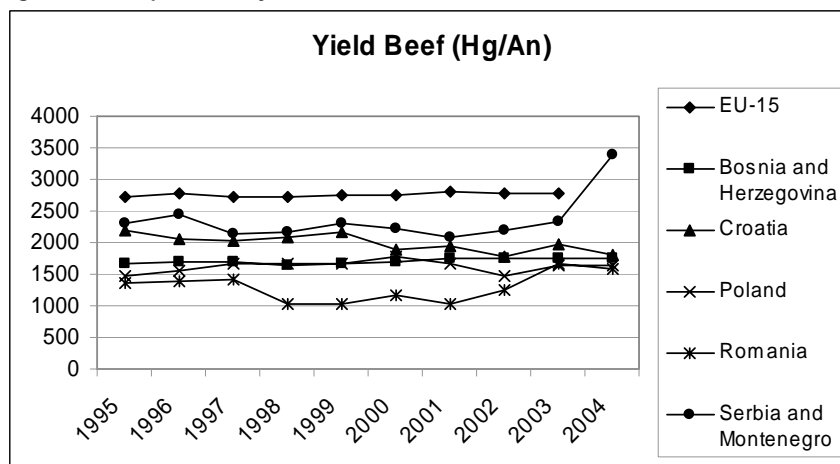

Yield Vegetables (Hg/ha)

Figure 13. Comparison of yield levels

Yield Beef (Hg/An)

According to these data, the yield levels in Bosnia and Herzegovina are low in general, both compared to the EU and to the rest of former Yugoslavia. Out of the compared products, cereals and beef are the product groups where B&H yield levels not are the lowest. What is remarkable is that B&H has the lowest yield out of the compared states in fruit and vegetable production, which are the product groups B&H export relatively more of. However, one should remember

that the above yields are average yields of the whole product group, and yield levels do not reveal any information of for example production costs.

Comparisons of prices

Production costs and/or gross margins are often compared across farms to determine which enterprise has a competitive advantage. Gross margins are obtained by subtracting costs of variable inputs from gross revenue. However, a critical assessment of the estimation methodology is needed to establish whether comparative costs are real or a result of the estimation system.

There are no data of production costs in B&H agriculture available for a comparison with corresponding costs in neighbour countries or with trading partners. However, a simple comparison of producer prices could be done. As the prices do not originate from the same source, they must be considered with caution. Anyhow, table 15 below shows producer prices for some key products in B&H, compared with the same in France and Poland. France is chosen to represent EU15, and Poland gives a reference to a new member state within the EU.

Table 15. Producer Prices (Euros/ton, 1000L, 1000ps), 2002

|	B&H	France	Poland
Wheat	136.2	106.6	113.1
Maize	108.8	114.4	94.6
Barley	132.7	94.9	113.3
Potatoes	138.1	102.9	89.0
Raw cow' milk (actual fat content)	243.0	306.4	186.1
Fresh eggs	104.5	42.1	45.0

Source: Eurostat (France and Poland) and domestic statistics

The producer price level in B&H is rather high compared to the EU level (represented by France). There are probably also differences in quality between the products, indicating that the price difference in fact could be underestimated. This indicates that the competitiveness is rather low.

Also compared to Poland the price level seems to be high. The agriculture in Poland was heavily supported in the pre-transition era, and an initial liberalisation preceded the EU membership. At the time of accession, Poland was closer to the EU price level than B&H seems to be.

Figure 14 illustrates the development of Bosnian and French producer prices for wheat and maize for a period of time.

**Figure 14. Comparison of producer prices, B&H and France**
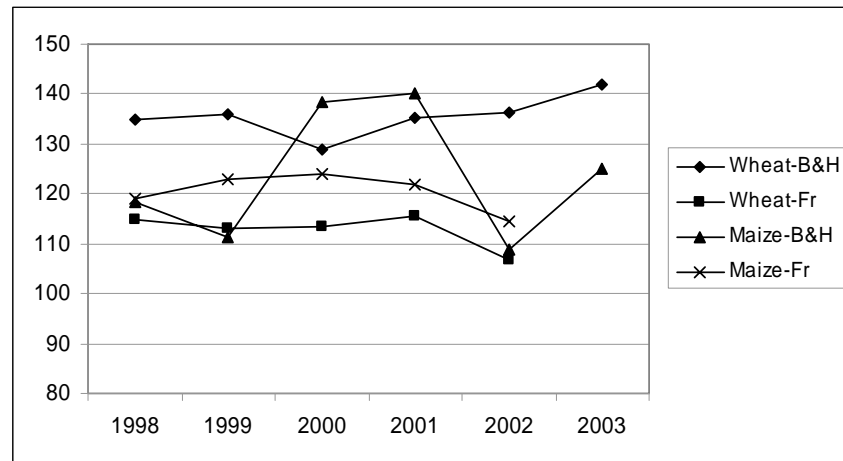
Compared to France, the price level of wheat seems to be increasing. Having in mind the reform of the CAP during the 90's, with decreasing prices, the price in Bosnia at the moment does not seem to be moving towards the EU-level. The price level of maize in France is decreasing in a corresponding way, the B&H price is difficult to comment on.

Relative Export Advantage for B&H

Total export of Bosnia and Herzegovina is low. The total export corresponds to below 20 per cent of GDP compared to about 35 per cent for the EU, while the import amounts to just below 70 per cent compared to about 34 per cent for the EU. Regarding trade with the EU, the export share of agricultural and food products was 5 per cent in 2004, compared to 20 per cent for EU. Figure 15 shows the RXA for B&H trade with the EU in agricultural and food products, using trade values from Eurostat. The export values for B&H are represented by EU's imports, and are compared to the trade within the EU (EU-15 intra-trade). This does not give the whole picture, since the trade with the EU only represents about half of B&H's total exports. However, the same applies for the EU, since only the trade within the EU is included. The choice of method is in this case explained by data availability.

Figure 15. Relative Export Advantage (RXA) of Agricultural Products in B&H-EU
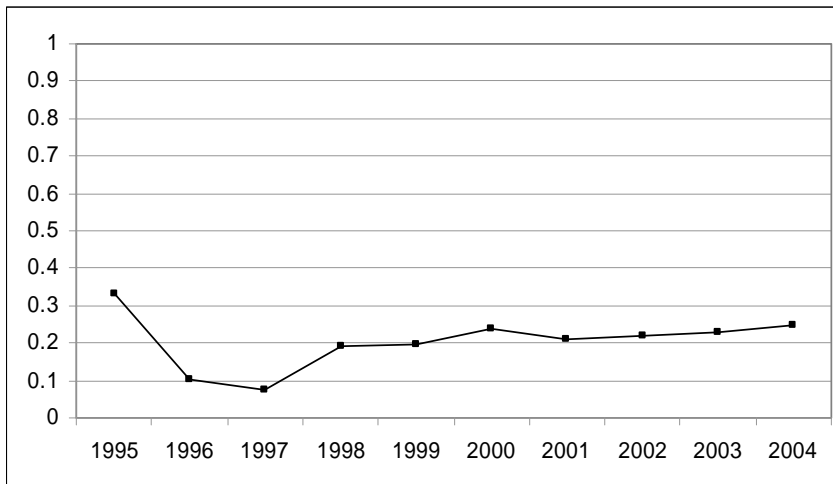

Source: Own estimations based on data from Eurostat.

RXA larger than one implies competitive advantage compared to EU-15 for the product or sector in question. According to this measure, B&H does not have comparative advantage in agricultural products on the EU market. Still, a country can have comparative advantages in a particular product, for instance special kind of cheese, without having comparative advantage at a sector level, in this case, for agriculture as a whole. For example, SLI (2004) shows that Sweden has comparative advantage in some processed food products, even though the RXA for agricultural and food products is below one.

Analyses conducted by the World Bank have reached the same conclusions pointing, however, that B&H is competitive in dairy products at Croatian market. At the same time B&H has a large trade deficit in agricultural products, including dairy, with Croatia. Hence, the results point to the potential for intra-industry trade based on regional specialities.

RXA calculations are made for the product categories dairy, fruit and vegetables. Comparisons are made with the rest of former Yugoslavia, and the results are shown in the following figures.

Figure 16. Comparison of RXA - Dairy
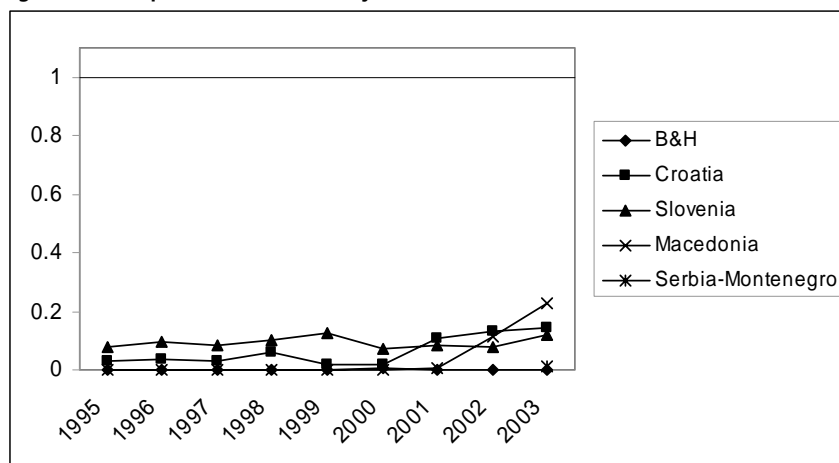
Not any of the compared countries are competitive regarding dairy products, according to this measure. The dairy sector is one of the most regulated sectors, and the sanitary regulations are extensive.

Figure 17. Comparison of RXA - Fruit
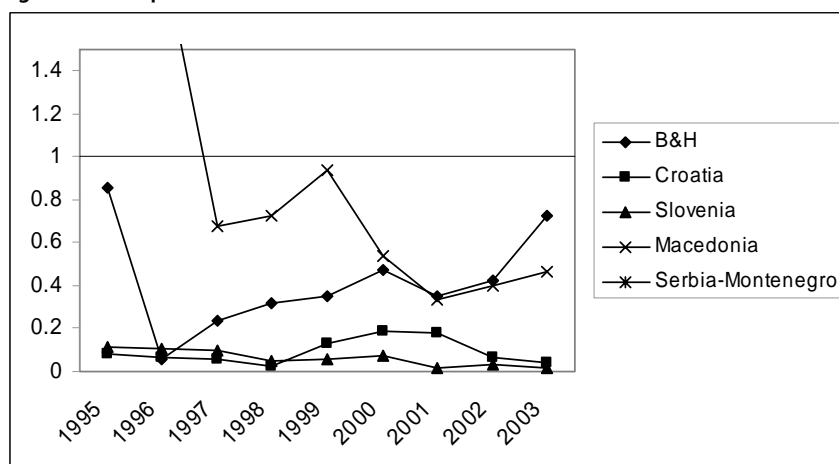
Even though the RXA is below one, fruit is one of the sectors where Bosnia and Herzegovina is stronger. It is one of the product groups with the largest exports.

According to the statistics, the export consists to a large extent of frozen raspberries and dried cherries and plums.

Figure 18. Comparison of RXA - Vegetables
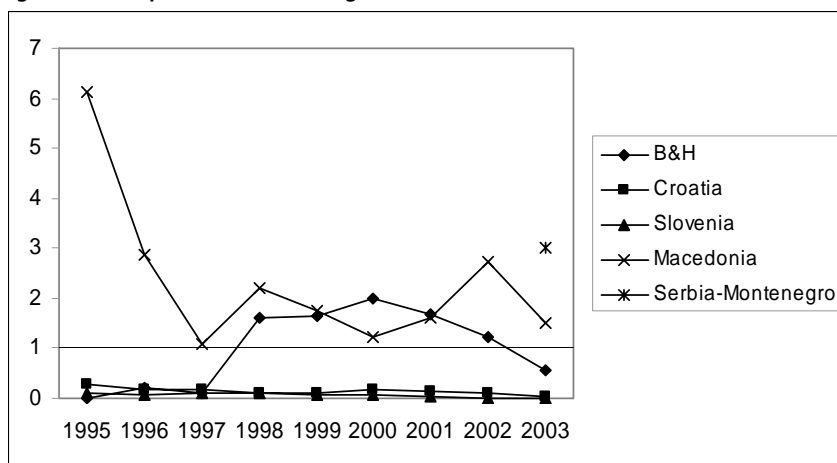
The RXA for vegetables has been larger than one for a while, but have decreased the last years. The export of vegetables to the EU consists mainly of mushrooms, both fresh/chilled, frozen and dried.

As mentioned above, revealed comparative advantage is not the most suited measure for competitiveness analysis of B&H agriculture, since the economy is in transition and there are several factors disturbing the market. In addition, the lack of data only allows analysis with the EU market as a reference region. However, the RXA is a rough indicator in this case, and can reveal something regarding the present competitiveness.

The following chapters present the in-depth studies of the chosen commodities; milk, raspberries and peppers, respectively.

9 Commodity Analysis: Milk

The dairy sector involves production of milk at farms as well as industrial processing. They can not be studied in separation from each other, since milk generally has to go through some processing before entering the market. The first part of this chapter covers the milk production, while the second covers the dairy industry. Both general data and information from our own survey is presented.

9.1 Milk production

Milk production can take place almost anywhere, but the system of production differs depending on for example climatic conditions. The climatic conditions can allow cows to be grazing all year around, or buildings and feeding can be required to a varying extent. Milk production is generally labour intensive, and the cost of labour is therefore important for the profitability. However, feed is the largest cost in milk production.

There is a tendency to seasonality in milk production. On farm level the degree of seasonality is determined by feeding and calving patterns. In countries with extensive low-cost production based on grass feeding, the majority of calving takes place in the spring, which leads to seasonal variability. More moderate climate, larger share of concentrate feeding and incentive policy promote less seasonal milk supply.

The dairy sector is one of the most regulated sectors within agriculture and the requirements regarding hygiene in production and handling are severe. The reason is the high perishability of milk. The delivery of farm milk has to take place on a daily basis, and handling and transportation require the right equipment and management. Vertical integration is common in the dairy sector, and generally exist in the form of producer cooperatives or contracting arrangements.

*Conditions for B&H*

The dairy sector has been prioritised by the Bosnian government in improving conditions for agriculture, and a large part of the agricultural land in B&H is suitable for milk production with lots of grassland. The climatic conditions are favourable for milk production. Milk production in B&H requires both buildings and feeding, but the climate allows for cultivation of silage etc.

Production

Milk production is considered to be strategically important in B&H. Before the war there were about 623.000 cows producing 875 million litres of milk per year. The war implied a decrease in number of cows of 60 per cent, and the production decreased even more. Now there are about 284.000 cows, with an average yield of 1900-2000 L per lactation, producing about 530 million litres per year (LAMP, 2005). Figure 19 shows the development of milk production from 1995.

Figure 19. Production of milk in B&H, mn litres
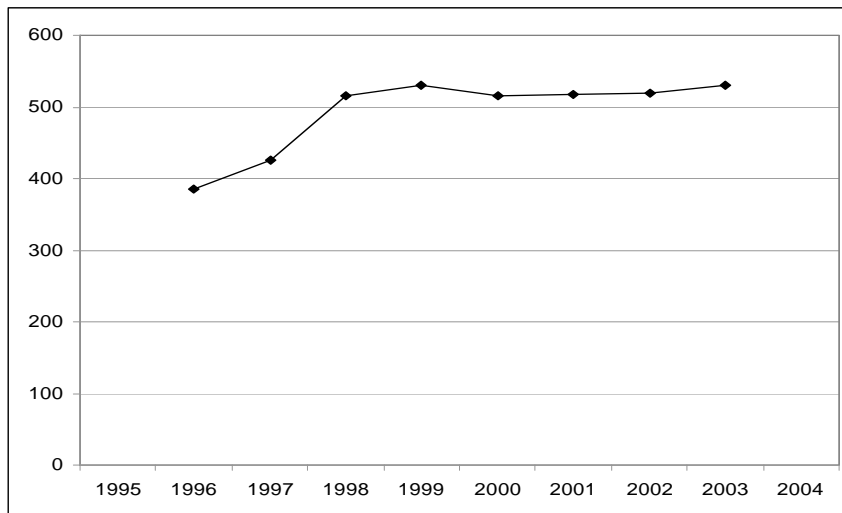
Source: Own compilation of domestic statistical data.

The first years after the war, there was a strong recovery, and since the end of the 1990s the level of milk production has been stable at approximately 530 million litres. Milk consumption was estimated at 300-400 million litres per year in 2001 (GTZ, 2001). Per capita consumption of milk is estimated to be 134 L per year (LAMP, 2005).

9.2   Producer structure

Successful milk production anywhere in the world requires skilled farmers with proper education and knowledge. Bosnia and Herzegovina has not been a typical agricultural region historically, and there is not a very strong tradition of agricultural production except from very small scale production for the household.

Fulltime farmers were never a large category. The average farmer does not have any particular education, even though agricultural education exist at several levels within the education system in B&H. Most persons with some (higher) education simply end up somewhere else than within primary production. The result is farmers without enough knowledge. Development aid workers in the field report that some of the smallest farmers lack even basic knowledge like how much water milking cows require or how to milk properly.

Number of farms, average size

Since there is no farm registry, information of number of farms, average size and such is somewhat uncertain. According to domestic data there are 284,000 cows in B&H (153,000 in FB&H and 131,000 in RS). The small average farm size in general makes no exception in dairy farms, and most of the dairy farms only have a couple of cows.

Technology

Production techniques within milk production in B&H are very basic and old fashioned. For very small farms it is not profitable, or possible, to invest in for example milking machines or cooling facilities, and milking by hand is very common in B&H. The cows are generally held in barns with poor light and ventilation conditions. Keeping the cows outside grazing during summer is not a very widespread phenomenon. The feed used is mainly hay from grasslands, with relatively low quality. Different types of cereals also occur. Mainly wheat, oats and barley, but in some cases also for example corn silage.

Breeds

The choice of breed is dependent on many different aspects, and one breed does not necessarily perform equally well for two different farmers. Several different breeds of cows are used in Bosnia, for example Holstein and Simmental. Within the Swedish support project *Cow How*, the Swedish breed SRB has been used successfully. One can not say there is one single breed that is suitable for dairy production in Bosnia and Herzegovina, but considering the conditions, a relatively insensitive breed should be preferred. Since many farmers lack basic knowledge and cow barns and the quality of feed often are poor, a very sensitive breed is not likely to be very successful. One problem regarding the choice of breed for some dairy farmers is that they tend to seek breeds that are suitable for meat production as well as milk production. The calves are sold early, with the

implication that neither milk yields nor meat production is optimal. There are no programmes to improve cattle breeds, and the market for cattle with improved genetics is therefore limited.

Quality

Whitelock (2004) studied several dairy farms of different size and location in B&H, and reported several remarks regarding hygiene and quality. No farmers were aware of appropriate limits for bacteria counts. In addition to improper cow preparation techniques and dirty equipment, poor cooling is one of the most serious problems. Whitelock's assessment is that these deficiencies are not due to neglect of the farmer, but simply lack of knowledge and proper equipment.

Within the EU, milk for human consumption can not have a total bacteria content of more than 100,000. In B&H the corresponding regulation is 1 million. Improvement of milk quality depends largely on motivation and education. However, education will do little good until farmers are motivated to produce a high quality product for the processors. Such motivation will come in the form of payment premiums (Whitelock, 2004).

Yield level

The yield level of milk increased considerably during the 1990s. According to FAOSTAT data there has been a decrease since the peak in 1999, see figure 20.

Figure 20. Average yield level of milk in B&H (Hg/animal)
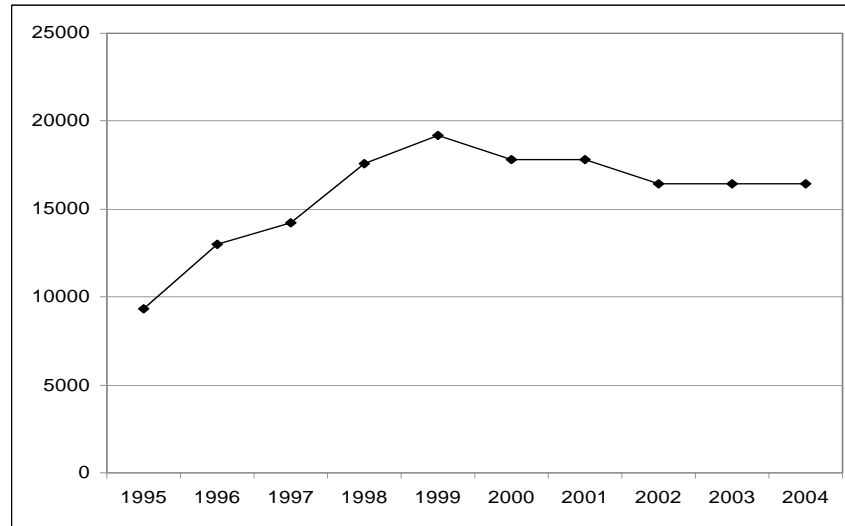
Source: FAOSTAT

Compared to EU-25, the productivity of milk production is very low. The milk yield in B&H is also low compared to other countries in the region. Figure 21 shows yield levels of some of the competing countries over the period 1995-2004.
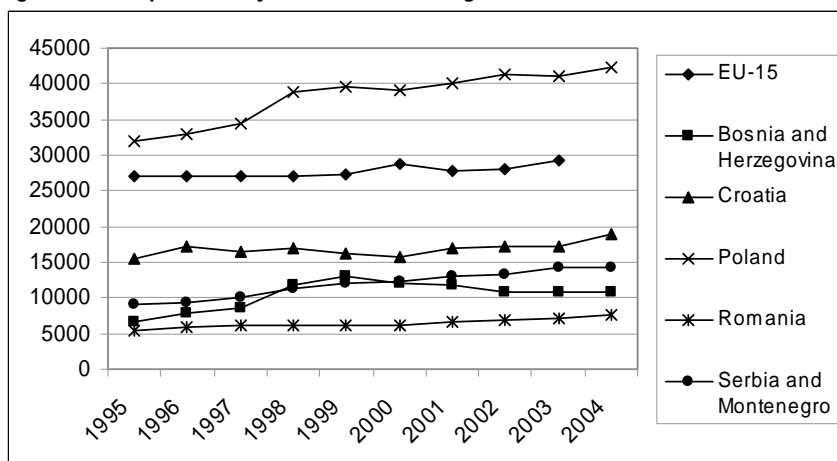
Figure 21. Comparison of yield levels – Milk (Hg/animal)

Source: FAOSTAT

The reasons behind the very low productivity are several. The quality of feed and the poor selection of genetic material are some of the major factors hindering improved productivity. Lack of knowledge is one large underlying problem, which in turn partly explains the other reasons mentioned. If the farmer is not aware of the importance of the quality of feed it is even more difficult to produce feed of high enough quality.

There seems to be a significant difference between the entities as well, see table 16. One reason behind the higher yield levels in RS might be that RS historically has a longer tradition of agricultural production and a larger share of full time farmers.

Table 16. Productivity in milk production.

	Productivity per cow (L/yr)	Collected (%)
RS	2,900	17
FB&H	1,948	19
EU-25	5,889	91

Source: LAMP, 2005

The level of collection of milk is low, around 20 per cent according to some estimates (see table 16), even though collected quantities have increased a lot in recent years. A few years ago only 10-12 per cent was collected by dairies. A

large part of the milk produced by the small farms is consumed within the household, and surpluses are typically sold locally by the farmer him/herself. Even farmers that actually have a contract with a dairy sell part of the produce locally. The reason is the somewhat unstable relations between the contractors, and that it occurs that dairies refrain from accepting the milk, either because of insufficient quality of the milk or for no legitimate reason.

Production costs

Low productivity and relatively high labour costs, together with the structure of very small farms, imply relatively high production costs per litre of milk. The average total production cost in the sample studied within this project is 0.22 Euro (further described in section 9.3), which is just above the interval of the low cost countries, according to a production cost comparison conducted by Hemme & Deeken (2005). B&H can not be considered a low cost milk producer, but the costs are not as high as most others in Western Europe. Table 22 shows a comparison of producer prices between B&H and their most important trading partners/competitors. It should be mentioned that the source of data not is the same for B&H as for the other countries.

Figure 22. Comparison of producer prices.
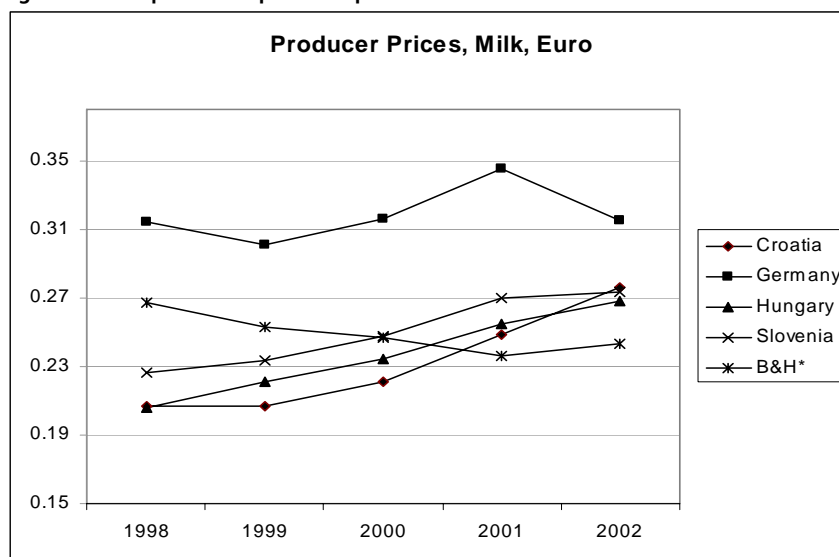
Source: For B&H domestic statistical sources, others FAOSTAT.

The development of Bosnian producer prices has been a bit different than in the other. But in spite of falling producer prices, the milk production has been stable (compare figure 19) during the studied period.

Policy

The dairy sector is one of the most heavily supported agricultural sectors within the EU, both when it comes to level of support and to measures used to regulate the market. Prices are supported through tariffs, export subsidies and intervention. In addition to these normally applied measures, the EU also applies a milk quota system, which puts a ceiling to the amount of milk every farmer is allowed to produce without penalty. In recent years direct support per cow has been introduced (headage payment) adding to the above traditional market regulating measures. There is no direct regulation of the price of unprocessed milk delivered by the farmer, though there is a target price for unprocessed milk and processed products. Prices paid to farmers are indirectly supported, through the market regulating measures mentioned above.

The dairy sector of Bosnia and Herzegovina is less regulated, but still the most regulated agricultural sector in the country. The measures used are import tar-

iffs, headage payments and subsidies (minimum purchase prices). There is a minimum purchase price of 0.50 KM/L for milk with a fat content of 3.6 per cent in FB&H. In both entities there is a subsidy for milk with 3.6 per cent fat (0.10 for RS and 0.14 for FB&H). In addition, some of the cantons have their own subsidies for milk production.

Total agricultural subsidies in the RS for 2005 were budgeted at 32,969,611 KM. Of that 8,683,000 KM were allocated to the dairy sector (subsidies for milk and dairy cattle breeding, with the largest share to the former type). For FB&H the total budget for agricultural subsidies 2005 was 15.74 million KM. The subsidies paid by the cantons are not included in that amount. The total amount spent in the dairy sector amounts to 6,887,900 KM (largest share to primary milk production here as well) (LAMP, 2005). Figure 23 shows the quantities of milk that were subsidized in 2003 and 2004 in Republic Srpska and Federation of B&H respectively.

Figure 23. Subsidized Quantities of Milk
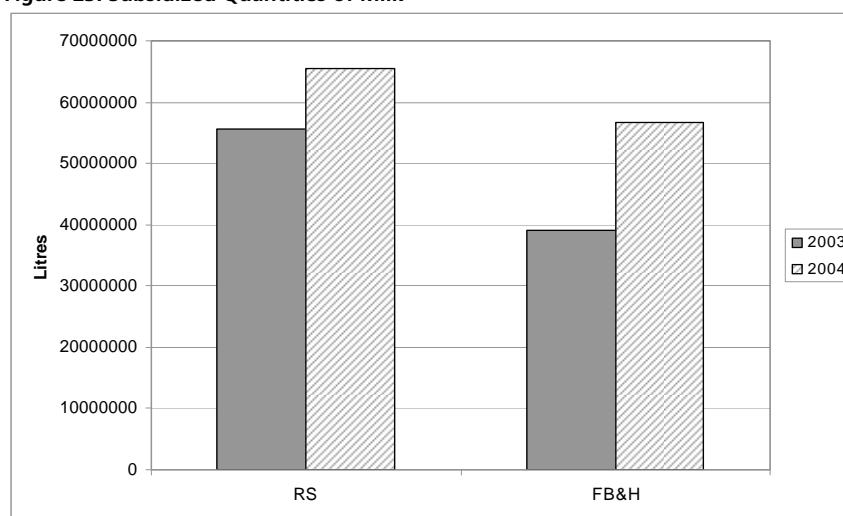
Source: LAMP, 2005

The current pay plan for milk in B&H is based one factor, being fat. No other parameters are examined. The subsidies from the government is also based on fat (Whitelock, 2004).

9.3   Results from the farm survey - Milk

In order to make an assessment of the competitiveness in the dairy sector, a small survey was conducted within this study. The sample includes 30 milk producers with five or more milking cows. 14 of the producers are located in FB&H, 13 in RS and 3 in Distrct Brcko. Farms vary in both location and herd size in order to get an idea of differences in conditions etc. However, the sample does not make any claim of being representative for all milk producers in B&H. The average producer is likely to be smaller than the average of this sample, but the focus of this study is mainly producers that can be considered as commercial. The survey covered for example costs of production, production levels, input use and distribution of the produce. In this section the result from the milk survey are summarized and presented.

Characteristics of the farms

In 2005 the average farm in the sample had 10.3 milking cows, up from 9.83 and 7.37 in 2004 and 2003 respectively. Over the period 2003-2005, out of the sample of 30, 18 farms had recorded an increase in their herd size, 8 a decrease and 4 no change. 3 farmers had commenced dairy production during the period 2003-2005.

The largest farms in the sample in 2005 had 30 milking cows and the smallest farms 5. The average yield per cow per day was 18.36 litres. Average butter fat content was just over 4 per cent.

93.7 per cent of the milk produced by the farms in the sample is sold to dairies for processing. 4.4 per cent is sold on the green market with the rest consumed within the household. Seventeen farms in the sample report that they process milk themselves - in all cases into soft white cheese / fresh cheese. Most of this activity is small scale for own consumption, however one farmer is processing 17,260 litres of milk himself, generating 5,544 euros per annum (10,838 KM), from the sales of cheese and kajmak.

All of the milk sold to dairies by farms in the sample was done on a contractual basis. In the majority of cases, dairies collect milk directly from the farm (18 instances). There were eleven cases of farmers selling to dairies via village collecting stations and one instance of a farmer transporting the milk themselves to a dairy. The farms that sell via village collecting stations tend to be smaller

(mean of 6.27 milking cows in 2005). Where dairies collect milk from farms, a charge is typically made of 0.02 euros (0.04 KM) per litre however there were 2 cases of farms not paying for collection.

The average milk price was 0.25 euros (0.48 KM) per litre. The prices received by farmers varied from 0.20 to 0.28 euros (0.4 to 0.56 KM) per litre. In general prices were lower in Republika Srpska (RS) than the Federation of Bosnia and Herzegovina (FBH). The highest prices were recorded in the Brcko District. In general, the prices paid at Village Collecting Stations tend to be lower than where dairies collect direct from farms (after adjusting for transport cost). The average price received by farmers on the Green Market for their milk was 0.94 KM (0.48 euros) per litre.

Private Profitability

Table 17 presents indicators of private profitability. which include valuations for own labour and land input. Milk production is, overall, profitable and only two farms in the sample (1 in RS and 1 in FBH) reported a loss. Overall margins tended to be slightly higher in RS than FBH despite higher milk prices in the latter. The average profitability of each farm (5,116 euros) compares well against reported local incomes and may explain why average herd sizes have increased.

The last column replicates the second in all regards apart from own labour input is not valued i.e. it is seen as having a cost of zero. Disregarding the value of own labour improves the margin by about one third.

Table 17: Average Private Profitability for Bosnian Dairy Farms (n=30), measured in euros

	Labour valued	Labour **not** valued
Total Revenue	19315.18	19315.18
Cost Items		
Purchase of animals	942.85	942.85
Death of animals	65.13	65.13
Total cost of feed (summer)	2934.68	2934.68
Total cost of feed (winter)	5174.82	5174.82
Other costs	60.33	60.33
Overheads	1351.28	1351.28
Labour	3111.55	716.15
Marketing	559.01	559.01
Total costs	14199.65	11804.25
Gross margin	5115.54	7510.93
GM per cow	491.88	722.21
GM per litre of milk	0.08	0.12

The average total production cost in our sample is 0.22 Euro, which is a bit higher than in low cost countries, as mentioned earlier. B&H can not be considered a low cost milk producer, regarding neither the more commercial producers nor the average in the country (which has a slightly higher cost of production). One should remember, however, that production costs in primary production do not give the whole picture of the cost structure in a country since fresh milk from the farms is not traded internationally. The milk is almost exclusively processed before entering trade, and conditions and costs in the dairy industry are also decisive for whether the sector is competitive. Therefore the dairy processing sector is looked into in the next section.

9.4 Dairy industry

This section presents information on the dairy industry from existing studies, domestic and international data and our own survey all together. Due to the extent of the study, and the sensitive nature of the information needed, this dairy survey is very limited. It includes three dairies, located in different parts of B&H. They also differ in size and level of modernity.

Structure

There are about 60-80 dairies in B&H, ranging in size from 1,000 litres of milk per day, to capacities of 60,000-160,000 liters/day. Most of the dairies are private and have a capacity of 2,000-10,000 litres. However, only about 36 per cent of the total capacity of the dairies in B&H is used (LAMP, 2005).

The optimal size of a milk processor depends on two conflicting forces, i.e. increasing returns to scale in processing (unit cost of processing smaller when many units are produced) on one hand, and higher cost of collection when the milk has to be collected from a larger area on the other. For the dairies studied the longest distance for collection is below 100 km, and the number of farmers supplying milk ranged from 2000 to 7500. Dairy processors that are small and specialized or very large scale seem to be working best in B&H (Reese, 2004). As in many industries, medium sized companies are too large to develop very specialized niche products and too small to be able to compete with the large ones.

Only a small share of the milk produced in B&H goes through dairies (see table 16). The amount collected by dairies is about 20 per cent, compared to an average of 90 per cent in the EU. The main part is sold by the farmer, either directly to households or in local markets (fresh or processed products as sour cream or cottage cheese). One reason behind the unwillingness of farmers to sell to dairies is that payments usually are delayed (GTZ, 2001).

Collection & Quality control

Milk is collected in two ways. For larger farms, the milk can be picked up directly at the farm. However, most of the milk is collected at collection stations. At the station the amount of milk brought there by the producer is recorded and an acidity test is made. According to Whitelock (2004), the collection of milk leaves something to be desired regarding quality and hygiene. Often the milk is

not cooled adequately before pick up, and the milk delivered to the collection points showed temperatures of 10-15 degrees.

The laboratories in the milk processing plants are generally very basic, using basic microbiological and wet chemistry for the analysis. Whitelock (2004) consider it to be too difficult for the laboratories as they currently exist to do SCC counts or other tests needed. An independent lab doing tests for several of the smaller dairies is instead suggested.

Within the EU, milk for human consumption can not have a total bacteria content of more than 100,000. The dairies observed in this study reported levels of bacteria of less than 800,000 to 1 million, which is the regulated limit in B&H.

In 2004 a *Law on Food* was adopted in B&H. The law shall follow the principles of EU legislation regarding food and feed safety. The detailed rules and regulations are not yet drafted, and the law is not yet implemented (LAMP, 2005). The present system of regulation and control is from former Yugoslavia, but is under the responsibility of the entities and is not very consistent or clear.

Dairies are left to establish their own quality assurance measures. Some dairies have introduced EU standards in their value chain, while other compete with cost, with minimum focus on quality assurance (LAMP, 2005). Especially dairies that to some extent are internationally owned are doing training and offering assistance to farmers. Whitelock (2004) even found that many farmers find it difficult to get on to the right sanitation equipment needed. Some farmers stated they went to Croatia to get such equipment.

The importance to improve the quality of products in the dairy sector of B&H is stressed in several analyses (Phillips (2004), Reese (2004), Whitelock (2004)). The quality of domestic dairy products is not believed to be comparable with to imported products, either in real terms or perceived quality (Phillips, 2004), even though there is a general preference for domestically produced food in B&H.

Products

Milk consists of two basic components: fat and non-fat (mostly proteins) in fixed proportions in the milk, but used in various proportions in the production of dairy products. Only butter, skimmed milk powder and hard cheese can be

regarded as internationally tradable products. Fresh products with shorter shelf lives are typically marketed domestically.

In more advanced markets, dairy products comprise a combination of high-volume, low-margin products, like fluid milk, and value-added products like aged cheese. In B&H the structure tends towards low margin and fast turnover products. The majority of dairies produce only short shelf life products, and in FB&H there are not more than around nine dairies that produce cheese. This situation derives partly from cash flow constrains that prevent most Bosnian dairies from tying up working capital in products with long term returns, such as cheese (LAMP, 2005). UHT milk accounts for up to 80 per cent of the dairy products consumed in Bosnia and Herzegovina, and the rest of the market is primarily yoghurt and sour cream (Reese, 2004). These three products are also the ones domestic dairy processors focus on. The production by the dairies observed in this study follow the same structure, with UHT milk accounting for 52-85 per cent of the production, followed by yoghurt, sour cream and fresh cheese respectively.

Processing of long life milk by diaries implies both advantages and disadvantages for the dairies. An advantage is that such a product gives them an access to consumers in a country with inadequate infrastructure and lack of cooling facilities in some areas. A disadvantage comes from the fact that UHT milk is a low value product with small margins. In addition, because UTH production belongs to a price driven segment of the market, the competition is strong, from both domestic and imported products (Phillips, 2004).

However, there are a few types of cheese produced. The largest and most famous is Livno cheese, which is a hard cheese produced mainly in the Livno area. Livno is a remote area, that not allow handling of fresh milk. Livno cheese is now made from cow's milk, preferably of milk from cows fed with fresh grass, and aged for at least two months. Livno cheese, which is considered a delicacy, is very popular in Croatia and enjoys a good reputation in the former Yugoslavia (LAMP, 2004). There are six major dairies producing the Livno cheese, and they are specialized in this cheese only. Only one of the dairies have EU export license, but the export to EU is still non-existent. Livno cheese can not compete in price with similar products that are subsidised within the EU. Around 70 per cent of the Livno cheese produced in B&H is exported, mainly to

Croatia. Mostly through the informal market, because of the difficulty to comply with EU sanitary regulation (LAMP, 2004). Neither of the dairies studied produced any hard or aged cheese.

Marketing

There are large difficulties in marketing effectively in B&H. There are barriers to efficient marketing at several levels in B&H, from governmental policy restrictions to the lack of consumer information (Phillips, 2004). There are no data on consumer preferences or other consumer related statistics.

The lack of brand/category audit data makes it impossible to ascertain market share (Phillips, 2004). Some non-scientific studies, however, show that about 50 per cent of the shelf space in supermarkets is covered by imported products. International brands are generally doing a better job regarding marketing and are also in general more consumer oriented.

Foreign direct investments

Foreign direct investments (FDI) play an important role in many transition countries as multinational companies bring in modern technology, product development and training of staff. FDI could also be mentioned as one of the factors behind increased unemployment, since new technology often requires less human labour.

FDI can help lift barriers to further development, such as lack of capital or know how, which is a particular problem in a country like Bosnia and Herzegovina. The potential for FDIs is generally larger in sectors with a large extent of processing, as for example the dairy sector. The dairy processing industry is one of the agricultural sectors of B&H where FDIs actually exist, and there are a few international dairy processors that have invested in plants in B&H[11].

Trade/distribution

Bosnia and Herzegovina has free trade agreements (FTA) with several of their main trading partners[12]. FTA partners export –often subsidised– milk without any tariffs to B&H. For non-FTA countries there is a tariff of 10 per cent +

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[11] For example German Meggle.
[12] See chapter 4 for further description.

0.15KM/kg. However, imports of dairy products have remained relatively stable since the FTA came into force in May 2004. The exports, however, have doubled. Until the last couple of years B&H dairy products were hardly available in regional markets. In addition to the political problems, B&H face trade disadvantages in the form of difficult transportation conditions through the mountainous landscape.

According to domestic statistics 22 per cent of the milk and dairy products consumed are imported (LAMP, 2005). Croatia, Germany and Slovenia supply around 80 per cent of imported dairy products. Officially, 57,500 tonnes of dairy products, valued at 114 million KM, were imported in 2004. The products imported are primarily yoghurt and fluid milk. There is reportedly a large volume of milk being unofficially imported. The extent of this activity is unknown, but according to estimates they imply a loss of customs duty of about 18 million KM (LAMP, 2005). Table 18 shows from what countries B&H dairy imports originate.

Table 18. B&H imports of dairy products by country of origin, 2004

Country	Import (1000 KM)	Share (%)
Croatia	36,260	31.8
Germany	29,012	25.4
Slovenia	27,418	24.0
Serbia and Montenegro	6,436	5.6
Hungary	3,802	3.3
Austria	3,536	3.1
Czech Republic	2,673	2.3
Netherlands	1,948	1.7
United States	956	0.8
Denmark	945	0.8
Others	1,034	0.9
Total	114,020	100

Source: Foreign Trade Chamber of B&H

The export opportunities of the dairy industry are limited mainly because of the relatively high floor price and the inability to fulfil requirements regarding quality and sanitary conditions. B&H dairies do not export to the EU, since B&H is not registered as a third country and can not prove that required disease control mechanisms are in place (LAMP, 2005).

The export value of dairy products in 2004 was approximately 11.8 million KM, of which about 90 per cent is exported to the neighbouring countries Croatia and Serbia and Montenegro (LAMP, 2005). Table 19 shows to what countries the B&H dairy products were exported in 2004.

Table 19. B&H exports of dairy products by country of destination, 2004

Country	Export (1000 KM)	Share (%)
Croatia	9,032	76.2
Serbia and Montenegro	1,771	15.0
Macedonia	694	5.9
United States	196	1.7
Slovenia	134	1.1
Others	7	0.1
Total	11,834	100

Source: Foreign Trade Chamber of B&H

The value of total exports of dairy products covers only 10 per cent of the value of imports, and the trade balance in dairy amounts to -102,786,000 KM.

9.5 Calculations of potential competitiveness

In this section the results from calculations of Domestic Resource Costs for milk are presented (methodology described in 3.2). Due to the paucity of some of the data, the results can only be considered as *approximate DRCs*. General assumptions made are also described in 3.4.

The analysis assumes a surplus yield of 18 litres per cow per day (which excludes the milk used as feed for calves) and an average herd size of 10.4 milking cows, based on the cost of production survey. The assumption is made that all farms sell their milk to dairies rather than selling it themselves on the green market.

Table 20: Summary of Approximate DRC calculations for Milk production in Bosnia*

PRICES		KM / litre
Farm gate		0.48
Green market		0.94
Import (CIF) adjusted price		0.53
ANALYSIS OF PRIVATE PROFITABILITY		
Private Output Price	Pf	0.48
Private Value of Tradable Inputs	Ef	0.30
Adjustment for Value of by-products (calves)	Bf	0.15
Private Value Added	VAf = (Pf+Bf) - Ef	0.33
Total Value of Non-Tradable Factors	VNf	0.12
Gross Private profitability per litre	BFN = VAf - VNf	0.21
ANALYSIS OF SOCIAL PROFITABILITY		
Adjusted Border Price (social output price)	Ps	0.53
Social Value of Tradable Inputs	Es	0.29
Adjustment for Value of by-products (calves)	Bs	0.15
Social Value Added	Vas=(Ps+Bs)-Es	0.38
Social Value of Non-Tradable Inputs	VNs	0.12
Gross Social Profitability	BEN = VAs-Vns	0.26
PROTECTION COEFFICIENTS		
Nominal Protection on Product	NPCp =Pf/Ps	0.91
Effective Protection Coefficient	EPC =VAf/VAs	0.87
Domestic Resource Cost (DRC) Ratio	VNs/VAs	0.32

cf. definitions in table 2.

The analysis for milk indicates the production is profitable at both private prices and against imports – The DRC ratio is less than 1. The adjusted c.i.f price is above the domestic price due principally to the adjustment for transport and

storage. However the differences between domestic and import prices may also reflect variations in quality.

A major contributor to the profitability of dairy production is the value of by-products, namely the sale of calves and old cows. The revenue from these sales is equivalent to 0.15 KM per litre.

Due to the lack of distortions to labour and land markets, there are few differences between the social and private prices of non-tradable inputs. Feed accounts for around two thirds of total costs, which given the structure of Bosnian tariffs means there is little difference between private and social tradable costs.

Sensitivity analysis for labour

DRCs calculations are very sensitive to the shadow prices imputed for non-tradable inputs. For this reason a sensitivity analysis was carried out, assuming that the social cost of labour is 10 per cent lower than private costs.

The calculations for milk are not very sensitive to changes in labour costs as labour accounts for a relatively low share of total costs. In the case of milk, feed accounts for around 63 per cent of total costs, while labour accounts for only 10 per cent of total costs.

Table 21. Summary of Approximate DRC calculations for Milk production in Bosnia, assuming 10 per cent decrease in labour costs

ANALYSIS OF SOCIAL PROFITABILITY		KM per litre
Adjusted Border Price (social output price)	Ps	0.53
Social Value of Tradable Inputs	Es	0.29
Adjustment for Value of by-products (calves)	Bs	0.15
Social Value Added	VAs = (Ps+Bs)- Es	0.38
Social Value of Non-Tradable Inputs	VNs	0.11
Gross Social Profitability per litre	BEN = VAs-Vns	0.27
PROTECTION COEFFICIENTS		
Nominal Protection on Product	NPCp =Pf/Ps	0.91
Effective Protection Coefficient	EPC =VAf/VAs	0.87
Domestic Resource Cost (DRC) Ratio	VNs/VAs	

Conclusions

According to the calculations based on the farm survey, milk production is profitable and herd sizes are increasing. The analysis indicates that the production is profitable at both private prices and against imports. The DRC ratio is less than 1, namely 0.32. Labour costs only account for around 10, and profitability and competitiveness is therefore not very sensitive for changes in labour costs.

10

Commodity Analysis: Raspberries

10.1 Raspberry production

Raspberry production is well suited to small farms, since a small area can generate a significant income. Equipment needs are not great, but raspberry production requires much labour, especially during the harvest. Initial investment in planting is relatively high, and the costs are primarily related to land preparation, planting and installation of a trellis and irrigation system. The largest investments needed are in processing facilities and cold storage plants.

Raspberries are very delicate fruits that are susceptible for several types of disease and it is important to monitor and control pests. Except from using healthy plants and applying pesticide, proper site selection and crop rotation are important factors to avoid pest problems. They are also fragile and have a very short shelf life. Raspberries must be picked by hand, directly into containers (machine harvest is an option only for berries that will be processed) and then cooled immediately. Raspberry production requires careful management, but when managed well, plantings should fruit for many years. In return, the demand for raspberries is usually very high and high prices can be obtained. As a global commodity, prices are set by the market based on supply-demand considerations.

The market for fresh raspberries is very limited due to the fragility and short shelf life. The product with the highest value is the individually quick frozen (IQF) raspberries, used mainly for cake production. Each berry must be separated, undamaged and clean. Berries that are damaged or of lower quality are frozen or ground and used for fruit yoghurts, jam, flavouring in pastries or juices.

Conditions for B&H

Both the climatic and the economical conditions are very well suited for berry production in parts of Bosnia and Herzegovina. The areas around the river Sava, in eastern Bosnia and around Sarajevo are abundant in sunny sites with the right type of well drained soil. The abundance of labour available for seasonal work is also favourable. However, the lack of financial resources and loans available for farmers is less favourable, since raspberry production demands investments in the initial stage. In addition it takes a couple of years from planting to harvest.

Refrigeration is required during the whole value chain, which might be an other problem in Bosnia and Herzegovina.

Production

The world production of raspberries has increased from about 320,300 in 1995 to 477,800 tonnes in 2005, an increase of almost 50 per cent. More than 80 per cent is produced in Europe. Serbia and Montenegro is one of the leading producers of raspberries, both regionally and worldwide, and account for about 22 per cent of the European production. Besides Serbia and Montenegro, Hungary and Poland are main producers of raspberries in Europe. According to FAOSTAT the production in Bosnia & Herzegovina has decreased over the past few years, and is now about 1 700 tonnes. LAMP (2005) estimated that approximately 350 hectares were used for raspberry production in 2004, and according to FAOSTAT it was about 420 hectares. Table 22 shows the levels of production for the whole world, Europe, Bosnia and Herzegovina and Serbia and Montenegro for the years 1995, 2000 and 2005.

Table 22. Production of raspberries, tonnes.

	1995	2000	2005
World	320,362	408,415	477,763
Europe	265,892	335,244	395,977
Bosnia & Herzegovina	2,700	2,000	1,700
Serbia & Montenegro	53,084	56,059	90,000

Source: FAOSTAT

Figure 24 shows the development of production for raspberries. There is no clear trend; production level varies considerably during the chosen period of time, to a certain degree probably because of different climatic conditions between years.

Figure 24. Production of raspberries in B&H (Mt)
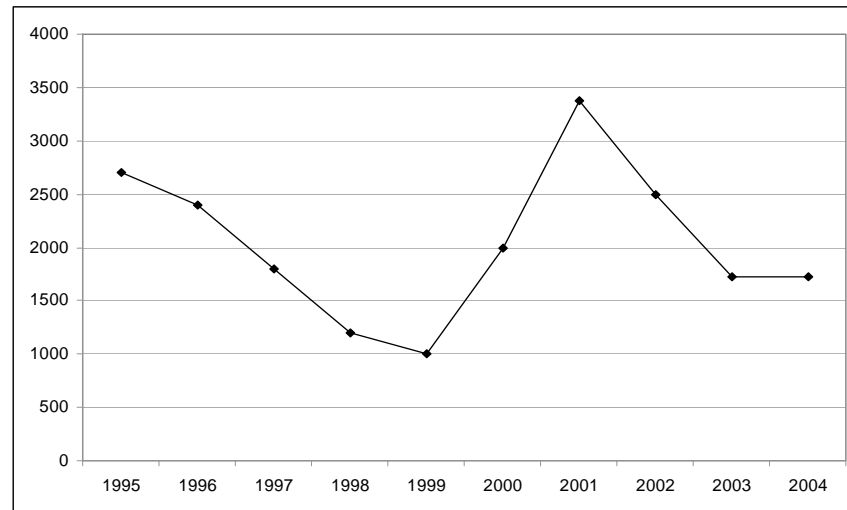
Source: FAOSTAT

There are no reliable data for domestic demand, but consumption is limited due to the relatively high price of raspberries.

Trade

According to the Chamber of foreign trade of B&H the total export of raspberries 2005 amounted to 159 tonnes and a value of 222,183 KM. Import of raspberries was 61 tonnes and 84,585 KM, which gives a trade balance for raspberries of 137,598 KM. Raspberries is one of the most exported agricultural commodities, and one of few with a positive trade balance and the relative export advantage (RXA, EU market) is very high.

Figure 25 shows the world market prices for raspberries. These prices refer to prices of the products traded, and can not be compared to the prices received by the farmers, but can give and idea of the trend.

Figure 25. Market Price of Traded Raspberries (KM/kg)
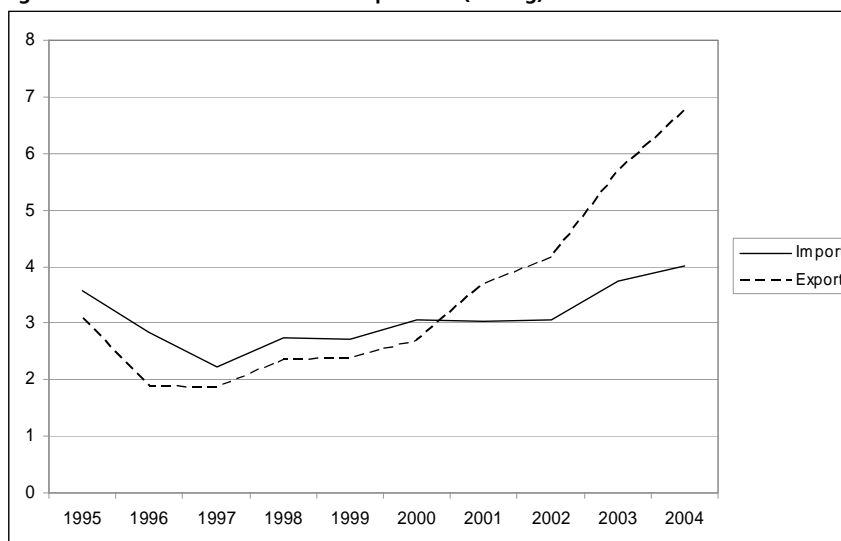
Source: FAOSTAT

The trend seems to be rising prices. In our study, data instead show decreasing prices the last few years.

10.2 Producer structure

Raspberry production data available are very limited, and in order to analyse the sector a small sample of raspberry producers (described further in 10.3) was studied. In this section information from other sources as well as some findings from the own survey are presented.

Among the raspberry producers surveyed, the area devoted to raspberries range from 0,1 to 0,2 hectares. Average yield varies over the production cycle. The plants start producing after two years, and peak some time around year seven. The average yield levels seem to vary slightly between the different regions covered by this survey. The highest levels range from 1500 (Zvornik and Hadzici) to 1800 kg per 10th of a hectare (Sapna).

Figure 26 shows a comparison of yield levels in raspberry production.

Figure 26. Comparison of yield in raspberry production
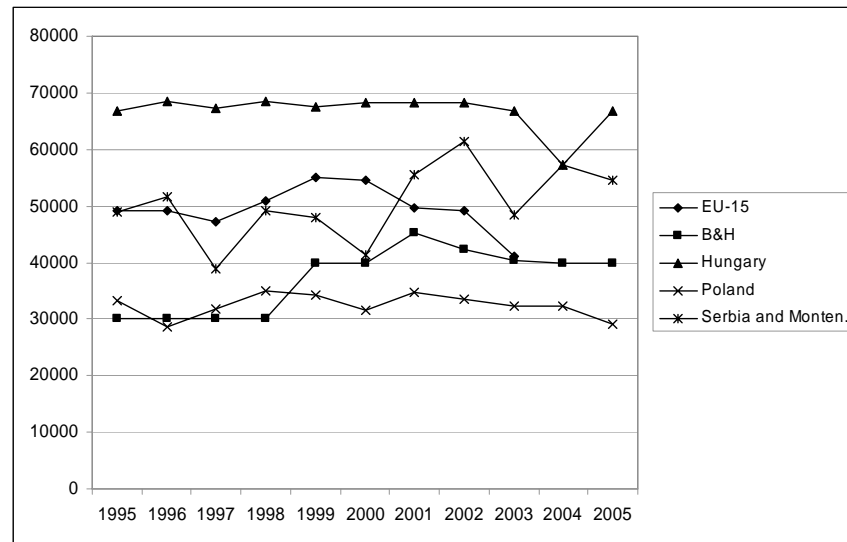
Source: FAOSTAT

Yield level of B&H is not as high as in Hungary or Serbia and Montenegro, but still comparable with the main competitors.

Some of the producers have forward contracts with the processors, either proper contracts or verbal agreements. For medium sized or larger producers, processors or wholesalers picking up the produce is by far the most common way of distribution. There are also a number of cooperatives within the raspberry sub-sector.

Processing industry

On the processing and marketing side, the industry consists of around 20 processors and distributors. Most of them are buying domestically produced raspberries and are importing as well. One of the largest actors is the bakery KLAS, which has made a major commitment to berries, primarily frozen raspberries for export. In addition to investments in processing capacity, KLAS has invested several million KM in start-up loans for farmers and refrigeration facilities placed in the fields. The more than 600 farmers organized in cooperatives are procuring on 12-year forward-purchase contracts and also receive training and technical assistance (LAMP, 2004).

Raspberry production may have potential for foreign direct investments, especially on the processing side of the sector. Up to now, the FDI in raspberry production has been very limited, as for agriculture on the whole. There is one Swedish company, Olle Svensson AB, that has invested in a freezing facility in Srebrenica. The company has more than 800 producers supplying them with mainly organic raspberries. They also offer their producers loans for investments and education and counselling.

10.3 Results from the farm survey - Raspberries

The raspberry farm survey included seven raspberry producers. They are all established, with experience of the whole growing cycle. They are based in the main berry producing regions (Eastern Bosnia and around Sarajevo). 5 are located in FB&H and 2 in RS, and they all cultivate more than 1 dunum (1000 square metres) of raspberries.

Farm Characteristics

The average area devoted to raspberries in 2005 was 0.16 hectares. This was unchanged from 2003 and 2004, and in fact no farms reported any changes in the area devoted to raspberries during the period 2003-5. The largest raspberry farmer devotes 0.5 hectares to the crop with the two smallest growers in the sample having 0.12 hectares of this fruit.

In 2005, the average yield in 2005 was 14,957 kg per hectare - up from 12,857 kg per hectare and 8,829 kg per hectare in 2003 and 2004 respectively. The farm with the best performance reported an equivalent yield of 18,000 kg per hectare in 2005.

66.5 per cent of the sample's output is sold to other outlets (specialist fruit trader or in 1 instance a co-operative) and 31.8 per cent is sold to processors. The remainder (1.7 per cent) is consumed within the household.

Three farms in the sample have written contracts with buyers, which in each case account for 98 per cent of their output. The remaining 4 farms sell none of their output using a formal contract but two cases report having verbal agreements with buyers. In all cases transport was handled and paid for by the buyer.

The average price received by farmers in 2005 was 0.63 euros per kg (table 24). Prices in 2005 were lower compared against 2003 and 2004. The price paid by

traders and the co-operative in 2005 was higher than that offered by the processor (0.66 euros per kg compared to 0.56 euros per kg).

Table 23. Average farm-gate raspberry prices 2003-2005

	2003	2004	2005
Average price in KM received (considering all outlets) per kg	1.36	1.39	1.23
Average price in euro per kg	0.70	0.71	0.63

Private Profitability

Profitability has been calculated on a ten-year cycle, reflecting the typical life-cycle of a plantation (table 25).

Under these assumptions the first commercial fruit crop occurs in year 3 and yields peak in year 7.

Using the average prices received by farms in 2005 to value output, raspberry production is unprofitable not only over the ten-year cycle but also in each operating year. Every farm reports a cumulative loss and none report annual profits even in the years of peak production (years 6 to 8) (table 25). The average cumulative loss over the ten-year period is equivalent to just over 17,100 euros per hectare. As farms devote on average only 0.16 hectares to raspberries, actual losses incurred will be less but at current prices the crop looks unattractive.

Table 26, replicates the analysis in table 25 except that the value of own labour is excluded from the calculations (i.e. it is assumed to be zero).

Table 25. Profitability of Raspberry Production (per ha, in euros)

Year	1	2	3	4	5	6	7	8	9	10
Harvest yields (kg, per ha)	0.00	0.00	9486	11786	10929	14643	15571	15286	14288	13643
Total Tradable costs	6400.64	996.65	1048.88	1078.10	1010.17	1112.43	1110.23	1015.28	1088.32	1015.28
Total non-tradable costs	1384.51	2040.24	6009.51	6867.75	6656.66	8210.62	8479.78	8307.40	7840.66	7564.56
Total cost	7785.15	3036.89	7058.38	7945.84	7666.82	9323.04	9590.01	9322.68	8928.98	8579.84
Revenue (yields x average price in 2005)	0.00	0.00	5577.46	6929.83	6425.84	8609.79	9155.78	8987.78	8399.80	8021.80
Net operating income	-7785.15	-3036.89	-1480.92	-1016.01	-1240.98	-713.25	-434.23	-334.90	-529.19	-558.04
Cumulative Net Income	-7785.15	-10822.04	-12302.96	-13318.97	-14559.95	-15273.20	-15707.43	-16042.33	-16571.52	-17129.56

Table 26. Profitability of Raspberry Production (per ha, in euros), excluding the value of own labour

Year	1	2	3	4	5	6	7	8	9	10
Harvest yields (kg, per ha)	0.00	0.00	9486	11786	10929	14643	15571	15286	14288	13643
Total Tradable costs	6400.64	996.65	1048.88	1078.10	1010.17	1112.43	1110.23	1015.28	1088.32	1015.28
Total non-tradable costs	243.23	991.18	942.24	978.76	895.49	860.80	764.75	720.19	673.44	634.73
Total cost	6643.87	1987.83	1991.12	2056.85	1905.66	1973.22	1874.98	1735.47	1761.77	1650.01
Revenue (yields x average price in 2005)	0.00	0.00	5577.46	6929.83	6425.84	8609.79	9155.78	8987.78	8399.80	8021.80
Net operating income	-6643.87	-1987.83	3586.35	4872.98	4520.19	6636.57	7280.80	7252.31	6638.03	6371.79
Cumulative Net Income	-6643.87	-8631.70	-5045.36	-172.38	4347.81	10984.38	18265.17	25517.48	32155.51	38527.30

This adjustment regarding labour costs has a significant impact on the calculations because (a) all of the labour used by the raspberry producers is their own and therefore unwaged and (b) labour is by the far the largest non-tradable cost item. Making the adjustment for own labour makes the crop profitable over the ten year cycle, with a return on investment already seen in year 5.

Analysis of potentials and constraints for efficient performance as well as profitability of raspberry production was discussed with V. Trifkovic, agribusiness analysts at LAMP, and H. Jusovic, local agricultural expert at Caritas, both specialists in fruit and vegetable production. Trifcovic pointed out that many raspberry growers are using outdated set of varieties and that new varieties are difficult to introduce. He emphasised the importance of using high quality of planting materials which are free from viruses. The fact that growers are not organised hinders them, according to Trifkovic, from obtaining better prices at the domestic market. However, LAMP has a positive view of future prospect of cultivation of berries in B&H. The sector has been expanding. Very high yields that have been obtained by some producers in Serbia indicate that potential for growth of yields may be considerable.

Caritas has previously prepared gross margin calculations for raspberry production. Those were used as an input in lending operation to farmers. Caritas' assessment of profitability indicated, contrary to calculations made by SLI, that production of raspberries is profitable for growers. Caritas' calculations were based only on one year, rather than on a whole lifecycle of the plantation, which can be argued, is a more appropriate way of assessing profitability of a perennial crop. However, adjusting for the age of the plantation, the yields assumed in both calculations were similar. Also costs of cultivation assumed in both analyses were similar. The reason for differences in profitability assessment is solely due to the fact that Caritas calculation was based on a much higher producer price, namely 1,6 KM i.e 30 per cent higher price. At that price, SLI calculation would also show a profit. The farm gate prices of raspberries have declined since Caritas prepared their assessment.

10.4 Calculations of potential competitiveness

In this section the results from calculations of Domestic Resource Costs for raspberries are presented (methodology described in 3.2). Due to the paucity of

some of the data, the results can only be considered as *approximate DRCs*. General assumptions made are also described in 3.4. All prices are shown in KM.

Table 27. Summary of Approximate DRC calculations for Raspberry production in Bosnia*

PRICES		KM/Tonne
Domestic farm gate		1229
Export parity price - adjusted back to farmgate, fob		1159
ANALYSIS OF PRIVATE PROFITABILITY		
Private Output Price	Pf	1,229
Private Value of Tradable Inputs	Ef	229
Private Value Added	VAf = Pf - Ef	1,000
Total Value of Non-Tradable Factors	VNf	1,456
Gross Private profitability		
per tonne	BFN = VAf - VNf	-456
per hectare	*BFH = BFN x R*	*-4,812*
ANALYSIS OF SOCIAL PROFITABILITY		
Adjusted Border Price (social output price)	Ps	1,159
Social Value of Tradable Inputs	Es	224
Social Value Added	VAs	936
Social Value of Non-Tradable Inputs	VNs	1449
Gross Social Profitability		
per tonne	BEN = VAs-Vns	-513
per hectare	BEH = BEN x R	-5420
PROTECTION COEFFICIENTS		
Nominal Protection on Product	NPCp =Pf/Ps	1.06
Nominal Protection on Tradable Inputs	NPCi =Ef/Es	1.02
Effective Protection Coefficient	EPC =VAf/VAs	1.07
Domestic Resource Cost (DRC) Ratio	VNs/VAs	1.55
SCB Ratio	Es+VNs/Ps	1.44

* *cf. definitions in table 2*

The analysis indicates that raspberries are unprofitable at both private and social prices (DRC ratio substantially above 1). Domestic farm-gate prices are slightly above adjusted border prices (i.e accounting for transport to the border and storage) as one may expect. The calculations for raspberries are very sensitive to assumptions on labour. If labour input is valued at 25 KM per day (the going rate for paid labour in raspberry production), labour accounts for 61 per cent of total costs.

Sensitivity analysis for labour

DRCs calculations are very sensitive to the shadow prices imputed for non-tradable inputs. For this reason a sensitivity analysis was carried out, assuming that the social cost of labour is 10 per cent lower than private costs.

Out of the three commodities analysed in this repost, the adjustment to labour costs has the largest effect on the estimations for raspberries. This is because labour accounts for a larger share of total costs in this case (61 per cent) than for peppers or milk. However the 10 per cent reduction in labour costs is insufficient to make Bosnian raspberry production socially profitable. Under the sensitivity analysis, gross social profitability improves from a loss of 513 KM per tonne to a loss of 410 KM per tonne. The DRC ratio improves from 1.55 to 1.44.

Table 28. Summary of Approximate DRC calculations for raspberry production in Bosnia, assuming 10 per cent decrease in labour costs

ANALYSIS OF SOCIAL PROFITABILITY		KM per tonne
Adjusted Border Price (social output price)	Ps	1,159
Social Value of Tradable Inputs	Es	224
Social Value Added	VAs	936
Social Value of Non-Tradable Inputs	VNs	1346
Gross Social Profitability		
per tonne	BEN=VAs-Vns	-410
per hectare	*BE =BEN x R*	*-4331*
PROTECTION COEFFICIENTS		**Per tonne**
Nominal Protection on Product	NPCp =Pf/Ps	1.06
Nominal Protection on Tradable Inputs	NPCi=Ef/Es	1.02
Effective Protection Coefficient	EPC =VAf/VAs	1.07
Domestic Resource Cost (DRC) Ratio	VNs/VAs	1.44
SCB Ratio	Es+VNs/Ps	1.35

Conclusions

The analysis indicates that raspberries are unprofitable at both private and social prices. Labour accounts for a large share of the total costs (61 per cent), and reduction of labour costs have a significant effect on the results. However the 10 per cent reduction in labour costs is insufficient to make Bosnian raspberry production socially profitable.

All labour used by the producers surveyed is unwaged, which have an effect for the private profitability and might explain why the producers continue with raspberry production.

11 Commodity Analysis: Peppers

11.1 Pepper production

Peppers is a crop well suited to small scale farming. The equipment needed is not specific for growing peppers, but can be used for other purposes as well. Peppers are a warm season crop, planted on beds covered with plastic mulch. They grow best on well drained soils with good water-holding characteristics. An irrigation system is recommended for optimal growth, and also allows for application of injection-based fertilizers. Insects are a major problem in pepper production. In addition to using disease-resistant varieties and a good crop rotation system, both herbicides and pesticides are often needed. Peppers are almost exclusively harvested by hand.

Peppers are, unlike raspberries, not very fragile. They are relatively easy to transport and do not require any special packaging. They are most often packed in cardboard crates.

Conditions for B&H

The climatic conditions in B&H are quite suitable for pepper production. Peppers can grow in open fields, but only production in green houses or poly tunnels can be considered as commercial. The structure with small farms and many part time farmers is also appropriate for pepper production. The fact that they are relatively insensitive and not very demanding to grow is an advantage in B&H, where the level education and knowledge, as well as the access to financial resources for agricultural investments often is insufficient.

Production

The production of peppers in Europe is only moderate. According to FAOSTAT, Bosnia and Herzegovina might account for up to 20 per cent of the peppers produced in Europe. According to domestic data, 3,826 hectares were used for pepper production in 2004, of which almost 65 per cent in RS. The area used for pepper production has increased slightly the last few years. The total pepper production 2004 amounted to 48,178 tonnes (including both open field and green house production). Official statistics show a significantly higher yield level in RS, which implies that RS accounted for almost 80 per cent of the total pepper production in B&H in 2004.

Figure 27 show the pepper production in B&H during the period 1995-2005.

Figure 27. Production of peppers, B&H (tonnes)
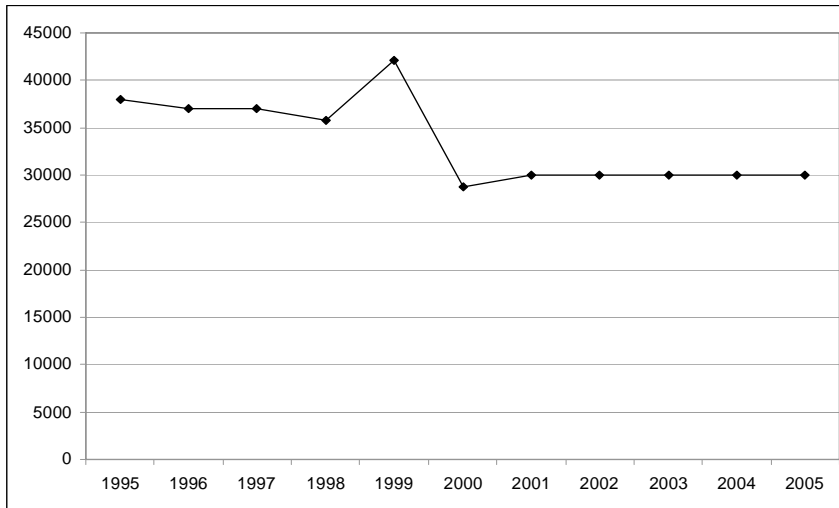
The vegetable sector recovered relatively quickly after the war, since it is possible for small farms to start production without any large investments. According to figure 27 the production of peppers has decreased over the last ten year period.

Figure 28 shows a comparison of yield levels in pepper production between some of B&H's competitors.

Figure 28. Comparison of yields in pepper production

Yield levels, Peppers
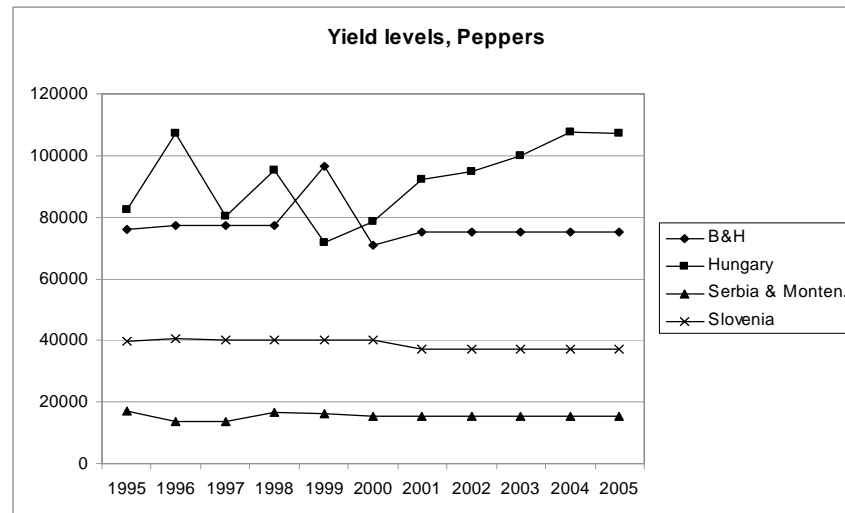
Source: FAOSTAT

Trade

According to the Chamber of foreign trade of B&H the total export of peppers 2005 amounted to 37 tonnes and a value of 42,274 KM. Import of peppers was 12,003 tonnes and 7,719,103 KM, which gives a trade balance for peppers of - 7,676,829 KM. These figures only include unprocessed peppers, and it is possible that part of the imported peppers are being processed, and then re-exported.

11.2 Producer structure

The number of farmers producing peppers is high. Most farms use far below 0,2 hectares for pepper production, and still it is estimated that around 3,800 hectares are used for this production. This implies a great number of pepper growers. It is very common to have some small scale pepper production in addition to other agricultural activity, and peppers are produced almost all over Bosnia.

Peppers are sold in a number of ways; either to wholesalers (on contracts or wholesale markets), directly to local retailers or in green markets. However, wholesale markets seem to be the most common way. Farmers are also selling on green markets to a large extent. The share of produce sold on forward contracts is increasing, but many producers prefer to sell the produce in green markets to ensure they get paid and to avoid delays in payments. Local or regional

cooperatives and associations exist to some extent, and Agricultural Institutes (Mostar and Sarajevo) provide technical support and training.

11.3 Results from the farm survey - Peppers

The sample of pepper producers includes 7 farms located in north and south regions of B&H respectively, which are characteristic regions for such production. They can all be regarded as commercial producers, and use either green houses or polytunnels (open field production is not included).

Farm Characteristics

The average farm in the sample produced the equivalent of 113 tonnes per hectare of peppers in 2005 (up from 110 and 112 tonnes per hectare in 2003 and 2004 respectively). The average area devoted to peppers by each farmer in 2005 was 0.097 hectares in 2005, unchanged from 2003. Over the period 2003 to 2005, 5 farmers reported no change in the area devoted to peppers with 1 case of an increase and 1 of a decrease in area sown. The land area devoted to peppers in the sample varied from between 0.01 and 0.22 hectares in 2005, and the average yields for the seven producers included in our survey ranged from 9,750 to 12,600 kg per 0.1 ha (highest in Capljina, lowest in Gradacac).

The vast majority of peppers produced are sold to wholesalers (76.15 per cent), with remainder distributed via local sales (13.96 per cent), the green market (7.17 per cent), other outlets (1.99 per cent) and own consumption (0.73 per cent). In 5 cases farmers transported produce themselves to wholesale markets for sale with one case of collection by a wholesaler and 1 instance of a mix of both methods.

Only one farmer had a contract with a wholesaler (which covered 92 per cent of his output) and this farmer reported the lowest average price for his output. However this price included transport, which was undertaken by the wholesaler.

Table 29 details the average prices received by farmers, according to outlet. As one may expect average prices were higher on the green market (0.65 euros per kg) than from sales to wholesalers (0.54 euros per kg). The average price received by farmers from wholesalers varied between 1.1 and 1.40 KM (0.56 and 0.72 euros) per kg.

Table 29. Average prices received for peppers by outlet in 2005 (per kg)

Outlets	Amount sold / distributed to different outlets by all 7 farms (kg)	Average price received per kg (in KM)	Average price received per kg in euro
Own consumption	570		
Green market	5,600	1.275	0.65
Local sales	10,900	1.275	0.65
Processor	0		
Wholesaler	59,450	1.064	0.54
Other outlet	1,550	1.150	0.59

Private Profitability

Table 30 records the average profitability of the seven pepper producers. All farmers in the sample registered a profit from this commodity. Net average operating incomes are 39,619 euros per hectare, which given an average growing area of 0.097 hectares equates to 3,843 euros per farmer. This compares well against other activities.

Table 30. Summary of Private Profitability for Pepper Production (2005), euros per hectare

	Euros per ha
Total Tradable costs	20868.31
Total non-tradable costs	12126.66
Total cost	32994.97
Revenue	72614.30
Net operating income	39619.33

Table 31 replicates the analysis presented in Table 30 except own labour is not valued at its opportunity cost. When own labour input is valued at zero, non-tradable costs roughly halve as only 23 per cent of the labour input used in pepper production is waged. This adjustment increases reported returns.

Table 31. Summary of Private Profitability for Pepper Production (2005) – excluding valuation of own labour

	Euros per ha
Total Tradable	20868.31
Total non-tradable	6072.60
Total cost	26940.91
Revenue	72614.30
Net operating income	45673.40

11.4 Calculations of potential competitiveness

In this section the results from calculations of Domestic Resource Costs for peppers are presented (methodology described in 3.2). Due to the paucity of some of the data, the results can only be considered as *approximate DRCs*. General assumptions made are also described in 3.4. All prices are in KM.

Table 32. Summary of Approximate DRC calculations for Pepper production in Bosnia*

PRICES		KM/Tonne
Farm gate price		1257
Export parity price - adjusted back to farm-gate, fob		1066
ANALYSIS OF PRIVATE PROFITABILITY		
Private Output Price	Pf	1,257
Private Value of Tradable Inputs	Ef	334
Private Value Added	VAf = Pf - Ef	923
Total Value of Non-Tradable Factors	VNf	210
Gross Private profitability		
per tonne	BFN = VAf - VNf	713
per hectare	*BFH = BFN x R*	*80,580*
ANALYSIS OF SOCIAL PROFITABILITY		
Adjusted Border Price (social output price)	Ps	1,066
Social Value of Tradable Inputs	Es	318
Social Value Added	VAs	748
Social Value of Non-Tradable Inputs	VNs	210
Gross Social Profitability		
per tonne	BEN = VAs-Vns	538
per hectare	BEH = BEN x R	60777
PROTECTION COEFFICIENTS		
Nominal Protection on Product	NPCp =Pf/Ps	1.18
Nominal Protection on Tradable Inputs	NPCi=Ef/Es	1.05
Effective Protection Coefficient	EPC =VAf/VAs	1.23
Domestic Resource Cost (DRC) Ratio	VNs/VAs	0.28
SCB Ratio	Es+VNs/Ps	0.50

*cf. definitions in table 2.

The analysis indicates that pepper production is internationally competitive (DRC ratio of less than 1). The export parity price is below the domestic price when transport and storage costs are adjusted for. As tariff rates on tradable inputs are very low there is little difference between the private and social valuation of these costs. As labour and land costs are assumed to be undistorted, non-tradable private and social costs are identical. In summary, Bosnia possesses profitable export opportunities for peppers.

Sensitivity analysis for labour

DRCs calculations are very sensitive to the shadow prices imputed for non-tradable inputs. For this reason a sensitivity analysis was carried out, assuming that the social cost of labour is 10 per cent lower than private costs.

The reduction in labour costs by ten per cent improves the profitability of pepper production – social profitability per tonne rises from 538 KM to 551 KM. The DRC ratio improves from 0.28 to 0.26. However it should be noted that pepper production is comfortably profitable even without the adjustment to labour costs.

Table 33. Summary of Approximate DRC calculations for pepper production in Bosnia, assuming 10 per cent decrease in labour costs

ANALYSIS OF SOCIAL PROFITABILITY		KM per tonne
Adjusted Border Price (social output price)	Ps	1,066
Social Value of Tradable Inputs	Es	318
Social Value Added	VAs	748
Social Value of Non-Tradable Inputs	VNs	196
Gross Social Profitability		
per tonne	BEN = VAs-Vns	551
per hectare	BEH = BEN x R	62288
PROTECTION COEFFICIENTS		
Nominal Protection on Product	NPCp =Pf/Ps	1.18
Nominal Protection on Tradable Inputs	NPCi=Ef/Es	1.05
Effective Protection Coefficient	EPC =VAf/VAs	1.23
Domestic Resource Cost (DRC) Ratio	VNs/VAs	0.26
SCB Ratio	Es+VNs/Ps	0.48

Conclusions

The analysis indicates that pepper production is internationally competitive and that Bosnia possesses profitable export opportunities for peppers. Peppers are also profitable for farmers. The reduction in labour costs by ten per cent improves the profitability of pepper production, but pepper production is comfortably profitable even without the adjustment to labour costs.

12 Summary, conclusions and policy recommendations

The analysis of competitiveness of agriculture in B&H conducted by SLI consists on one hand of a general assessment of competitiveness at the sector level, on the other hand an in depth study of three key commodities. The first part of the study analyses factors that are decisive as determinants of competitiveness and provides some simple indicators of competitiveness. The relevant factors are macroeconomic situation, trade policy, agricultural policy, natural conditions and factor availability as well as business climate and general economic conditions. Simple indicators of competitiveness include comparisons of yields, producer prices and calculation of indices of revealed comparative advantage.

The presence of distortion on the domestic market, for instance during a process of transition to market economy, or on foreign markets (such as trade restrictions or export subsidies) makes it more appropriate to concentrate on potential rather than on revealed comparative advantage, which has been done in the analysis of the three commodities. This section of the report summarises the more general analysis and the commodity study as well as the conclusions that can be drawn from the analysis.

Macroeconomic conditions

General macroeconomic conditions in B&H can be characterized by stability which is conducive for the development of the private sector, including agriculture. Prices and exchange rate have been stable. Nevertheless, the stability of the nominal exchange rate might hide some important exchange rate misalignment that might create indirect distortions to agriculture.

Outputs and incomes have increased. However, the current account deficit is around 23 per cent of the GDP, which is unsustainable in the long run. Budget is now close to balance but government spending is at half GDP, which may be difficult to sustain at the present level of economic development. The official level of unemployment is above 40 per cent and unemployment has been rising rather than declining. However, unofficial activity absorbs part of the official unemployment. Implications for the agricultural sector are as follows. Due to the shortage of budgetary funds, it is not likely that the government spending

will increase substantially in spite of low spending on agriculture compared to other sectors and other countries. Low demand for farm labour outside agriculture due to high unemployment implies that outflow of labour from agriculture will be limited, structural change slow and the sector will continue to play a considerable role as a social buffer providing food security for farm household members.

Trade policy

Trade policy in B&H as well as trade policy of potential trading partners strongly influences trade performance. Bosnian trade policy is fairly liberal in general. This extends to agriculture. The level of border protection is low, and there are no export subsidies. The average import tariff on agricultural products is 5.2 per cent, compared to 21.5 per cent in EU. In some neighbouring countries, e.g. in Bulgaria, the MFN[13] tariff on food and agriculture is near to the EU level, 21.1 per cent. The applied tariffs which take into account Free Trade Agreements (FTA) and other preferential tariff arrangements are still higher than in B&H, 9.3 per cent. In B&H, the interventions on domestic market are limited as well, see section 3. B&H is not yet a member of the World Trade Organisation.

B&H has FTAs with Albania, Bulgaria, Croatia, Macedonia, Moldova Serbia-Montenegro and Turkey. Agriculture is to a varying degree included in the FTA. B&H also enjoys the autonomous trade measures granted unilaterally by the EU.

B&H is at present (since January 2006) in the process of negotiating a Stabilisation and Association Agreement (SAA). The negotiations are the first step toward a possible EU membership. B&H is the last of former Yugoslav republics to open SAA negotiations.

Besides tariffs and TRQs, technical barriers to trade (TBT) and sanitary and Phytosanitary measures (SPS) are decisive for trade performance. Since B&H is unable to comply with EC Food and Veterinary Office (FVO) recommendations, it is unable to export animals or animal products to the EU. The framework and system for implementing sanitary and phytosanitary standards is

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[13] Most Favoured Nation

weak. The inspection functions are spread out on a large number of authorities and are therefore very difficult to organize and harmonize. An export certification system is not yet in operation. B&H needs to harmonize its veterinary and phytosanitary legislation to that of the EU and to establish laboratories and certificate bodies able to certify compliance of agricultural goods with the EU requirements.

To summarize, agricultural products from B&H do not compete with imported products on equal terms, since the level of support in some main trading partners or neighbouring countries is higher than in B&H and agriculture is only partially included in the preferential trade agreements. This is in particular the case with the EU. The situation is made worse by the inability to comply with SPS regulations on key commodities. The proper response to this situation is, however, not raising the level of external tariffs but achieving a better access to markets of the trading partners through negotiations and a gradual improvement of the infrastructure for compliance with the sanitary and phytosanitary requirements of the EU.

Agricultural policy

B&H lacks a unified agricultural policy at the state level and the institutional capacity (both financial and human) is weak. There are agricultural policy institutions at several levels in B&H: entity, cantonal and municipality level, but not on the state level. This system causes differences and varying conditions depending on the region. Moreover, there are no direct lines of command linking the different administrations together, and the assignment of responsibilities is not clear. Currently, there is technical assistance for the creation of a Ministry of Agriculture at the state level.

Approximately 2-3 per cent of the total budget in B&H is allocated to agriculture (compared to a contribution of around 10 per cent of GDP). For example, the agricultural administration staff in B&H amounts to around half of the staff in Slovenia and five times less than in Austria and Latvia. Also the annual subsidies and support to agriculture are the lowest in B&H. Legal regulations are cumbersome, and bureaucratic procedures hinder investments. Property rights and land ownership are not always clear. There is no land registry. Stable, predictable and transparent regulatory framework is essential for performance of the agriculture. B&H has not as yet reached such conditions.

Natural conditions and the availability of production factors

Natural conditions for agricultural production are good, though less favourable than in other countries in the region. Agricultural land is abundant compared to the EU, with more than 0.6 ha/person, compared to less than 0.4 in EU-15. However, only less than 20 per cent is suited to intensive agriculture. Natural water resources are abundant and ground water is readily accessible in many places.

The structure of agriculture is unfavourable with land broken up into small plots (3.2 hectares on average dispersed into 6-8 plots). This is one of the main disadvantages of farming in the Western Balkans which impedes the development of commercial agriculture and perpetuates subsistence farming. In addition, the progress with the land reform and privatisation in B&H has been slow and land market has been functioning badly. This means that the structure of agriculture can be expected to remain small scale for the foreseeable future.

Agricultural labour is cheap when compared to the EU. However, wages are, in general, higher than in the neighbouring Balkan countries. The relatively high wages combined with the low labour productivity may have an adverse effect on agricultural competitiveness in B&H.

There is a long tradition of small scale farming and traditional organic production. However, production has mainly been for self-consumption. Farmers generally lack marketing skills and market orientation is weak. The level of knowledge concerning modern farming, and marketing and management is often not satisfactory.

Access to physical and financial capital in agriculture is limited. Both technology and technical equipment are outdated. Poor sanitary conditions prevail on farms. Investment by private farmers has been limited. There is lack of access to financial resources. Commercial bank lending to farm and agricultural enterprises has been low as they consider such loans costly and risky.

To summarize, abundance of agricultural land and good availability of labour constitute advantages of agriculture in B&H with respect to factor conditions. However, relative high wage level compared to neighbouring countries may be a hindrance. Disadvantages consist of very small farm size, extensive subsis-

tence farming, outdated technologies and equipment, lack of access to financial resources, low investments and lack of market orientation. A relative abundance of labour and scarcity of capital implies that B&H should be expected to have comparative advantage in labour intensive commodities. However, a relative low wage level is a precondition for competitiveness in a labour-intensive production. Hence, the objectives of creation of employment in agriculture and of improving incomes of farmers are to some extent in conflict with each other. Furthermore, B&H could be expected to have comparative advantage in products that make considerable use of grazing land, such as extensively raised veal and beef as well meet from sheep and goats. Pastures may also be important for production of milk.

Upstream and down stream sectors and domestic market

Internationally competitive input suppliers are important for competitiveness. The quality and cost of inputs in B&H are, however, not favourable. Relatively high prices of cereals contribute to high feed costs. There is lack of well developed veterinary system and of quality control systems. There are poor connections between extension services and producers and between breeding centres and agricultural institutions. Nonexistent programs to improve cattle breeding and markets for selling cattle with improved genetics are also keeping the productivity low.

Only a few companies in the processing industry have been able to invest, with assistance from international projects. Many companies experience financial problems. Due to poorly developed capital markets they have to rely on surpluses generated from business operations for reconstruction. Lack of greenhouses creates seasonal surpluses/shortages for fruit and vegetables.

The state-owned companies involved with the agro-processing industry are operating at less than 40 per cent of pre-war capacity. There is a lack of marketing skills, and the market orientation is weak. In many cases the packaging materials are poor. Regarding quality management, the awareness is gradually developing, but is hindered by lack of financial means etc.

Due to the small size of the population B&H has limited domestic markets compared with most other countries in the region and in particular the EU. Moreover, domestic demand is low due to weak purchasing power and a decreasing

population. However, the potential for market growth in B&H is high due to relatively low level of consumption at present and favourable economic growth in recent years. This is especially the case for products with higher quality. Replacement of the extensive imports also creates an expansion of domestic sales. An obstacle is, however, that consumers perceive the quality of locally produced food to be low in B&H. In spite of the image of lower quality, there is a general preference for domestic products.

Performance of the agricultural sector

Performance of the agricultural sector compared to other sectors in the Bosnian economy and compared to development in other countries in the Balkan as well as to former candidate countries to the EU constitutes an indication of competitiveness. Agricultural production has recovered strongly after the war but subsequent development can be characterised by a slow recovery process. Agricultural productivity is still depressed. Milk yields improved considerably in late 1990 from an exceptionally low level but have been stagnating or even slightly falling since then and are still one of the lowest in Europe. General economic development has, on the other hand, been favourable. GDP has been growing at four to five per cent for several years. Hence, performance of agriculture in relation to other sectors on the domestic market has been weak.

Trade balance in agriculture

An obvious indicator of low competitiveness of Bosnian agriculture is the trade balance. Food imports (in value terms) are more than eight times as high as exports. However, the trade balance in food has improved 2005. Huge trade deficits are caused by trade imbalances especially in processed agricultural products. In terms of traded volumes the imbalance is smaller due to a high share of highly processed products in the import. Some of the most important agricultural products in exports at present are fresh or processed vegetables and fruit/berries. The most important trading partners, for both import and export, are the neighbouring countries Croatia and Serbia-Montenegro, and also Germany.

Prices and yields in comparable countries

Prices of some key agricultural products are high in B&H compared with EU level (represented by France) and Poland in the pre-accession period (representing a new member state/candidate country). The prices appear, moreover, not to

be converging to the EU level. Yields of cereals, fruits, vegetables and milk are low in B&H compared to EU15, other countries in the Balkan region and Poland and Romania.

Revealed Comparative Advantage

If one country's share of exports of a certain commodity is larger than its share of total exports in the world or in a reference region, the country has a relative export advantage in that commodity. According to this measure, B&H does not have comparative advantage in agriculture at the sector level on the EU market.

Applying the same measure at the sub-sector level, reveals that B&H is competitive in vegetables and close to competitive in fruits. B&H appears, hence, to have comparative advantage in vegetables. RXA (relative export advantage) index for fruits is improving as well. This seems consistent with what one may expect from trade theory. A labour-abundant country, like B&H, should be competitive in labour-intensive products such as vegetables and fruits. However, the exports are generally very small. B&H is, furthermore, not competitive in production of other labour intensive products. Here, potentials are not realised. The small scale of production is one, since it becomes problematic (and expensive) for processors to gather large enough quantities. Besides the problems with logistics, the lack of control bodies as well as cooling facilities is hindering a more efficient production.

B&H is also richly endowed with pastures and grazing land. This could translate to competitiveness in products that make considerable use of this resource. Yet, trade analysis reveals no comparative advantage in those sectors. Inability to comply with FVO recommendations is the major explanation.

Potential competitiveness: commodity analysis

In this analysis competitiveness is treated as the ability of Bosnia and Herzegovina to produce agricultural products that could meet the test of foreign competition while simultaneously maintaining and expanding farmers' private profitability and thus income. In other words, competitiveness is the ability of B&H producers to profitably gain and maintain market share in domestic and/or export markets. The analysis is focused on comparative advantage, that is, the relative cost advantages over trading partners. In this case, the long-run comparative advantage depends on securing a lower comparative cost structure. The quanti-

tative measure used for analysing potential competitiveness of the three commodities is the Domestic Resource Costs (DRC) ratio.

The DRC ratio compares the opportunity costs of domestic production to the value added it generates (Tsakok, 1990). It makes a distinction between tradable inputs and non-tradable inputs, i.e. those that are not subject to international trade. The numerator is the sum of the costs of using domestic primary resources - land, labour and capital (non-internationally traded inputs) valued in terms of shadow prices. The denominator is the value-added in border prices. When the DRC is smaller than one, domestic production is efficient and internationally competitive, because the opportunity cost of domestic resources is smaller than the net foreign exchange it gains in export or saves by substituting for imports. The opposite is true when the DRC is larger than one. DRCs are sensitive to the choice of shadow prices for non-tradable inputs, and to the choice and changes in exchange rate and international prices. The Domestic Resource Cost ratio (DRC), is designed to measure cost competitiveness and may inadequately capture differences in quality. Comparative cost advantages can originate from various sources such as differences in factor endowments, production technologies or productivity, as well as the prices of production factors.

The DRC measure is important for informing policy decisions. Given the level of technology and management, resources should be moved out of commodities with high DRCs and transferred to those commodities with low DRCs. The measure can also indicate which commodity systems are likely to expand in the future and which are likely to contract.

Proxy[14] DRCs for three products have been calculated within this project: raspberries, peppers and milk. The initial assumption has been that B&H might have comparative advantage in fruit and vegetables, and milk. In order to have data necessary to measure potential competitiveness, a small cost of production survey has been carried out within the project. Here a summary of the results from the commodity study is presented.

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[14] Because of the paucity of some data (see 3.4) the DRCs calculated should be regarded as approximate DRCs.

Peppers

For peppers, the survey comprised of 7 farms. It indicated that, on average, during the period 2003-2005 the yield of peppers increased from 110 to 113 tonnes/ha whilst the farm gate price was relatively stable, around 640 Euro/tonne. The largest quantities of output were sold to wholesalers. The second most important distribution channel was direct local sales.

Production is relatively labour intensive. On average, 489 person-days are spent per year per hectare. The most labour intensive feature is harvesting followed by spaying and irrigation. Most of the labour is non-paid family input; only 23 per cent of the labour requirements are covered by hired labour. However, in our calculations of competitiveness we assumed that all factors should be paid at opportunity costs. For this reason, we impute the average daily wage rate of labour to family labour input as well.

The analysis indicates that pepper production is internationally competitive (DRC ratio of less than 1, namely 0.28). As tariff rates on variable inputs used in peppers production are very low, they do not distort the market. In summary, Bosnia possesses profitable export opportunities for peppers. Peppers are also profitable for farmers. Private profitability equates to 713 KM/tonne. So, farmers do have incentives to produce peppers.

As previously mentioned, the DRCs calculations are very sensitive to the shadow prices imputed for non-tradable inputs. For this reason a sensitivity analysis was carried out, assuming that the social cost of labour is 10 per cent lower than private costs. The reduction in labour costs by ten per cent improves the profitability of pepper production. The DRC ratio also improves from 0.28 to 0.26. However, it should be noted again that pepper production is comfortably profitable even without the adjustment to labour costs.

According to available trade statistics the import of peppers far exceeds exports. Part of that deficit is reduced by the export of processed peppers. Trade statistics in B&H are, however, not detailed enough to show the extent this kind of trade.

Yields of peppers in B&H are comparable to the rates achieved by other pepper producing countries and the natural conditions are favourable. Peppers is a crop that is not disadvantaged by the structure with small farms.

The production techniques used for cultivation of peppers are relatively simple, and do not require large investments, which is suitable in B&H where the level of agricultural education among farmers is generally low and there is a general lack of financial resources for investments in agriculture.

Milk

The other profitable and competitive commodity amongst the studied products is milk. Thirty dairy farms were covered by the cost of production survey, 14 in Bosnia and Herzegovina, 13 in Republica Srpska and 3 in district Brcko. The average herd of milking cows per farm has increased from 7.4 cows in 2003 to 10.4 cows in 2005. Compared to other countries in the region, e.g. Bulgaria and Romania, this appears to be a large average herd. However, it should be noted that large and specialised farms were selected for the survey, as it is expected that commercial farms will need to compete on the international market or face the foreign competition on the domestic market.

The average yield per cow per day varies substantially between summer and winter. It is around 20 litres during the summer and 17 litres during the winter. The cow breeds are crucial for improving the yields, e.g. the best cows in the sample had 28 litres of milk per day in summer and the worst 15 litres. However, farmers in B&H try to spread the risk and prefer dual purpose livestock. If there are problems with the collection of milk or late payments by dairies or surplus production, they sell calves for baby beef. The farmers keep cows on average for 8.3 years.

Most of the milk in the sample is sold to dairies although the price farmers can get on the green market selling in the neighbourhood is twice as high as the price paid by dairies. The largest cost item is feed, which accounts for around two thirds of total costs. Around 71 per cent of total feed is produced by the farmers themselves.

For the analysis of DRCs based on the cost of production survey a surplus yield of 18 litres per cow per day was assumed (which excludes the milk used as feed for calves) and an average herd size of 10.4 milking cows. It was also assumed that all farms sell their milk to dairies rather than selling it themselves on the green market. The analysis for milk indicates that production is profitable at

both private prices and against imports. The DRC ratio is less than 1, namely 0.32.

A major contributor to the profitability of dairy production is the value of by-products, namely the sale of calves and old cows. The revenue from these sales is equivalent to 0.15 KM per litre. Altogether the farmers gain 0.21 KM profit per litre.

The calculations for milk are less sensitive to changes in labour costs than for the other two commodities as labour accounts for a lower share of total costs. In the case of milk, feed accounts for around 63 per cent of total costs, while labour accounts for 10 per cent of total costs.

The low yield level and small farm size are factors hindering a more efficient and profitable milk production. Farmers' lack of knowledge can be regarded as one of the largest hinders, together with low quality feed used, which, in turn, partly is due to the lack of knowledge.

The negative trade balance in dairy products is very large, even though it has improved in the last years. The relative export advantage (RXA) for milk products in the EU market is very low, partly because B&H does not fulfil the sanitary requirements to export into the EU. However, the negative trade balance in milk is not only dependent of export possibilities to the EU, the import of (cheaper) dairy products is an significant issue. Even though B&H is unlikely to become a net exporter of low cost dairy products, there may be a potential to export more processed niche products, like the typical *Livno cheese*, that seem to be well-known in the region.

The results of the DRC calculations suggest domestic production has the potential to compete with imports, which goes against the RXA findings. The reason for the different results is that the RXA is based on actual trade statistics. Exports of dairy products to the EU have been very limited because of the inability to comply with EU regulation. The DRC calculations, however, indicate that Bosnian dairy production has *potential* to be competitive. This is, however, the case for farms larger than average, which can be regarded as commercial. The very small farms with up to five cows that do not have the possibility to make investments in for example cooling facilities face lower returns. Production systems with only a few cows are primarily suitable when labour is very cheap. It is

not realistic to presume all the smallest dairy farms will be profitable in the long run, and the same applies for the dairies – there are too many medium sized dairies that can not compete on costs with larger ones within or outside B&H. Structural changes, however, usually are slow, and it is probable that the structure of small farms will remain. The dysfunctional land market, with unclear property rights etc, also indicates a slow process. The high level of unemployment outside agriculture also suggests small scale farming will remain. So far the opportunity cost of labour of many small scale farmers is low.

Improving the quality of milk is essential, and by improving the very low yield level both profitability and competitiveness would increase. The negative trade balance in dairy products has decreased in the last years, but is still considerable. The possibility to substitute imports with domestically produced milk is hindered mainly by the dairies' difficulty to collect large enough quantities of milk of good quality. Two of the most important factors to accomplish better quality and higher yield levels are education and counselling for farmers, and improved feed quality.

Raspberries

Seven raspberry farms were surveyed. On average they devoted 0.16 ha to raspberries and received a yield equal to 9 t/ha in 2003 increasing to 15 t/ha in 2005. This increase was due to the maturity of plantations which were young in 2003. In our research, a 10-year cycle was assumed with the first fruit harvested in year three and the highest yield recorded in year seven. All labour input was made by family members and no hired labour was reported.

Most of the sales of raspberries have not been made to a processor but to an intermediary company that collects raspberries from farmers.

The analysis of DRCs for raspberries was based on 2005 prices, assuming a 10 year growing cycle. Costs were based on annual averages. The analysis indicates that raspberries are unprofitable at both private and social prices (DRC ratio substantially above 1, namely 1.55). However, the calculations for raspberries are very sensitive to assumptions on labour. If labour input is valued at 25 KM per day (the going rate for paid agricultural labour), labour accounts for 61 per cent of total costs.

Out of the three commodities the adjustment to labour costs has the largest effect on the estimations for raspberries. This is because labour accounts for a larger share of total costs in this case (61 per cent) than for peppers or milk. However, the 10 per cent reduction in labour costs is insufficient to make Bosnian raspberry production socially profitable. Under the sensitivity analysis, gross social profitability improves from a loss of 513 KM per tonne to a loss of 410 KM per tonne. The DRC ratio improves from 1.55 to 1.44, but still is above 1.

One of the questions is why people grow raspberries if they lack private profitability and are not socially competitive. Raspberry production appears to absorb labour with very low or zero opportunity costs, which otherwise will stay unemployed. This labour accepts to receive less than the usual average daily wage, thus to a great extent works on the basis of self-exploitation. But still, people remain engaged and extract some income. However, the very high labour requirements plus the relatively high wages for the level of labour productivity make the domestic costs of non-tradable resources high and therefore undermine the international cost competitiveness.

The natural conditions in B&H are very favourable for raspberry production. Raspberry production is also one of few traditional agricultural activities that is not disadvantaged by the structure of small farms. The fact that the production of high-value raspberries is limited to a few regions in the world is also encouraging the idea that raspberry production should be profitable in B&H. By looking only at trade statistics and RXA, Bosnia seems to be competitive in raspberry production. But the calculations of private profitability show a less positive picture.

Both profitability and competitiveness within raspberry production is very dependent on the market price/farm gate price on one hand, and on the cost of labour on the other. The market price has increased lasting recent years, while the farm gate price in B&H has decreased. One explanation could be that raspberry growers are many and unorganised while the processors are few and have a stronger position. The fact that raspberries is an exported product increases the potential for FDI. FDI would be very useful within this sub sector, since the processing/freezing industry requires investments and post harvest technologies (e.g. freezing and packaging) are crucial within the berry sub sector.

Policy recommendations

Several donors and international organisations such as IMF, World Bank, European Commission and FAO have at different occasions issued policy recommendations with respect to the agricultural sector. By and large, there seems to be an agreement as to where the major problems are and what policy changes would be desirable. One is the creation of political stability and a state level Ministry of Agriculture. Public institutions need to be improved (eg. law and order, contract enforcement and corruption). There must be a functioning land market, and property rights must be clear and reliable. Access to credits and credit conditions need to be improved and adjusted to the needs of farmers as well as the conditions for foreign direct investments. The introduction and implementation of uniform sanitary and phytosanitary regulations and control is also important. SLI agrees with the above mentioned recommendations.

The purpose of this report has not primarily been to arrive at policy recommendations but to analyse the competitiveness of agriculture in B&H. However, an essential part of such an analysis is answering the question how competitiveness could be improved, which implies a policy advice or recommendation of some kind. Both general and product specific recommendations emerge from the analysis of competitiveness of agriculture in B&H.

Starting with the former, there is a great need to improve availability and quality of agricultural data. Crucial information systems, like FADN and EAA applied in the European Union Member States, are fully missing. A farm register still does not exist. A comprehensive and reliable assessment and monitoring of the performance and competitiveness of the agricultural sector is not possible without such data. Furthermore, capacity to carry out sound policy analyses and impact assessments of possible agricultural policies is weak in B&H. A policy analysis unit at a central level, preferably at Ministry of agriculture when it is created, could fulfil such a function. Moreover, B&H needs support for institution building and human capital to be able to administer the complex system of diagonal cumulation of rules of origin.

Bosnia and Herzegovina should focus their efforts on quality standards and the application of the European conformity assessment in order to benefit from the unilateral trade liberalisation by the EU. However, they should bear in mind that such unilateral liberalisation may not last for ever and that the special prefer-

ences may be reviewed after 2010, particularly if Bosnia and Herzegovina manages to achieve a substantial growth of the agri-food exports to the EU in comparison to the usual levels.

Concerning product specific recommendations, the insufficient level of education was identified as one of the major explanations of the low level of productivity. Efforts to improve education and training of farmers seem, hence, recommendable. Such efforts can include demonstrations on farms which managed to achieve higher level of productivity than other farms in the vicinity or on special demonstration units. The extension services needs to be improved as well. Education of farmers should, moreover, provide both technical and economic skills with a more market driven and consumer oriented business model. The same applies to processing industry.

One of the largest problems for processors is the lack of market research and consumer data available for analysis. There is a considerable need to restructure dairy industry as there is too much capacity in the sector and all of the 80 dairies will not survive.

B&H is a considerable net importer of agricultural and food product. Many of the products that are imported could be produced within the country. The importance of the domestic market should not be underestimated. However, improvement of the balance of trade in food should also include increase of exports. Trade pattern in food in the industrialised world is becoming increasingly intra-industrial, i.e. the same products are exported and imported because of the consumer's preference for variety of, for instance different types of cheese. This means that exports are vital even for net importers. Well-established regional specialities tend, moreover, to fetch higher margins than standardised products (Folkeson, 2006). Hence, there are good arguments to develop promising products.

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Appendix

Table I. Bosnia and Herzegovina – Import Tariffs for Agricultural Products (2000)

Commodity	Import Tariff (per cent)
Wheat and Rye	5
Maize Grain	10
Maize Seed	5
Wheat Flour	10
Soybeans	0
Oilseed rape	5
Sunflower	5
Soybean Oil	5
Rape Oil	5
Sunflower Oil	5
Sugar	10
Tomatoes	10
Tobacco	15
All Other Vegetables	5
Apples and Pears	10
Apricots, Cherries, Peaches, Plums	10
Berries	5
Processed and Semi-processed Fruits and Berries	10
Milk and Milk Products	10
Live Animals	
Breeding Heifers	5
Live Cattle for Slaughter (less than 300kg)	5
All other Cattle for Slaughter	10
Breeding Sows	0
All Other Live Pigs	10
Breeding Stock for Sheep and Goats	0
All Other Live Sheep and Goats	10
Breeding Poultry	0
All Other Live Poultry	10
Meat and Meat Products	
Fresh and Chilled Meat	10
Meat By-products	5
Animal Feed	
Oil Cakes and By-products of Cereals and Sugar	5
Contrentrates, Premixes, Vitamins and Minerals	0
Organic Fertilizers	0
Urea and Ammonium-nitrate	0
Superphosphate	5
Complex and Mixed Fertilizers	5
All Agricultural Chemicals	0

Table II. Planned subsidies in FB&H for 2005

	Unit	Subsidy per unit in KM	Total planned amount in KM
PLANT PRODUCTION			
Mercantile wheat	kg	0.06	600000
Sown fodder crops on ploughed fields	ha	150	300000
Potato for processing	kg	0.05	125000
Vegetable for processing	kg	0,05-0,10	245000
Tobacco	kg	0.9	1449000
Seed wheat (original and first reproduction)	kg	0.14	98000
Seed potato (elite and original)	kg	0.25	417000
Establishment of orchards	ha	2800	1764000
Establishment of vineyards	ha	4200	840000
ANIMAL PRODUCTION			
Fresh cow and sheep milk	liter	0.14	6440000
Fattening cattle	head	150	675000
Fattening porker	head	30	360000
Heifers for breeding (less than 30 cows)	head	200	110000
Heifers for breeding (more than 30 cows)	head	150	72900
Ewes for breeding	head	120	200000
Pullets (heavy parents line)	head	2	160000
Pullets (light parents line)	head	1.5	129900
Honey production	kg	1	88000
Sea fish production	piece	0.09	45000
Marking of ewes for breeding	head	1.5	60000

Source: Programme and Instruction for 2005 according to Law on finance subsidies in primary agricultural production in Federation of B&H, Official gazette of Federation of B&H, No 18/05.

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